Initial Environmental Examination

August 2017

AFG: Qaisar–Dari Bum Road Project

Prepared by the Ministry of Public Works for the Ministry of Finance, Islamic Republic of Afghanistan and for the Asian Development Bank (ADB). This is an updated version of the second updated Initial Environmental Examination for the Herat-Andkhoy Road IEE (TA 4177-AFG).

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وزارت فوایدد عامه د تولگتو چارو وزارت
ISLAMIC REPUBLIC OF AFGHANISTAN
MINISTRY OF PUBLIC WORKS

Program Management Office (PMO)
دفتر تنظیم برنامه های بانک انکشاف آسیایی
دآسیایی پراختیا بانک د کرنلارو د سمبالښت دفتر

No: 671-671
Date: Aug. 7. 17

To:

Mr. Dong Soo Pyo,

OIC, CWTC, ADB

Subject: Initial Environmental Examination (IEE) for Qaisar to Dari Bum Road Project

Dear Mr. Dong Soo Pyo,

The technical team of the Ministry of Public Works (MPW) prepared the initial environmental examination (IEE) for Qaisar -Dari Bum Road project. A copy of the IEE is attached with this letter for your further process.

On behalf of the government, I would like to avail this opportunity to renew to the bank the assurance of our highest consideration.

Sincerely yours

Ahmad Wali Shairzay MSCE
Technical Deputy Minister
Ministry of Public Works

CURRENCY EQUIVALENTS

(as of 12 July 2017)

Currency unit	–	Afghani (AF)
AF1.00	=	$0.0146
$1.00	=	AF68.3933

ABBREVIATIONS

ADB	–	Asian Development Bank
ADF	–	Asian Development Fund
ADT	–	Average Daily Traffic
AIA	–	Afghan Interim Administration
AIMS	–	Afghanistan Information Management Service
CAN	–	Comprehensive Need Assessment
CBR	–	Consultant Bureau for Reconstruction
COI	–	Corridor of Influence
CSP	–	Country Strategy Plan
EIA	–	environmental Impact Analysis
EMP	–	Environmental Monitoring Plan
FAO	–	Food and Agriculture Organization
GOTISA	–	Government of Transitional Islamic State of Afghanistan
IBA	–	Important Bird Area
ICAO	–	International Civil Aviation Organization
IEE	–	Initial Environmental Examination
ILO	–	International Labour Organization
INGOs	–	International Non Government Organizations
IR	–	Interim Report
MDG	–	Millennium Development Goal
MPW	–	Ministry of Public Works
MRRD	–	Ministry of Rural reconstruction and Development
NDF	–	National Development Framework
NGOs	–	Non Government Organizations
PEA	–	Preliminary Environmental Analysis
PNA	–	Preliminary Need Assessment
PSA	–	Poverty and Social Assessment
SAI	–	Sheladia Associate Inc.
SIDA	–	Swedish International Development Agency
SPSS	–	Statistical Package for Social Sciences

NOTES

(i) The fiscal year (FY) of the Government of Afghanistan and its agencies ends on 20 December. “FY” before a calendar year denotes the year in which the fiscal year ends, e.g., FY2017 ends on 20 December 2017.

(ii) In this report, “$” refers to US dollars unless otherwise stated.

A. Introduction

1. This updated Initial Environmental Examination (IEE) has been prepared by the Ministry of Public Works Program Management Office, Government of the Islamic Republic of Afghanistan (MPW/PMO) for the Ministry of Finance (MOF) and the Asian Development Bank (ADB) to process the grant for the 151 km Qaisar-Dari Bum Road Project (QRDP). QRDP will rehabilitate and upgrade sections of the existing earth road track passing through the Provinces of Badghis and Faryab that are a part of the Ring Road linking Herat in western Afghanistan to Andkhoy and Mazar -i- Sharif in the north. The review of acts and regulations of Afghanistan related to environment concludes that the project does not infringe upon any of the laws and regulation. It also does not contravene any of the international treaties or conventions to which Afghanistan is a signatory. According to the Safeguard Policy Statement 2009 the project is categorized "B" for the environmental assessment for which an IEE needs to be prepared (designated as the Preliminary Environmental Analysis in this Report).

2. There is total absence of access to the project area because of poor security conditions. This updated IEE is reliant for it's description of the project area environment and assessment of the impact of the Project on the environment, on sections of the IEE report (see *Attachment 1*) relevant to and concomitant with the alignment and length of the 151 km Qaisar to Dari Bum road undertaken during the ADB project preparatory technical assistance Preparing the Heart- Andkhoy Road Project (TA 4177-AFG)[1]. In addition, this updated IEE constitutes a second update of the Herat-Andkhoy Road IEE, subsequent to the update comprising the Summary Initial Environmental Examination (SIEE), as Appendix D of the RRP for the approval of the Qaisar-Laman Road Project. This second and present update includes i) an providing more detailed information on several aspects of the environmental baseline (hydrology, protected areas); ii) updating Institutional, Policy and Legal Framework relating to environment in Afghanistan (see *Attachment 2*); iii) renewed information disclosure and consultation with project communities (see *Attachment 3*).

B. Project Description

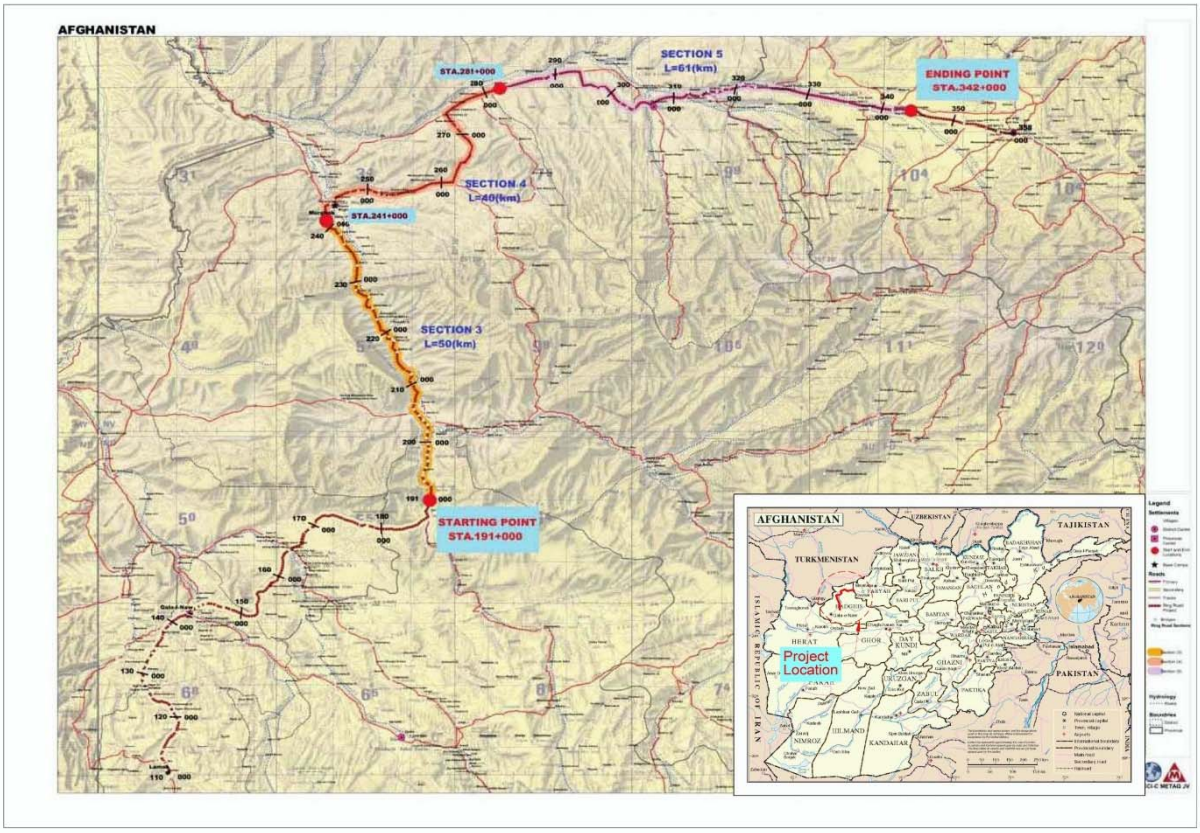
3. The 151 Km Qaisar-Dari-Bum Project road is divided into 3 stretches for construction purposes on the basis of topography and scope of construction and will be implemented as 3 separate construction contract packages, namely: i) Dari Bum to Bala Murghab (Package III) 50 Km; ii) Bala Murghab to Gormach (Package IV) 40 Km; and iii) Gormach to Sar Chashma-i- Chechaktu (Package V) 61 Km. Figure 1 below provides location map.

4. The Project road is designed to be a standard two-lane national major road which to maintain its standard would normally occupy a right-of-way (ROW) of up to 15 m each

[1] ADB. 2003. Preparing the Herat-Andkhoy Road Project. Manila. The IEE report was prepared for 553 km road, but ADB's project will cover road improvement of the first 210 km from Andkhoy. Therefore, this updated IEE focuses only on the area covered by the proposed ADB's project.

side of the road from the center- line. To reduce Land Acquisition and Resettlement (LAR) impact the maximum ROW adopted in the preliminary design is 10 meters on either side of the center line. Private land and structure falling within 10 meters either side of the center line is counted as impacted and added to the total quantity of impacted land and structure respectively. To further reduce LAR impact, in concentrated built up areas, only structures within 6 meters on either side of the center-line are cleared (involuntarily acquired) to accommodate the 11- meter cross section of the road (2 lanes of 3.5 m each and 2 m on either side of the 7 m pavement for shoulder, safety and drainage. These stretches are supported by reduced speed limits and speed breaking structures for further safety.

Figure 1: Location Map of Project



The proposed project will involve the following:

i. reconstruction and improvement of 151 km. two lane road from Qaisar to Dari Bum.

ii. construction of bridges along the alignment:

- Package III (50 km) – 16 bridges;
- Package IV (40 km) – 3 bridges;
- Package V (61 km) – 13 bridges

(i) construction of other structures:

Package III - 163 culvert locations;

Package IV - 90 culvert locations;

Package (V) - 97 culvert locations.

(ii) improvement of the horizontal/vertical curve and increase embankment in several parts of the road and

(iii) improvement of traffic sign by marking cross walk, signs and other safety features

5. The improvement and reconstruction of the road aims to achieve the AASHTO design standard with the following features:

(i) for flat, rolling and mountainous terrain, each of the two lanes would be 3.5 m wide with a 2m shoulder (total width of 11m); and

(ii) crown cross slope of 2.5% to 3% depending on the pavement surface and maximum super elevation will be 8%.

6. The construction components will include development and placement of sub-base, base, top and pavement. The pavement is proposed to be made of asphaltic material. Hard material for sub-base and base are available almost all throughout the alignment. Top materials for pavement are mostly black stone and these are available at specific points of the alignment. Materials like cement, bitumen and asphalt will be brought from outside.

7. The construction will require earth filling, earth cutting and rock blasting in the preparation of the base of the road. The blasting will require the use of detonators of different sizes. Stone crushing will be required for meeting the need of paving.

8. The construction work is expected to start in the end of 2018 and is scheduled to be completed in four and half years.

C. Description of the Environment

9. The Project is administratively located within Faryab and Badghis Provinces. The road passes through the following districts:

- Badghis Province
  - Qadis district
  - Murghab district
  - Ghormach district
- Faryab Province
  - Qaisar district

10. The environmental condition of the project area along the road are provided in the Herat-Andkhoy Road IEE and detailed and updated for several environmental aspects below.

1. Physical Environment

a. Topography and Soils

11. The road passes through several topography features, between 500 m and 1,500 m of altitude, in light mountainous terrains and sloped hillsides. From Qaisar to Bala Murghab the road passes through hilly area at around km 10 to km 15; km 25 to km 26; km 60 to km 62, and km 76 to km 90. In Qaisar area, the types of soil are formed by conglomerates, pebbles, sand, and less loams. Starting from Almar, the road goes up until the crossing of the Turkestan Range, from Gormac to Murghab, the soil conditions change to more limestone.

b. Hydrology

12. The Project area is dominated by Murghab river and its tributaries, specifically Dari Bum river, Chachantu river (West Qaisar), as well as Qaisar river near Qaisar settlement. From Dari Bum the alignment follows Dari Bum river, and then Murghab river until Bala Murghab. Further, after turning east the alignment largely follows West Qaisar river. The only available hydrological data for those rivers were reported as early as in 60's-70's; they are shown below in Figures 2 and 3.

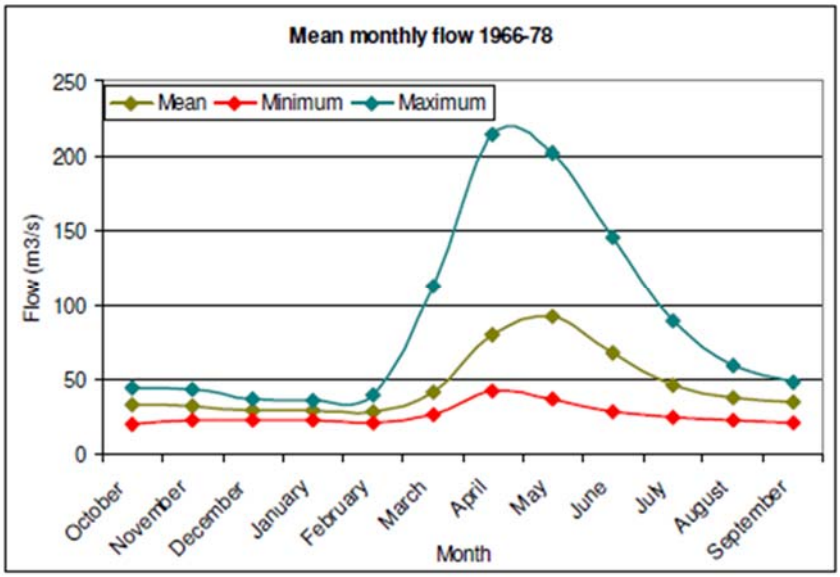


Figure 2: Mean monthly flows in the River Murghab at Qala-e-Niazkhan (station 40) in Badghis Province (Source: Hydrogeological Atlas of Faryab Province, Afghanistan)

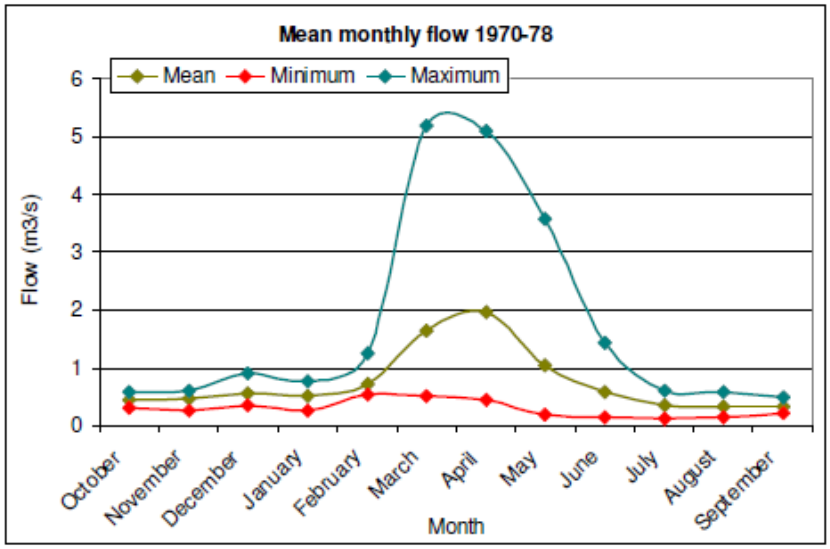


Figure 3: Mean monthly flows in the Chachantu river at Chachantu (station 44) in Qaisar District (Source: Hydrogeological Atlas of Faryab Province, Afghanistan)

13. The hydrological data indicate that the flows are seasonal, with the greatest flows between March and June for Murghab river, and March and May for Chachantu river being related to snowmelt.

- c. Land use

14. The land within the project area in Faryab province is mostly used to produce dryland wheat. In Badghis province project areas, rainfed wheat is most prominent. Most of the project area is either grazing land, or rain-fed agricultural land on which grain grows.

2. Ecological Environment

15. The vegetation along the corridor of the Project area is primarily semi-desert, which mainly consists of resistant grasses, various shrubs such as tamarisk, and sand acacia. The irrigated areas are mostly planted with grains, wheat, and other crops. Orchards and vineyards for personal consumption and not marketed are common in the villages. Wheat, barley, corn, vegetable, and fruits such as grape, melon and watermelon, and potatoes dominate the vegetation in the villages along the existing road. In the valley, it is very common to have acacia plantations. However, the Project area has no special species to be considered for preservation.

16. With regard to the fauna in the Project area, there are several domestic animals such as camels, horses, donkey, cow, buffalo, sheep and goat as well as dogs used as shepherds. Several types of birds are also found in the Project area. There is no presence of any rare or extinct fauna in the project area.

17. There are no specially protected or environmentally sensitive areas in proximity to the Project area.

D. Screening of Potential Environmental Impacts and Mitigation Measures

18. Potential environmental impacts expected within the construction stage may include: (i) disruption of traffic in the construction area; (ii) increased air pollution due to increasing dust and other volatile chemical substances from the asphalt plant; (iii) noise pollution and vibration; (iv) disruption of the water system due to construction of bridges and other earth work particularly in the valley areas; and (v) potential landslides associated with elevating some part of the road. These impacts will all occur only during the construction period. Mitigation measures to minimize these impacts include (i) rerouting traffic with clear signs; (ii) maintaining optimum moisture content during soil handling, spraying water to minimize dust, and maintaining a safe distance between the asphalt plant and public facilities including education facilities; (iii) strictly controlling construction works that create noise and vibration by prohibiting night work in residential areas; (iv) locating the hotmix and crusher plants at least 1 km from residential areas; (v) pumping stagnant water, and providing adequate drainage system; and (vi) stabilizing road embankment side slopes. These measures will be included in the contract document for the civil works. These impacts are all temporary and manageable.

19. Camps for construction workers will be established in areas that are not prone to social conflicts. The camps will need to be complete with adequate sanitation facilities and waste management to avoid any potential issues to the communities. Construction materials that contain hazardous and toxic substances such as petroleum, and asphalt should be stored in proper closed places and managed in accordance with the relevant international standards.

20. The most likely potential environmental impact of the project is traffic safety, therefore, adequate traffic signs and physical barriers to reduce traffic speed must be provided. This measure needs to be strictly enforced particularly in villages and towns along the road corridor, where markets are usually set up.

E. Institutional Requirement and Environmental Monitoring Plan

21. **Institutional Framework and Responsibility**. The contractor will be responsible for implementing mitigation measures during the construction phase. An international contract management, will help the Ministry of Public Work (MPW) particularly the Project Management Office and Project Implementation Unit in preparing contractual documentation so that bidding documents and other contractual obligations of the contractor clearly identify environmental responsibilities and describe penalties for noncompliance. Both national and international environmental consultants, part of the construction supervision consultant team, will supervise and monitor the implementation of mitigation measures during the construction stage. The MPW will be responsible for implementing overall environmental monitoring and management as part of the IEE.

22. **Environmental Monitoring Plan (EMP)**. The IEE (Appendix 1) provides generic environmental management and monitoring plan (Table 5.2.3), which will be reviewed and further elaborated by the contractor before construction to prepare site-specific EMP. An environmental specialist will be appointed during the construction stage to oversee the EMP implementation. Bi-annual environmental monitoring reports will be submitted to ADB for disclosure on the ADB's website and to other relevant Government agencies.

F. Public Consultation and Information Disclosure

23. Due to security situation in the project area only limited public consultations could be organized. Focus group discussions were conducted in Qala-e-Nau, the capital of Badghis province, with representatives of village estate councils (manteqa shuras) representing constitutive sub-groups of communities the Project road will pass through and is liable to impact. Village estate council members from both Badghis and Faryab provinces were invited by the provincial governor at the request of MPW for three days and received per diem and a reimbursement of their travel cost. The group discussions were basically organized for the purpose of public disclosure and consultations with project affected communities to comprehend the extent and impact of land acquisition and validate the adequacy and appropriateness of entitlements for APs, and of the institutional arrangements for the implementation of the resettlement process. More information on public consultation and information disclosure is in *Attachment 3.* Additional public consultations will be organized before construction.

G. Grievance Redress Mechanism (GRM)

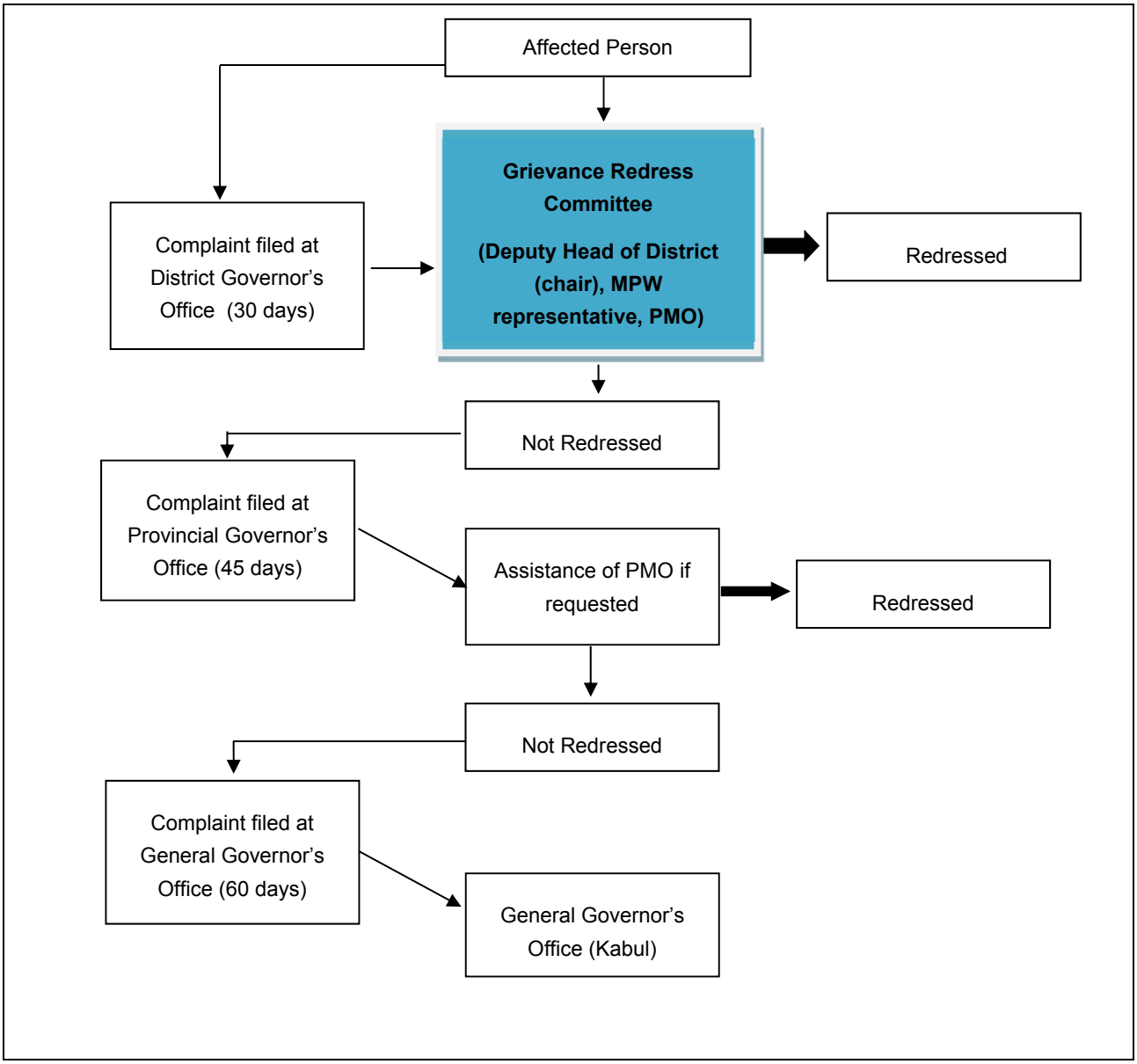
24. ADB's Safeguard Policy Statement requires establishing a grievance redress mechanism to receive and facilitate resolution of the affected people's concerns and grievances regarding the project's environmental performance. The GRM should address affected people's (APs) concerns and complaints promptly, using an understandable and transparent process that is gender responsive, culturally appropriate, and readily accessible to all segments of the affected people. The APs should be aware of the procedures on the resolution of grievances, which the environment and resettlement team will inform to project stakeholders during project disclosures and public consultations.

25. There will be a three -stage procedure for redress of grievances and complaints (Figure 4); however, APs have the right to move a court of law at any stage. These are as follows:

    - Complaints are to be filed at the district governor offices. This is a formal mechanism that supplements the mediation by Shuras where most grievances in the Afghanistan context are known to be effectively resolved. The district government with the help from Shura, and PMOs resettlement team is obliged to reply and explain the decision within 30 days from the date the complaint was received. The Grievance Redress Committee (GRC) will assist the district governor offices in the mediation and resolution of conflict.

- If AP is unsatisfied or has no reply from the district governor office, grievances can then be lodged with the Province Governor offices. The Governor office will issue the final decision within 45 days.

Figure 4: Complaints and grievances redress process



- If AP is unsatisfied or has no reply from the province governor office, grievances can them be lodged with the General Governor Office in Kabul. The General Governor office will issue the final decision within 60 days.
- An AP is free to access the country's legal channels at any stage of the GRM and refer to the appropriate courts. Should the AP want to pursue legal recourse in a

court of law at any time, MPW will ensure that support is given to the AP to prepare a case.

- The GRC for the provincial and the district level will be constituted by a notification from the Provincial Governor. Orientation of the two provincial committees on the grievance redress process, and of the one at the General Governor's Office in Kabul, will be conducted by the MPW/PMO Safeguards Coordinator, who serves as the grievance focal point.

H. Findings and Recommendations

26. The IEE study (***Attachment 1***) shows that potential environmental impacts associated with the proposed project are expected to majorly occur during the construction period and that practical mitigation measures are available and manageable during project implementation. Therefore, in line with category B projects, a full environmental impact assessment to assess further impacts for roads involved in this project is not required.

G. Conclusion

27. The Project will improve existing roads. The overall IEE finding is that the Project will not cause significant environmental problems and potential adverse impacts are manageable and as such due diligence has confirmed Category B for Environment. An EMP will be prepared during the detailed engineering design and continued environmental monitoring will be carried out during project implementation. Progress reports on implementing the environmental monitoring plan and compliance with ADB's Safeguard Policy Statement will be prepared as part of the annual project implementation reports.

Attachment 1

INITIAL ENVIRONMENTAL EXAMINATION

Islamic Republic of Afghanistan Qaisar-Laman road project 233km

Funded by Asian Development Bank

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Acronyms

ADB Asian Development Bank

ADF Asian Development Fund

ADT Average Daily Traffic

AIA Afghan Interim Administration

AIMS Afghanistan Information Management Service

CAN Comprehensive Need Assessment

CBR Consultant Bureau for Reconstruction

COI Corridor of Influence

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MPW Ministry of Public Works

MRRD Ministry of Rural reconstruction and Development

NDF National Development Framework

NGOs Non Government Organizations

PEA Preliminary Environmental Analysis

PNA Preliminary Need Assessment

PSA Poverty and Social Assessment

SAI Sheladia Associate Inc.

SIDA Swedish International Development Agency

SPSS Statistical Package for Social Sciences

TASF Technical Assistance Special Fund
TISA Transitional Islamic State of Afghanistan
UNDCP United Nations Drug Control
Programme UNDP United Nation
Development Programme UNEP United
Nations Environment Programme UNHCR
United Nations High Commission for Refugees
VAM Vulnerability Assessment Mapping WFP
World Food Programme

ZOI Zone of Influence

0. EXECUTIVE SUMMARY

A. Introduction

The Project is categorized as a B Project according to the environmental assessment guidelines of the Asian Development Bank (ADB). Therefore, the Initial Environmental Examination (IEE), designated as Preliminary Environmental Analysis in this Report, was prepared in accordance with ADB's environmental guidelines. This IEE is based on the IEE and SIEE reports that were undertaken under the project preparatory technical assistance (TA 4177-AFG: Preparing the Heart- Andkhoy Road Project), and includes the assessment of the environmental impact in the sector.

B. Overview of the Environmental Assessment of the Sector Impacts

Apart from the territory's arid deserts and frozen mountains, virtually the entire land surface of the road influence area has been used for centuries, whether for local farming or, on a more wide-reaching basis, for livestock grazing, fuelwood collection and hunting. Tragically, the combined pressures of this way of live, warfare and civil disorder and drought, have taken a major toll of the territory's natural and human resources. These impacts have exacerbated a more general and long-standing process of land degradation, evidence of which is apparent throughout the affected provinces. As the natural resource base has declined, their vulnerability to natural disasters and food shortages has increased.

Improving the road network, as the main transport infrastructures in Afghanistan will benefit the territory by improving connectivity and facilitating traffic movement between rural areas and main national highways. However, it will also generate environmental cost related to road construction and operation. Increased mobility will also generate environmental costs related to road construction and operation. Increased mobility will lead to increased production and service sectors, and therefore to increasing deterioration of the environment and natural resources if appropriate mitigation measures are not applied. The environmental impacts associated with construction to improve the road networks will be addressed and handled mainly by the road authorities. However, dealing with the impact related to the operation of the road networks will involve other institutions and civil-society. Better coordination among agencies including civil society is needed to anticipate and prevent environmental problems. The technical assistance loan, which basically focuses on empowering civil society, will become a complementary component to maximize the project benefits and reduce any social and environmental cost related to the Project.

C. Summary of the IEE of the Sample Subproject

C.1 Project Description

The Herat-Andkhoy road is a segment of the Ring Road, which connects the major cities of Afghanistan with neighbouring countries. The total length of the Herat-Andkhoy road is 553 km. The first intervention involves the improvement and reconstruction of 179 km, including 43 bridges. The typical cross section suggested for the road in level and rolling terrain is of two road lanes,

3.50 m wide each, with two hard shoulders of 1.50 m and two verges of 0.50 m, for a total width of 11.00 m. In mountain terrain, in order to reduce the construction cost, the typical cross section suggested foresees the reduction of the total width from 10.00 m to 8.00 m, reducing the width of the traffic lane to 3.50 m and that of the hard shoulders to 0.50 m.

C.2 Environmental Condition of the Project Area

The environmental conditions of the project area particularly along the road alignment are briefly summarized here.

Section 1: Andkoy-Sirin Tagab

From Andkoy until Dawlatabad the terrain is an open plain sloping gently to the north. Prevailing elevations of the plain range form 250-290 meters in the north to 400-550 meters in the south. The surface of the plain is hilly, gently rolling, or flat, with hummocks and numerous closed basins covered by takyrs (claypans) or solonchaks (salt flats), which together with masses of barchan, ridge, dune and hummocky sands form the main obstacles to motorized off-road vehicles. The road is surrounded by terrain, principally of sand, with small covert of the xerofila (dessert vegetation); there are patches of mud with sand, there are not gravel sources close to the road and when the wind blows, the sand covers part of the surface of the road . The water table is usually saline or bitter saline and lies from 5-35 meters below the surface. There are along the corridor two rivers one is called Siring Tagab, the other is called Qaysar, the existing road cross the rivers in several points until the town called Siring Tagab, these rivers provide water for irrigation. The area according from same information that the team found is seismically quite active.

Section 2: Sirin Tagab-Maymana

From Sirin Tagab until Maymana the terrain increase in altitude, is mountainous and dissected the soil are predominantly rubble and rubble and stone in the south and rubble and loam or rubble and sandy loam in the northwest. The intermountain basins are at 700-1300 metres above sea level; the soil are gently rolling or flat, less often hilly, dissected by irrigations canals, and intermittent rivers, which are the principal obstacles to motorized off-road vehicles.

The intermountain basins contain loessy loams, rivers bottoms have accumulations of boulders, less often (principally in the biggest rivers valleys) sand and gravel soils with considerable rubble inclusions. The water table in the valleys and basins lies 2-20 meters below the surface; the tops of the mountains are practically without water. At the foot of the mountains, sides the water table often reaches the surface as springs. The area is seismically active according with the information that we obtain for different sources.

Section 3: Maymana-Gormac

From Maymana to Qaysar the road pass across more or less the same topography and the type of soil with same variants, the types of soils are formed by conglomerates, pebbles, sand, loess, loams, travertine‘s, salt. In the middle of the way the road at the altitude of Almar go up until across of one of the descended hill from the northern part of the Turkestan Range and after descend until Qaysar, from there go along the valley of the River Cap cal until Morgan crossing the feet of the several descendent hill of the Turkestan Range. In the area around Qaysir the soil is formed by sandstones, conglomerates, pebbles, clays, marls and salt, etc.

In the area around Gormac the soil is formed by limestones , marls, pebbles, conglomerates, sandstones, clays, etc.

Section 4: Gormac-Murgab

From Gormac to Murgab the road passes over more or less the same topography and soil at the anterior track the soil change a little to more limestones and marls.

Section 5: Murgab-Qalay Naw

From Murgab to Qalay Naw the existing road goes inside the valley of the river Murgab crossing several small valleys and hill and cross the river Kasan. The topography is similar at the anterior and the soil is formed by siltstones, sandstones, conglomerates, limestones, clays and same volcanic rocks and cross same parts with more pebbles sandstones and clays. The water table is generally as much as 10 meters below the surface in intermountain depressions and several dozen to several hundred meters below the surface on mountainsides. In the area of the Band –i-Turkestan Range, it often reaches the surface as springs. According with the existing information there are some caves in this area. The area is running at the altitude between 600-800 meters

Section 6: Qalay Naw-Herat

From Qalay Naw the existing road go up until the Safed Koh Range across the mountain valley until the pass called K. Sabzak in direction north to south. Before start to go up there are a lot round hill along the principal valleys. The prevailing elevations of the mountains are 900-1100 meters and the top is at 2995 meters, however, the pass is at 2550 meters. The area around the pass during winter and early spring is covered by snow. The topography is similar at the previous corridors in the beginning of the slope, and then change for more mountainous until the top in the Sabzak pass. The soil change several times from sandstone, clays, conglomerates to phyllites , quartzite and from them to limestone, sandstone, there are also volcanic rocks, and dolomites. From the Sabzak pass until Heart the road passes across the Karux town trough the one of the extreme fork of the Safed Koh Range inside of a valley. The topography changes from mountainous to the valley topography until Herat.

The soil from the Sabzak pass to Heart pass across different quality; there are volcanic rocks, igneous rocks, sandstones, conglomerates, dolomites, The waters table lies 3-20 meters below the surface in river valleys and 30-100 meters below the surface on mountainside.

6. Vegetation and Fauna in the whole corridor

The vegetation is primarily semi-desert along the corridor; from the north to the southwest it is very similar. Mainly it is constituted by: resistant grasses (sand edge, wheat grass, etc.) various salt worst and shrubs (tamarisk, sand acacia) In the north, there were leafless trees. The irrigated lands are planted with grains mainly wheat and industrial crops. Orchards and vineyards inside in the villages and towns.

In the village along the existing road, mainly cultivated areas with wheat, barley, corn, vegetables there are also fruit like grapes, melons and watermelons; potatoes and other vegetables. Especially in same valley there are Acacia, Poplar in others are huge plantation of pistachio.

As for fauna in the influence area of the road, there can be found several species of: camels, horses, donkey, caw, buffalo, sheep, goat as a domestic animal and domestic dogs used as shepherd. The identified wildlife was as follow: long tailed marmot same crow, falcon, pigeon, partridge, sparrow, etc.

At a distance of approximately 40 km before Qalay Naw from the left side of the corridor there are some rounded hills with a huge community consisting of turtle and ferret or long tailed marmot and other rodent not identified as a rat. The community extends for approximately 10 km along the corridor, only from the left side of the corridor.

According to available information, this community has never been identified from the ecological point of view, and needs to be assessed during the design of the new road, specifically, from the prospective to avoid the road passing over the surface through the same small pass of the corridor when wildlife migrates from one side of the corridor to another for food, reproduction or in search of water.

7. Economic sectors

The main economic activity in the project area is agriculture, located in the main river valleys. In addition, there is also cattle farming, more prominent in valleys located in the north of the corridor.

The commercialization or interchange of agricultural products is developed at a small scale, very close to its origin, due to the difficulty to make distant travels and because of the isolation of the population, specifically, during harsh weather conditions.

This means that the great agricultural wealth of the region does not have the economic effect it should have; being the resource with greater possibilities if the present limitations derived from the isolation of the area would be resolved.

For the primary beneficiary provinces, much of the agriculture and therefore much of the economy of the far western region of Afghanistan is based on dryland wheat farming (in good years, up to 25% of Afghanistan grain production comes from dryland rainfed farming), together with extensive livestock production in southern Faryab, Badghis, and parts of north and eastern Herat. The provinces of Faryab and Herat also produce some grapes and raisins, but given prevailing road and transportation conditions, it is difficult for farmers to ship most fresh fruits to markets. In addition to grapes and raisins, these provinces could also grow almonds, peaches, pears, apples, apricots and mulberries. Now, however, such crops are specifically grown for local household consumption, rather than being grown commercially.

C.3 Screening Potential Impact and Mitigation Measures

No significant environmental impact is expected due to location because the Project will be confined to rehabilitating an existing road and does not include roads located nearby or within reserve areas or wildlife sanctuaries. Environmental impacts may include disrupted traffic in the construction area, increased air pollution due to increased dust and other volatile chemical substances from the asphalt plant, noise and vibration, disrupted water systems due to cut and fill and other volatile chemical substances from the asphalt plant, noise and vibration, disrupted water systems due to cut and fill and other earthwork, and potential landslides associated with elevating the road. Such impacts will occur only during the construction period. Mitigation

measures will include re-routing traffic during the construction stage, maintaining optimum moisture content during handling of soil, spraying water to minimize dust, and maintaining a safe distance between asphalt plants and public facilities including night work near residential areas, pumping stagnant water and providing adequate drainage systems; stabilizing road embankment side slopes; planting trees; and establishing forums to communicate with affect persons. All these mitigation measures will be included in the contract documents for the contractor. All the impacts are clearly temporary and manageable. Among positive impacts (benefits), the following ones can be mentioned:

- Boosting economic growth and facilitating transportation, so that the products, mostly agricultural, would have a greater scope of distribution or commercialization (at the moment it is very limited). On the other hand, the improvement in the transport also allows access to materials, products, tools, etc. that allow an improvement in the present methods of work. If the new road is graveled, graded, and generally improved, trucks and other vehicles could be able to probably double their average speed, from slightly more than 20 km/hour, to slightly more than 40 km/hour. It will half the transportation time, and probably reduce transport costs by a comparable amount. If this happens, then the number of shops might also double over a few years‘ time.
- The establishment and development of new socioeconomics activities in some zones of the corridor, caused by the improvement in the transport and the effect of the road as a point of attraction for the population.
- Employment and Training issues: Construction of the new road will have substantial impact upon both short and long-term employment opportunities for the people living along the right of way, as well as in nearby towns, cities, and provinces beyond the immediate range of the road. The construction of the road will employ thousands of people, both skilled and unskilled laborers. The costs for importing products including pharmaceuticals, textbooks, magazines, and other essentials will be reduced as transportation costs go down.
- Other factor derived from the traffic improvement that must be considered, is the simplicity and rapidity in the delivery of patients or injured persons from very isolated points to the nearby hospitals or health centres.

C.4 Institutional Arrangement for Monitoring and Implementing Environmental Management Plan

13. The environmental management plan (EMP) covers actions to ensure that mitigation measures and monitoring of the implementation throughout project implementation and operation are part of the IEE. The EMP stated that, during construction impacts associated with earthwork (e.g., siltation, erosion, dust, noise) need to be carefully mitigated. During operation, air pollution due to vehicle emissions and contamination of oil are impacts that need to be handled. Implementation of the mitigation measures will be monitored in accordance with the Government and ADB‘s environmental assessment requirements. The report on EMP implementation should be submitted to ADB annually.

14. An environmental specialist will be hired as part of the consultant team for implementing the Project with the assistance of the construction supervision consultants, Afghanistan authorities (Ministry of Public Works-MPW) will carry out monitoring and evaluation to ensure that the project facilities are managed effectively and efficiently and that their development impact is

maximized. For this purpose, the Government of Afghanistan (MPW) will carry out appropriate surveys to establish baseline dates at the beginning of project implementation, immediately after project completion, and three years later. Monitoring indicators to be collected will include traffic volume by vehicle type, vehicle operating costs, travel time, passenger fares and freight rates, traffic speed, agriculture, commercial and industrialist production patterns, incomes and expenditure levels, vehicle ownership and uses, travel and migration patterns, incomes and expenditure levels, vehicle ownership and uses, travel and migration patterns and social access to public and private services and utilities, and employment generation. The findings and supporting data will be added to the project progress report and project completion report. The Government will evaluate the project impact in accordance with the schedules and terms of reference to be agreed upon with the Asian Development Bank.

C.5 Findings and Recommendations

15. As a result of overall assessment, the construction of the road will not cause any critical or unmanageable environmental impacts. On the one hand the project will have positive effects on the population of the region in a larger scale, and site-specific negative impacts, on the other, which are assessed as avoidable or manageable with certain preventive or corrective measures to be defined in the final project.

16. Therefore, the conclusion is that a complete Environmental Impact Assessment (EIA) is not required, as considered the captioned, it is not justified.

INTRODUCTION

OBJECTIVES OF THE PRELIMINARY ENVIRONMENTAL ANALYSIS

The Initial Preliminary Environmental Assessment (PEA) is a basic tool to incorporate the environmental aspects on the project level. At a first stage, a preliminary environmental assessment must be performed, in parallel with the start of the project works and planning to consider its environmental feasibility.

Therefore, this preliminary environmental assessment is aimed at the following objectives:

- To provide basic environmental data to the project in relation to the scope of analysis or area of influence.

- To provide information about the possible expected or potential impacts and their type of magnitude.

- To propose preventive and corrective measures to avoid or to minimize impact and to consider their cost.

- To assess the best possible alternative from the various points of view being considered: social, financial and environmental.

- To provide basic information to develop a management and monitoring plan.

To estimate the project feasibility and the suitability of the alternatives being proposed, it is necessary to define the scope of these objectives, in addition to the need to cover any aspects in detail through a specific analysis or perform a complete Environmental Impact Survey.

METHODOLOGY AND STRUCTURE OF THE PRELIMINARY ENVIRONMENTAL ANALYSIS

This survey fulfils the definitions and requirements of the Asian Development Bank (ADB) in terms of performing a summary environmental evaluation, defined as Preliminary Environmental Assessment (PEA) or Initial Environmental Examination (IEE).

This report includes the following information:

. **Introduction**. Description of the Preliminary Environmental Report and its content.

. **Description of the Project**. A brief description of the project activities and its main characteristics.

. **Description of the environment**. Analysis of physical, biotic and social environment, accompanied by specific cartography.

. **Identification and assessment of impacts,** considering which can be avoided or minimized, and, in each case, which can be assumed in the project or require a more specific environmental survey. Therefore, we propose to define an impact matrix table, which is a methodology regularly used for this kind of preliminary surveys.

- **Preventive and corrective measures,** defined in this chapter for the whole infrastructure and on the basis of the environment description and an estimate of environmental impact.

- **Environmental management plan and institutional responsibility**. The activities to be carried out in order to verify the expected magnitude of impacts and the correct implementation of the proposed corrective measures, both during the construction phase of the new highway and during the later operations.

- **Public information**

- **Recommendations**

- **Conclusion**

SOURCES OF INFORMATION

In order to produce this preliminary environmental assessment, we have used information from different sources, ranging from data gathered by the team responsible for the report to conservation organizations such as the Birdlife International Foundation or international organizations such as the United Nations High Commissioner for Refugees (UNHCR), United Nations Environment Programme (UNEP) and national organizations like Afghanistan Information Management Service (AIMS), etc.

These bibliographical sources have been used as a support for the description of the environment, and are based on covering the area collecting data both for the definition of possible environmental conditioning factors and for the analysis of the current social and financial situation of the surrounding population as well as future perspectives. In addition, we have collected cartographical maps and information from the various entities in the country during our visit.

PROJECT DESCRIPTION

ROAD NETWORK.

The process of reconstructing roads in Afghanistan involves different countries and entities. As can be seen in the drawing attached, the improvement and resurfacing of the A-76 is sponsored by Iran and the Asian Development Bank (ADB), closing the ring that interconnects the various regions of the country and the capital, Kabul.

At the simplest level, the proposed Andkhoi to Herat Highway links together the three western provinces of Faryab, Badghis, and Herat. The proposed highway is approximately 550 km long, and under current conditions - assuming weather conditions without rain, mud, or snow - it takes slightly more than 24 hours to complete a journey from one end of to the other, or three to four days of normal travel. Current traffic appears to be approximately 10 vehicles per day, travelling at an average speed of slightly more than 20 km per hour.

The existing communication route, not asphalted, is considered as a "secondary of all time", although as it is observed in the figure of "areas potentially blocked by snow (figure 3.2.1.). The region located between the mountainous chain Band-e-Baba Range and Turkestan Mountains can be seen potentially blocked from mid-November. A conflicting point in this aspect is the mountainous pass of Sabzak, between the provinces of Hirat and Badghis. In the Additional Documentation 2, Drawings, a general drawing of Afghanistan roads is enclosed (drawing 2.1.1.), which shows the on-coming projects and the scope of the current survey is noted.

Table 2.1.1, below, shows the current travel times along the length of the proposed highway between the major market towns, together with the quality of the road conditions. Road quality is determined by calculating the kilometers per hour it takes a vehicle to travel between each of the 14 market towns along the length of the road. To complete the trip over the entire length of 580 km now takes slightly more than 24 hours at an average speed of 24 km per hour. The qualitative conditions of different stretches of road as determined by vehicle speed vary from a low of approximately 17 km per hour for one particularly bad stretch (between Chelghazi and Gormach) to a high of about 40 km per hour in another stretch of good gravel road from the City of Herat to Sabzak Pass.

MAIN PROJECT CHARACTERISTICS

The Herat-Andkhoy road is a segment of the Ring Road, which connects the major cities of Afghanistan between themselves, and with neighbouring countries. The total length of the Herat-Andkhoy road is 553 km. The first intervention involves the improvement and reconstruction of 179 km, including 43 bridges.

The Project is categorized as a B Project according to the environmental assessment guidelines of the Asian Development Bank (ADB). Therefore, this Initial Environmental Examination (IEE), designated also as Preliminary Environmental Analysis (PEA) in this Report, was prepared in accordance with ADB‘s environmental guidelines.

The typical cross section suggested for the road in level and rolling terrain is of two traffic lanes, 3.50 m wide each, with two hard shoulders of 1.50 m and two verges of 0.50 m, for a total width

of 11.00 m. In mountain terrain, in order to reduce the construction cost, the typical cross section suggested foresees the reduction of the total width from 10.00 m to 8.00 m, reducing the width of the traffic lane to 3.50 m and that of the hard shoulders to 0.50 m.

Table 2.1.1.: Travel Times and Road Conditions between Market Towns

Stretches of Road From...to...	**Distance (km)**	**Time (hours)**	**Average km per hours**
1. Andkhoi to Daulatabad	68	3.5	<20
2. Daulatabad to Maimana	65	3	>20
3. Maimana to Almar	33	1	>30
4. Almar to Qaisar	32	1	>30
5. Qaisar to Chechaktu	19	1	20
6. Chechaktu to Chelghazi	7	20 min	>20
7. Chelghazi to Gourmach	25	1.5	17
8. Gourmach to Bal i Murgab	66	3.5	<20
9. Bal i Murgab to Daryi Bom	66	3	>20
10. Daryia Bom to Moqor	25	1	25
11. Moqor to Qual i Nao	22	1	>20
12. Qual i Nao to Sabzak Pass	54	2	>25
13. Sabzak Pass to Herat	99	2.5	40
Totals	581	24.5	24 km per hour

ENVIRONMENTAL DESCRIPTION

Chapter 3.2.9. includes a report of the environment road survey done during the trip along the studied corridor.

GENERAL DETAILS AND SITUATION

1.1.1. General information of Afghanistan

Afghanistan is located in the southwest of Asia and is bordered by Pakistan in the south and east; Iran in the west; Turkmenistan, Uzbekistan, and Tajikistan in the north; and China in the far northeast. It that does not have access to the sea. Its limits conform an almost elliptic figure, with a maximum length, from northeast to southeast, of 1450 km and a width of 725 km, and has 652,225 km^2 of surface.

The capital is Kabul, located in the southeast of the country. Reliable data regarding the population of the country is not available but it is estimated that there are around 21-26 million inhabitants.

1.1.2. Scope of Survey

The project involves the improvement of the sole communication route (A-76) between Herat and Andkoy, in the northwest of the country, passing through other locations such as Qala-I-Now, Maymana, etc. It is also important to analyze the possibility of acting between Dowlatabad and Sheberghan. The provinces affected are the following, from south to north:

- Herat (capital Herat)
- Badghis (capital Qala-I-Now)
- Faryab (capital Maimana)
- Jawzjan (capital Sheberghan)

A general situation map is included in the Additional Documentation 2 (drawing 3.1.1.).

In addition to passing through the three primary provinces, the proposed road will have substantial positive impact upon several other nearby Afghan provinces, particularly Jawsjan, Sari Pul, and Balkh, which will also benefit from increased direct trade and traffic over the proposed highway. Several other provinces of northern Afghanistan, including Kunduz, Baghlan, Takhar and Samangan will also benefit because it will give them an alternative route to export their crops instead of relying exclusively upon the Salang Pass and the markets of the sub-continent. The figure below (Table 3.1.1) shows schematically the primary, secondary, and tertiary beneficiaries of the proposed road by Province.

Primary, Secondary, and Tertiary Beneficiaries of the proposed highway

Table 3.1.1. Beneficiated provinces

BENEFICIARIES	PROVINCES
Primary	Faryab Badghis Herat
Secondary	Jawzjan Sari Pul Ballch
Tertiary	Samangan Kunduz Baghlan Takhar

In addition, people living in southern Uzbekistan and eastern Iran will also benefit from the proposed highway through increased trade, commerce and traffic.

PHYSICAL AND NATURAL ENVIRONMENT

1.1.3. Climate

Climate of Afghanistan is continental by nature, with cold winters and hot summers. Most of the country is semi-arid or arid, with low amounts of precipitation and high or very high variability between years. Snowfall is concentrated in the central mountains and the higher ranges of the northeast. Winter temperatures are extremely low in both these areas, below - 15ºC for many weeks during winter. Most of Afghanistan is influenced by weather fronts from the Mediterranean, with low and erratic rainfall, typically in spring. The east of the country lies near the margin of the monsoon system affecting the Indian subcontinent. There, parts of the eastern provinces, including Kunar, Nuristan, Laghman, and Nangarhar, have up to 1,200 mm of rainfall in summer (roughly five times the national average).

The climatic conditions also show major daily variations mainly due to the high average altitude of the territory. During the day, temperatures can vary from 0 to 38 ºC. In summer temperatures reach 49 ºC in the valleys of the North. By mid-winter they drop, normally, to less than 9.5 ºC, an altitude of 2,000 m in the Hindu Kush, Kabul located 1,795 m above sea level. It has cold winters and warm summers. Jalabad (585 m) enjoys a subtropical climate, whereas Kandahar (to 1,006 m) has mild temperatures. Afghanistan is a relatively dry country; the annual average rainfall is 305 mm, raining mainly between October and April. Sand storms are frequent in deserts and the dry plains.

Although this environmental aspect or variable is assessed in the previous report, this Environmental Assessment includes relevant data on influence of physical (erosion, geomorphology, etc), biotic (vegetation, soil uses) and social variables (settlements distribution, communications and accessibility, etc). Thus, assuming Herat and Mazar-i-Sharif as

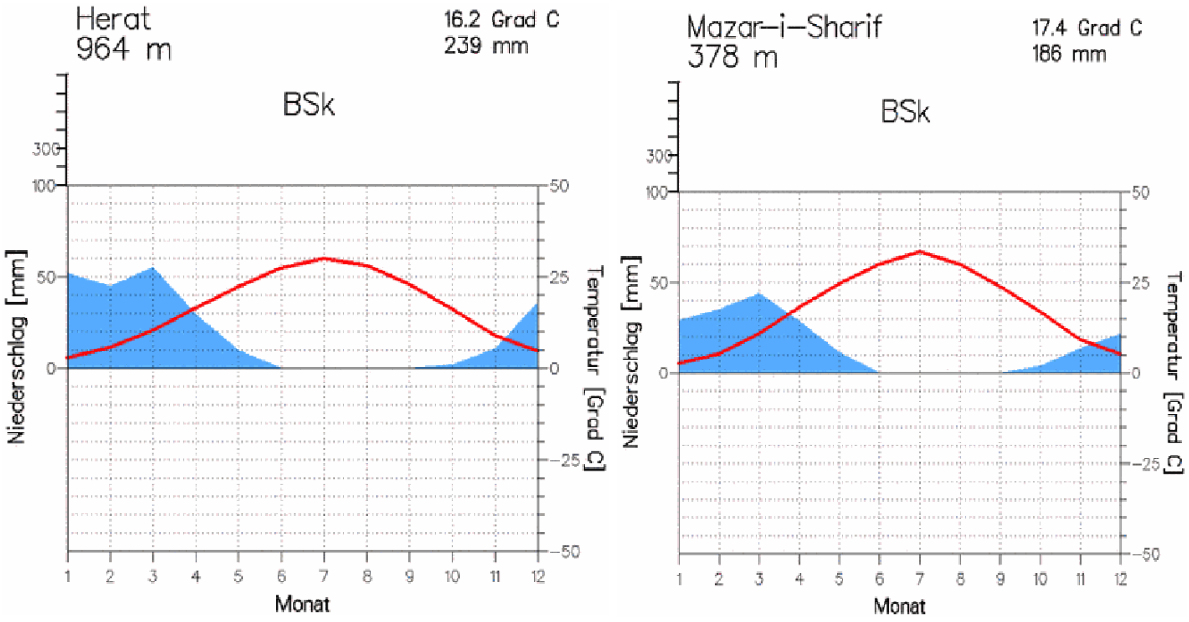
representative of the initial and final layout areas and because there are no other cities with this kind of information in the area, the following aspects can be observed (see attached weather maps):

- In Herat (964 m of altitude) the annual average temperature is 16.2 ºC, with maximums in July of 30 ºC (average) and minimums between December and January below 5 ºC (average). Annual rainfall does not exceed 240 mm, with maximums in January and March (50 and 55 mm respectively).
- In Mazar-i-Saharif, data are similar, with an annual average temperature of 17.4 ºC, although with maximums averages of 35ºC in July and minimum averages of 3ºC and 5ºC in January and December. Annual rainfall does not reach 190 mm, being March the rainiest month, with hardly 45 mm of average.

With respect to months with total or minimum absence of precipitation, in Herat it occurs during May and November, and only from June to October this circumstance occurs in Mazar-i-Saharif.

Obviously, intermediate sections present different characteristics, although most territory that is not of high mountain maintains similar parameters.

Climate diagrams are included next:



1.1.4 Terrain

Afghanistan is a predominantly mountainous country; three quarters of its surface are mountains, and more than a quarter (27%) is located at more than 2,500 metres above sea level. There are some low altitude fluvial valleys in the north and several desert regions in the south and southwest. The main mountainous system of the country is Hindu Kush that, with its various ramifications, covers 1,000 km of the Pamir, a chain of mountains in the Northeast located on the Western border of Iran. The average altitude of the Hindu Kush is 7,620 m, with some summits that reach 7,690 m.

Natural passes on mountains at several points facilitate the transit within the country as well as the communication between neighbouring countries. The only passage in the Hindu Kush below 3,000 m is the Shibar (2,987 m) that connects the region of Kabul with the Northern part of the country. The historical mountainous pass Jyber, in the Northeast border crosses the Sulayman Mountain and provides easy access to Pakistan.

The most extensive flatlands are located in the southwest of the country, centred around the internal drainage basin of the Helmand River, and in the north of the country, between the northern foothills of the Hindu Kush and the Amu Darya (Oxus) River (here marking the border with Tajikistan and Uzbekistan). Both regions, the southwest in particular, include large areas of sand desert.

The scope of survey includes several differentiated zones from the geomorphologic point of view. Thus, we distinguish the following sections:

Herat – **Murghab**

From the proximities of the Herat centre, below 1,000 meters of altitude, the mountainous chain, Dribble Range and Safid Range is reached, passing from a fluvial course (river Rodi Karuz) to a hill located about 2,500 meters denominated Sabzak Pass; it then descends again to Murghab, in the valley of the Murghab river. This area is less than 500 m above sea level.

Murghab – **Maimana**

This section passes several geographic features, between 500 and 1,500 m of altitude, in light mountainous terrains and sloped hillsides. Numerous fluvial courses are born in the Turkestan Mountains.

Maimana - **Andkhoy**

This last section is the flattest of all, because the layout always stays below the 1,000 meters above sea level, always in continuous slope into the valley of the river Sirin Tagab. Sandy and desert zones in the subsection next to Andkhoy are crossed as well as the territory between A-76 and Sheberghan.

From a seismic perspective, as can be seen in the figure 3.2.3 (Additional Documentation 2), much of the Herat and Maimana regions are located in areas of high seismic risk, while the rest of the affected territory is located in areas of low average risk and low or moderately very low. This is the case of the mountainous chains of the Paropamisus region.

A geomorphology drawing of the North-west region is included in Additional Documentation 2, named Drawing 3.2.1. North-West relief.

1.1.5. Hydrography

Five principal drainage regions can be distinguished, with the Koh-e-Baba mountain range in the geographic centre of the country as the primary watershed. With one exception, all drainage systems in Afghanistan end in closed basins (see included figure 3.2.2., in Additional Documentation 2.

The major river is the Amu Darya, which rises in the Pamirs, forms much of the northern border of Afghanistan, and traverses a large area of Central Asia, drying up before it reaches the Aral Sea. The Murghab and the Har-Rud, which crosses the city of Herat, both drain the northwest sector of the Hindu Kush, flowing west then north to terminate in southern Turkmenistan, where they contribute to groundwater resources. The Helmand, which collects rain and snow-melt from the southern slopes of the Hindu Kush, is the longest river entirely within Afghanistan, its catchments extending over some 31% of the country. Helmand waters flow through the arid southwest plains to enter the marshlands and lakes of the Sistan basin, which is shared with Iran. The Kabul River system, which drains around 9 % of the country around the capital, traverses the Jalalabad Gorge to join the Indus River in Pakistan.

With the exception of the Amu Darya, which receives inputs from countries to the north, most rivers in Afghanistan – and almost the entire supply of the country water for irrigation, drinking, and maintenance of wetland ecosystems – are derived from rainfall within the country own borders and the seasonal melting of snow and permanent ice-fields in the mountains. The persistence of snow and ice are closely related to prevailing temperature, so this source of water is likely to be at risk from continuing global warming. In general, the peak flow of melt-water occurs in springtime, and flow is sporadic or non-existent in many watercourses during the summer. In years with heavy precipitation, rapid runoff can cause flooding and mudslides in the spring.

There are very few lakes and marshland areas. Because of their rarity, existing wetlands are particularly valuable for people as sources of water and other resources such as reeds, and as habitat for wetland species, notably for breeding and migrant water birds. The largest permanent lakes are those at Band-e-Amir in the central highlands, and at high altitudes in the Wakhan Corridor. Other lakes are more variable in extent. By far the largest lie within the Sistan basin, where lakes and flooded marshland cover up to 4000 km^2 in times of good water supply (occasionally, even these have been known to shrink or dry completely). As almost half of the Sistan wetlands lie in Iran, transboundary management of this resource is required. Other important wetland areas include Dasht-e-Nawar, Ab-e-Estada and Kole Hashmat Khan.

The river Hari Rud that flows through Herat, is 1,125 km in length and crosses the province leading into a fertile agricultural valley. On its route it forms numerous dams or lakes, of great interest for fauna.

Other fluvial channels that are crossed or passed next to are the Murgab, the Qaysar and the Serin Tagar, among others. In the district of Pastun-Kot (province of Faryab), the Maimana river forms small lakes, little geographic and ecological features in this area.

The Hari Rud is a primary hydrographical river basin while the rest is framed in the great river basin of the Northwest.

These aspects are sufficiently developed in the whole Project, including a figure of a general map of fluvial river basins, included in this environmental survey (figure 3.2.2.).

1.1.6. Soil

The characteristics of the soil are related to litic aspects and agricultural ones, that is to say, of their agricultural and productive capacity.

The attached map shows the classification of the territory in terms of its division according to areas of predominant use of soil. The following areas are identified within the scope of this survey:

- Region of Herat: agricultural Area of high productivity, with irrigated land cultures. Associated to a high-density population.
- Region between Heart and Sabzak Pass.- Area of mountain pasture land. Cattle region with very little agricultural advantage and low density of population.
- Sabzak Pass-Chapake Guzar . Almost all affected land falls under the so called "rainfed crops areas. It is a region with agriculture development linked to the bottom of a valley with phreatic levels and fluvial waters that support the development of a rich irrigation farming and, as a consequence, human resettlements (not very numerous). On the other side, hillsides and mounts are only good for cattle pastures and small tree farming that need few requirements and they have very well adapted to climate conditions.
- Region of Andchoy. - It includes the district of Andkhoy and the one of Sheberghan. The soil is described as specialised on cattle breeding and oasis, with low level of population and agricultural field.

A figure with the agro-ecological areas is attached with the limits of the areas crossed by the new road. It is included as Additional Documentation 2, figure 3.2.4.

With respect to the type of soils, according to the terminology adopted in the cartography of the National Atlas of Afghanistan published by Geokart, most of the territory is composed of soils named Mountain light Serozems, which occupy the areas of intermediate relief, not very steep.

The mountainous region of the Safed Koh between Herat and Qalay- I –Naw contains soils named Mountain typical Serozems, like the section between Murgab and Maimana. The more important valleys in the fluvial courses, in their sections of smaller altitude, are alluvial soils, often saline and well irrigated. This is also the case of the Hari Rud to the South of Herat, of the Murghab near the border with the Turkestan and of Sirin Tagab on the North of the Maimana nucleus. The mountainous summits, like the Sabzak Pass, correspond to soils named Mountain dark Serozems, geologically like "glacial reliefs". Finally, around Andkhvoy, the soils are denominated Takyrs, and they correspond to areas of sandy desert.

1.1.7. Vegetation

1.1.7.1. Ecological conditioners

Meteorological records on Afghanistan have been available since the late 1950s. The findings of the meteorological centres have been applied in climatic studies, maps, and tables of precipitation; and these have shown the importance of precipitation and altitude as conditioning factors for the diversity of Afghan flora. Precipitation patterns define two main climate and vegetation zones. Ninety-five percent of Afghanistan territory belongs to the "Mediterranean" zone; and the greater part of its flora pertains to the greater "Turkestan" and "Iran-Turan" regions. A limited area—about five percent of the country, in the east and south-east—receives the impact of the Indian monsoons and belongs to the sub-tropical zone. Altitude, throughout both zones, explains the different strata of vegetation.

The importance of precipitation is evident. In the southwest, where altitude varies from 300 to 1000 m above sea level, total annual precipitation does not exceed 100 mm. Hence the area (i.e, Regestan and the region south of the Helmand river) is a desert. By contrast the northern plains at a similar altitude experience continental weather conditions and receive more than 200 mm of precipitation. The vegetation of this area is comparable to that of Central Asia and the Uralo-Caspian region. In Afghanistan, mountainous central region, plains vegetation occurs between 1,200 and 2,400 m altitude, particularly in Kabul province. Above 2.500 m, cool-climate vegetation is observed. In higher altitudes, where little precipitation is received, only a few forms of Alpine flora occur.

1.1.7.2. Flora in Afghanistan

The flora is similar to the one of the Tibet and the Himalayas and plains and deserts of Middle East. The forests of cedar, pine and other coniferous trees are located between 1830 and 3660 m of altitude. As a result of excessive tree cutting, the forests occupied only 2.1% of the surface of the country in 2000. In lower altitudes, there are shrubs and trees such as the hazel, pistachio, the ash, the juniper and tragacanth. Below 900 m, the vegetation is rare and is made up of grass and some shrubs. In spring, many types of flowers blossom both in mountains and in herbaceous steppes.

Afghanistan experiences a real winter, and thus much of its small vegetation has an annual life. With the spring rainfall is observed the growth of Terophytes and Geophytes, including such bulbs a *Muscari* (grape hyacinth), *Merendera, Tulipa,* etc.

The vegetation disappears with the coming of summer and the drying up of the plains. Only the xerophyles which are generally thorny, resist the dry warm weather of summer. Also, Afghan climate is suitable for Halophyle vegetation, especially that of the families *Chenopodiaceae*, *Polygonaceae* and *Compositae*.

Afghan flora belongs generally to the holartic and floristic group termed ―Irano-Turkestian or Turanian‖.

1.1.7.3. Vegetal cover. Forests

The development of forests is limited in Afghanistan not only by the total quantity of rainfalls (a minimum of 250 mm a year is required for the growth of trees), but also by their seasonal distribution with respect to the vegetative season. In most parts of the central mountains of the Hazarajat, precipitations occur during the cold season, when they are useless, while the vegetative season corresponds with a relatively dry summer, and hence an absence of forests.

Rainforests

It is mainly in the south-eastern and eastern part of the country, which in summer enjoys the earliest approaches of the Indian monsoon, where dense and lasting forest plants can grow. Apart from the monsoons properly speaking, which considerably vary from year to year and can be more or less absent, there are always random precipitations (Rathjens, 1969, 1974) proceeding directly from the layer of clouds and the atmospheric humidity, which is always very high in the afternoon. From the bottom to the top of this south-eastern slope, there is a well-defined series of successive strata: 1) A lower, semi-arid level of shrubs, below 1300 meters, has above it a luxuriant

combination of *Olea cuspidata* (wild olive trees) and *Reptonia buxifolia*. 2) Above 1,300 m there are evergreen oaks, the eastern varieties of Mediterranean forms: *Quercus baloot* (up to 2,000-2,300 m); *Quercus dilatata* (ca. 2,000-2,400 m); *Quercus semicarpifolia* (up to about 2,900 m). 3) The level of coniferous forests, covering the westernmost part of the Himalayan forests, starts with *Pinus gerardiana*, which from a height of 2,000 m, among the driest exposures, mixes with the Q. baloot, which grows in the wettest exposures. Between 2,400 and 2,700 m, when annual precipitations exceed 800 mm, the main trees are cedars (*Cedrus deodora)* mixed with Q. semicarpifolia. 4) Between 2,900 and 3,300 m, there are nothing but conifers, forming a mixed forest of spruce (*Picea smithiana*), fir (*Abies webbiana*) and pine (*Pinus wallichiana)*. 5) The highest limit of forest vegetation consists of a level of junipers (mainly *Juniperus semiglobosa*) reaching 3,500 m.

Dry forests

In the rest of the country, where there are no summer monsoons, the vegetation is adapted to a more or less long dry season. Real forests are virtually absent on all the southern slopes of the central mountains, where the rains are insufficient and unevenly distributed. A forest formation appears on the northern slope, where the spring rainfalls increase more rapidly, in the form of a clear forest of junipers. It extends west towards the Elburz (Alborz, q.v.) and Khorasan, fringing the highlands while gradually rising westwards, from about 1,400 to 2,900 m in the east up to 1,500 to 3,600 m in the west (mainly *Juniperus seravtschanica)*. In its lower stratum, it produces pistachio and almond trees (here *Pistacia vera, Amygdalus* sp.), reaching 1,600 to 2,000 m in the central sector and more than 2,000 m in the Hindu-Kush. On the southern and western slope of the central highlands, this formation of pistachio and almond trees (here *Pistacia atlanticao* between ca. 1,200 and 1,800 meters) occupies the entire interval between the sub-alpine vegetation of thorn cushions and that of the deserts or semi-deserts to the south and southeast.

Deforestation.

In fact, the forest formations mentioned above for the most part lead a merely theoretical existence. The country real surface of forests, located almost entirely in the east and southeast, has been estimated at some 25,000 sq km only (Fischer), that is, less than 4% of the total surface. The deciduous forests have almost completely disappeared. The natural extension of clear juniper forest, more than 95% of which is destroyed, can only be reconstructed with the help of a few witnesses. The groups of pistachio trees on the northern slope of the central mountains have only kept some of their density in the northwestern province of Badghis, his between Qal a Naw and the high valley of the Koæk. Here they still attracted a large number of temporary migrants in the 1970s during the harvest of this wild fruit. Among the wet forests of the east and southeast, the level of holm oaks is also in a state of very advanced deterioration. Only the higher level, consisting of coniferous forests, is as yet relatively well preserved. Due to the dearth of historical texts, it is impossible to describe the stages of this deforestation, as has been done in Iran. It is in any case certain that it started a long time ago. The belt of more or less continuous dry forests that perhaps surrounded the Kabul basin some 2,000 years ago (Rathjens, 1958) had already disappeared before the Muslim period, the authors of which do not mention anything about it. The presence of pistachio trees in Bactria, which were still abundant during the period of the Hellenic kingdoms, soon also grew rare. It may be that the degradation of the *Q. baloot* forest is more recent. Numerous traces of *Sophora griffithii* still witness its ancient extension.

1.1.7.4. Vegetation and soil uses in the scope of the survey

The natural vegetation, understood as the original or possible potential vegetation without anthropic conditioning factors (human) is mainly represented by herbaceous formations and some forest formations in locations with moist soils such as river valleys.

As can be seen in the attached drawing in Additional Documentation 2 (Drawing 3.2.5.), the potential dominant vegetation series are:

- Ephemeral Wormwood and wormwood-tragacanth steppe.
- Gen Artemisia, Astragalus
- Juniper schrubs. *Gen Juniperus*
- Ephemeral Mixed herbaceous-wormwood steppe with patches of fruticose vegetation.
- Juniper woods and schrubs with roses.
- Cultivated fields and patches with trees like willows (S*alix sp*), poplars (*Populus sp*) and rosebays (*Nerium oleander)*.
- Medium herbage ephemerid vegetation.
- Sedge-meadow grass ephemerid semi deserts with patches of halophiles vegetation.

By focusing the description of the vegetation stratus on the surroundings of the project, from the point of view of soil usage, the area is flanked, in most of the route, by herbaceous mountainous elevations covered with herbaceous and small stems in the surroundings of the towns with few tree specimens, in general associated to the alluvial land close to the river.

The river affluence area is not dominated neither by notable river-side vegetation or trees and is mainly occupied by farming.

Apart from the areas dedicated to farming (fruits, vegetables, cereals, almonds tree, etc.) and the few trees that pop up along the route, the more representative vegetations are associated to the steppe ecosystem, represented by fruit-producing xerophile and criophile pastures and shrubs adapted to the difficult climatic conditions of the region. Altogether, including the cold deserts, they conform the denominated eco-region Paropamisus Xeric Woodlands. There are some small Arboreal examples, for example, in Sabzak Pass, with coniferous light forests of *the Juniperus* sort.

Overgrazing has allowed weedy plants and spiny shrubs to replace the original meadow plants traditionally found in the open woodlands common to this ecoregion. Native meadow plants grow in some areas away from human influence, including species such as mints, plantains, gentians, small reeds, sedges, and rushes. In areas where snowmelt accumulates, willows, sea buckthorn, and shrubs beneficiate of the available moisture. The vegetation of this eco-region is opportunistic and adapted to the hard conditions of these dry and mountainous areas.

Referring to the zones that can be denominated like cold deserts in strict sense, the more common vegetal types in the turanian element, dominant element in Afghanistan, are the following ones:

Desert of ephemeral.

It is found on soils of loess salt-free type that in spring are very humid but they dry from May. Several annual species and geophytes will develop during the short vegetative period from the beginning of March to mid May. The most important species are *Carex hosti* (*C. Stenophylla*) and *Poa bulbosa*. In some areas we can see the *Foetida rule* appearing in isolation having 2 meters high; the seeds of the 40-50 annual species reach the maturity in about 30-45 days. In the years with abundant rains this type of desert reminds of a meadow and produces 0.5-2.5 Ha of dry mass and can be used for pasturing during 3 months, but during the remaining 9 months it is completely dead.

Desert of halophites.

This type of desert is found on soils with shallow phreatic water, located mainly in the lower course of the rivers, in depressions or around saline lakes. Most of the typical species are hygro-halophyles (*Gens Salicornia, Halocnemun, Holoxylon, Seidlitzia, etc.)*

Takiri.

They are flat with clayey surfaces and lacking vegetation. During the spring they are flooded by superficial waters that fall from the mountains although they dry up very quickly. In the shallow pools that warm up quickly, one can find 92 cianophytes, 387 chlorophytes and other seaweed; they produce 0.5 t/ha with a nitrogen content of 4.5% (atmospheric nitrogen fixation). Lichens grow on elevated surfaces (*Dioploschistis* among other). Phanerogams are rare in these environments.

Sand desert.

Sandy soil supports a vegetation that is denser than in the previous case. During the spring the terophytes can cover 50% of the surface, with species like the *Carex sp*. Also summer plants and shrubs appear and remain active until autumn. Some of these shrubs are: *Haloxylon persicum, H. Aphyllum, Calligonum sp; Eremospartum sp, Ammodendron sp and Astragalus,* these last three of the Leguminosaceae family, three species of *Salsola*, etc.

This type of ecosystem appears in the provinces of Jawzjan and Faryab, mainly.

Botanical species of the common vegetation of the North West provinces of Afghanistan are:

Ornamental exotics:

A careful survey of recreational gardens, arks and roadside including city and suburbs was conducted. In addition to the trees mentioned above, the ornamental exotic are also identified therein.

- Natural bushes:

Peganum harmala
Periploca calophylla
Ephedrine antheridia
Capparis spinosa
Saccharum munja
Glycyrrhiza glabra
Ferula asafoetida
Seidlitzia rasmarinus
Alhagi camelorum
Vitex negundo
Cuminum carvi
Crocus stivus
Rheum alpinum
Capparis himalayensis

- Mountain slopes and upper valleys:

  - Fruit trees:

Prunus armeniaca
Pyrus malus
Morus alba
Punica granatum
Vitis vinifera
Juglans regia
Elaeagnus latifolia
Pistacia vera
Amygdalus ebrahmica

  - Forest trees:

Pistacia khinjuk
Salix wallichiana
Populus alba
Alnus nitida
Fraxinus floribunda
Ailanthus glandulosa
Robinia pseudoacacia
Amygdalus communis
Juniperus excelsa

3.2.5.5. Environmental risks

Human activities such as hunting, wildlife trade, and habitat conversion are, for the most part, currently unregulated and causing species losses. Forests and woody plants are being lost near villages to satisfy their needs. Forests and woody plants are being lost near villages to satisfy the need for fuel and charcoal. And the livestock paths that cross the hills of this ecoregion are causing serious erosion and preventing plant regeneration. The grazing of domestic animals is one of the

most serious threats to the eco-region because it degrades the habitat and causes the replacement and alteration of natural vegetation.

In terms of specific cartography on this aspect, we have included in Additional Documentation 2 (drawing 3.2.2.) vegetation maps of the territory affected by the road being analysed.

1.1.8. Fauna

The Central Asian republics of the former Soviet Union (Turkmenia, Uzbekistan, Tajikistan, the southern Kazakhstan) form part of an arid belt stretching from northwestern Africa through southwestern Asia to Mongolia and western China. In this section attention will be focused on the fauna of these republics, with only minor attention to the animals of Mongolia and western China.

In composition, origin, and ecological features the fauna of the Central Asian republics is related to those of Persia, though there are significant differences. Russian zoologists include both areas in the Irano-Turanian zoogeographical subregion, which includes both plains and mountain areas. The fauna of this subregion is fairly well known.

The animal complexes of the Central Asian sand deserts are especially rich and distinctive. Each of the three mountain systems of this region also has a number of unique features: the Turkmeno-Khorasanian system, in particular the Kopet-Dag range in southern Turkmenia; the Gissaro-Darvaz system, mainly in Tajikistan and southern Uzbekistan; and the vast and heterogeneous Tian Shan range. The fauna of the western chains of the Tian Shans (the Ugam, Talas, Chatkol, and Fargna ranges) are related to Gissaro-Darvazian in some features but differ sharply from animals of the central and northern parts of this system, which are more closely related to those of central Kazakhstan, the southern Altai, and Mongolia, including many steppe and some taiga elements, together with endemics.

The large vertebrates of the entire area have been severely decimated by centuries of human activity, which has intensified during the last decades. For example, the Turanian tiger and the cheetah (*Acinonyx jubatus*) have been totally eradicated. Populations of leopards, onagers, tugay deer (*Cervus elaphus bactrianus)*, gazelles (*Gazella subgutturosa)*, and highland dwellers like the snow leopard (*Panthera uncia*), ibex (*Capra hircus aegagrus* in the Kopet-Dag, *Capra sibirica* in the Tian Shans and the Gissaro-Darvaz system, *Capra falconeri* in the chains of southern Tajikistan), and mountain sheep (*Ovis ammon cycloderus* in the Kopet-Dag, *Ovis ammon* bocharensis in southern Tajikistan, *Ovis ammon* poloi in the Pamirs, etc.) are now very small, most surviving only in preserves and under threat of extinction.

Many birds, especially game species, have suffered a similar fate: the pheasant *Phasianus colchicus*, the partridge *Francolinus caccabis chookar*, and species of such grouse genera as *Tetraogallus* and *Pterocles*. Populations of the large predators, like eagles (*Aquila chrysaetus* and *Haliœetus leucoryphus*), falcons (*Falco cherrug* and *F. pelegrinoides*), and vultures (*Gypaetus*; *Gyps himalayensis*), are also seriously diminished, as are those of the desert bustard (*Chlamydotis undulatus*), and the woodpecker (*Picus squamosus*).

Desert reptiles, for example, the lizard *Varanus griseus* and the snakes Naja oxiana and *Ptyas mucosus* are also declining.

Especially threatened are animals living in the tugays, the periodically inundated forests in the great valleys of the Amu Darya (*q.v.; Oxus)*, Syr Darya (Jaxartes), Morgab, and Zarafæan, which are disappearing rapidly under the pressure of expanded irrigation and other human activities.

Despite these destructive processes, many vertebrates are still common. Particularly numerous among mammals are the wolf (*Canis lupus*), foxes (*Vulpes vulpes* and in the deserts also *Vulpes corsak*), the polecat (*Vormela peregusna*), the desert shrew (*Diplomesodon pulchellus*), the hedgehog (*Erinaceus or Hemiechinus auritus*), the hare (*Lepus tolai*), and many rodents, including ground squirrels (*Citellus fulvus* and in sandy deserts *Spermophilus leptodactylus*), gerbils (*Meriones lybicus* and M*eridianus, Rhombomys opimus*), and jerboas (*allactaga elater*, *psammophilous Allactaga bobrinskii, Dipus sagitta*, *Eremodipus lichtensteinii, Jaculus turcmenicus*, *Paradipus ctenodactylus*). In the mountains there are marmots (*Marmota caudata* and menzbieri, the latter endemic to the western Tian Shans), *Citellus relictus,* and several species of pika (*Ochotona*) and vole (*Microtus*) and at high altitudes Alticola. The rat Nesokia indica inhabits humid environments, *Rattus turkestanicus* the mountain forests; both species are also found in oases and settlements. Several species are found only in the southwestern parts of the region, for example, the endemic genus *Calomyscus, Meriones persicus* (also found in Persia), *Microtus afghanus*, and the Indo-African ratel *Mellivora indica*.

The birds of the Central Asian republics are extremely diversified. Although they are relatively uncommon in the deserts, there are several characteristic species, including the jay *Podoces panderi*, *Scotocerca inquieta,* the sparrow *Passer hispaniolensis*, and some wheatears of the *genus Oenanthe*. In oases and tugays most of the birds have vast ranges, for example, the palm dove *Streptopelia senegalensis,* the starling *Pastor roseus,* the myna *Acridotheres tristis,* and many species of the passerine genera *Emberiza, Oenanthe,* and Passer. In the mountains there are a few strictly localized forms, as well as many with relations to species of European, Mediterranean, Himalayan, Chinese (the white-winged grosbeak *Mycerobas carnipes, Myiophoneus temmincki*, *Terpsiphone paradisca*), and Eurasian highlands (e.g., alpine chough *Pyrrhocorax graculus*, species of finches of the genera *Erythrina* and *Montifringilla, Phoenicurus erythrogastra*, and the wall creeper *Tichodroma muraria*) birds.

Reptiles, especially lizards and snakes, are numerous in the plains of the Central Asian republics; some of the same species are also found in the mountains. Among lizards some geckos inhabit the sand deserts (*Teratoscincus scincus, Crossobamon eversmanni*), others (species of *Alsophylax* and *Cyrtopodion*) the soils of the oases and foothills; the isolated southern Asian genus *Eublepharis* is represented in the Kopet-Dag by the species *turcmenicus*. The second important family of lizards is Agamidae: *Trapelus sanguinolentus* and *Phrynocephalus mystaceus* and *interscapularis* are highly adapted to the sand deserts, whereas other species of *Phrynocephalus* live on soils and species of *Laudakia* in the mountains. *Laudakia caucasia* and *L. erythrogaster* are also found in Persia and the former in Transcaucasia as well. *Laudakia himalayana* is found in Tajikistan and the northwestern Himalayas, whereas *Laudakia lehmanni* is limited to the Gissaro-Darvaz system. The skink *genus Ablepharus* is represented by several species in the mountains. Species of *Eremias* (of the family Lacertidae) are also numerous.

Snakes abound in this region, particularly species of *Eryx* and *Coluber* (*karelini, ravergieri, rhodorhachis,* all localized) and especially in sandy deserts *Psammophis lineolata*. Species of *Lytorhynchus, Eirenis*, and *Boiga* are found mainly in Turkmenia, as well as in Persia and throughout southwestern Asia. Among poisonous snakes *Naja oxiana* and *Echis multisquamata*

are also found in Persia and Afghanistan. The dangerous *Vipera lebetina* is distributed through the eastern Mediterranean region and Central Asia (except for the highlands) as far as northwestern India.

Turtles, on the contrary, are rare; only *Testudo* (or *Agrionemys) horsfieldii* occurs commonly in the arid plains and foothills of the Central Asian republics, northeastern Persia, Afghanistan, and Pakistan.

The general aridity of the environment accounts for the small number of amphibians. Only the frog *Rana ridibunda* and the toads *Bufo viridis* and *danatensis* are widely distributed throughout the region. The primitive salamander *Ranodon sibiricus* is localized in the mountain springs of the Dzungarian range in southeastern Kazakhstan.

There are also rather few fishes, though some are endemic. Among the latter the relict genus *Pseudoscaphirhynchus* includes three almost extinct species in the Amu Darya and Syr Darya basins; the single related genus is *Scaphirhynchus*, found in the Mississippi basin in the United States. Several species of *Cyprinids*, of the genera *Schizothorax* (snow trout) and *Diptychus*, are specific to the mountain rivers from Kopet-Dag to Tibet and the Himalayas. Some fishes that were living in the Aral Sea are probably now extinct there, for example, *Salmo trutta aralensis.* Some widely distributed species have economic importance: the carp *Cyprinus carpio,* the sim *Abramis brama,* the esbele catfish *Silurus glanis,* and in the Tian Shans the trout *Salmo trutta.* The eastern Asian genera *Ctenopharyngodon* and *Hypophthalmichthys* have been introduced into irrigation systems in the Central Asian republics.

As for the fauna in the influence area of the road, we should highlight the most sensitive area near the project, although not affected by it: the area located around kilometre 100, where there is a population of Russian Turtles (*Testudo horsfieldii)* and of marmot (*Marmota caudata*).

In addition to this type of central Asian turtle and marmot, the attached sketch distribution map (drawing 3.2.2) also shows some species of herbivores and carnivores; the following species of mammals also live in this area:

- Long Clawed (*Spermophilopsis Leptodactylus*).
- Goitered Gazelle (*Gazella Subguthurosa*);Herat
- Ibex (*Capra ibex)*; Sabzak Pass
- Ierboas (*Jaculus sp.);* Maimana to Adkhwoy
- Striped Hyaena (*Hyaena hyaena*); not in high mountains
- Caracal (*Caracal caracal*)
- Marble Polecat (*Vormela peregusna*)

In addition, we should also mention numerous birds, amphibians and reptiles and other mammals of great ecological and conservation interest included in the list of species threatened of the UICN (International Union for the Conservation of the Nature):

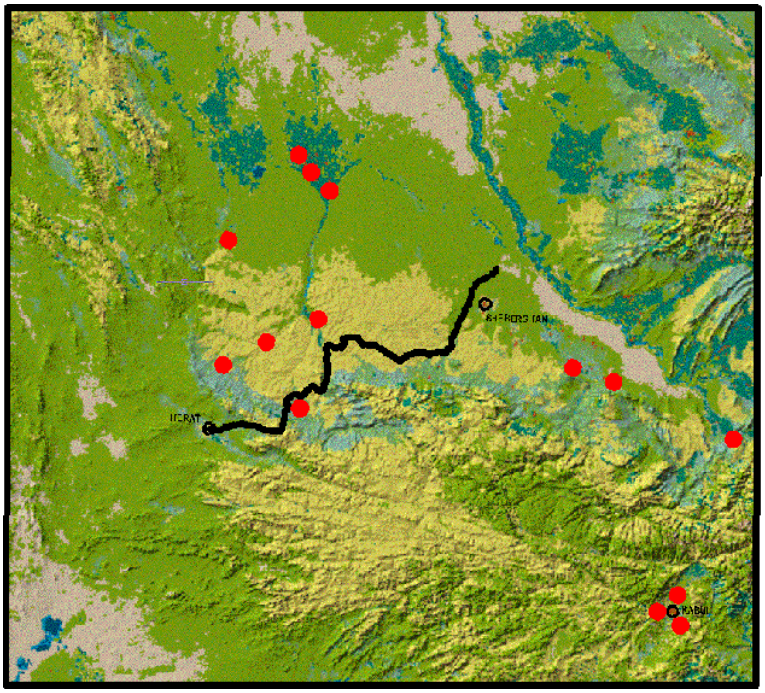
- Afghan Brook Salamander (Batrachuperus mustersi).
- Afghan Mouse-like Hamster (Calomyscus mystax).
- Afghan flying Squirrel (Hylopetes baberi).
- Afghan (Russian) Tortoise (Testudo horsfieldii).
- Afghan Fox (Vulpes cana).
- Long tailed Marmot (Marmota caudata).

Also present in the scope of this survey are birds included in the descriptive cards of the Important Birds Areas (IBAs) found in the following section of the survey.

Some other common species in the north and north-western part of Afghanistan are:

- Coyote (*Canis aureus)*
- Desert fox (*Vulpes ruppelli)*
- Indian mongoose *(Herpestes auropunctatus)*
- Black bear (*Ursus arctus)*
- Hare (*Lepus capensis)*

In addition to the distribution map of certain fauna species, we have also included the area of distribution of the Russian turtle in Afghanistan, by means of a satellite photo.



1.1.9. Natural spaces

3.2.7.1. Protected Areas

Protected areas were first introduced in the West primarily as a means to protect landscapes, wildlife and habitats of particular value, often by exclusion of people and regulation of access and use. More modern approaches stress the need for community participation in protected area planning, and for multiple uses aimed to benefit residents as well as maintain natural processes. Evidence from around the world shows that with suitable design and management these twin goals can be achieved.

Since the 1970s, there has been greater recognition of the cultural, aesthetic, recreational and economic significance of the need to protect forests, wetlands and other habitats rich in biological diversity. To work effectively, protected areas must provide economic and social benefits and involve local people in management as partners and decision-makers. In addition, the most effective protected areas are those linked by corridors, protected by buffer zones and designed to maximize resilience to threats.

Afghanistan has never had the benefit of an effective protected areas system. Although some progress was made in implementing a protected areas network designed during the 1970s, the escalation of disorder through that decade, and the Soviet occupation in 1979, prevented its development and modernization.

In Mughal times, five hundred years ago, specified areas were set aside as hunting grounds. More recently, in the 1970s, a small number of sites were similarly used by the former royal family, having been declared by royal decree as waterfowl sanctuaries or wildlife reserves. A 1992 government review listed the existing protected areas as one national park (Band-e-Amir), three waterfowl sanctuaries (Ab-i-Estada, Dasht-e-Nawar and Kole Hashmat Khan) and two wildlife reserves (Ajar Valley and Pamir-i-Buzurg). Between 1977 and 1992 a further ten sites were proposed for protected area status, including three important areas in the western half of the country: Registan Desert Wildlife Management Reserve, Hamun-i-Puzak Waterfowl Sanctuary, and Northwest Afghanistan Game Management Reserve. However, there has never been an overall enabling legislation providing for the establishment and management of protected areas, and the precise current legal status of each protected area is uncertain. Most were never formally gazetted and institutional structures have since changed. Afghanistan is not yet party to the Ramsar Convention, though several wetland sites in the country have previously been identified as of international importance for migratory and breeding water birds. In addition, despite some of the rich biodiversity contained within the country, a comprehensive assessment of biodiversity has never been conducted.

Among the protected areas mentioned, only one of them, the denominated Ajar Valley Wildlife Reserve, is next to the scope of the performance, although sensibly moved away from the potentially affected zone. This space is located to the East of the nucleus of Sheberghan, it occupies 40,000 hectares, and its central point of geographic reference has the following coordinates; 36° 40' North–67° 37' East.

3.2.7.2. Important Bird Areas (IBAs)

The conservancy organization "International Birdlife" has considered the existence in Afghanistan of 17 Important Areas for the Birds of which we mention and describe in this study two, next to the scope of the performance. They are the following ones:

- Hari Rud Valley. Code: AF011
- North-western Steppe. Code: AF006

IBA North-western steppe is located to the West of Qala-i-Naw, on the steppe plains that extend until Turkmenistan and Iran.

IBA Hari Rud Valley is located in the valley of this river, between Obeh and Herat, including 35,000 hectares. Although not directly affected, the layout has its origin in the proximities of the North limit of the space.

The factsheet cards are included below (tables 3.2.1. and 3.2.2.)

Table 3.2.1. North-western Steppe (IBA AF006)

BirdLife IBA Factsheet

AF006	North-western steppe
Country	Afghanistan
Administrative region(s)	
Central coordinates	62, 35.1666666666667
Area	80000 ha
Altitude	500 - 1000m
Criteria	A1, B2, B3

Site description Barren, hot, desert-steppe plains lying west of the town of Qala-i-Nau in north-west Afghanistan, rising to rounded barren foothills of the Paropamissus (Safed Koh) range to the south, and bordered by Turkmenistan to the north and Iran to the west. The area is between 500 and 1,000 m above sea-level, and fingers of hills project into the plains from the south. *Artemisia* steppe predominates on the plains, with *Pistacia* woodland in the hills; patches of *Juniperus* occur on hills nearer the Paropamissus. Land is mainly used for grazing; *Pistacia* woodland provides seasonal income to local people.

Habitats and percentage cover

04. Grassland	-
08. Desert	-

Land-use and percentage cover

agriculture	-

Birds The region is little explored but could perhaps produce species which are associated with the deserts of adjacent Turkmenistan. See box for key species; other known or possible breeding species include *Accipiter badius*, *Merops superciliosus*, *Melanocorypha bimaculata*, *Calandrella acutirostris*, *Saxicola caprata* and *Scotocerca inquieta*. Just south of the region around Sabzak Kotal, *Certhia himalayana* and *Parus*

Variable Wheatear (*Oenanthe picata*)	resident	B3
Plain Leaf-warbler (*Phylloscopus neglectus*)	breeding	B3
Pale Rock-finch (*Carpospiza brachydactyla*)	breeding	B3

Conservation issues No conservation measures have been taken. Overgrazing by livestock, leading to excessive erosion and degradation of soil locally, and uncontrolled hunting are likely to be serious problems. The lack of more detailed information on the state of habitats and on wildlife inventories will inhibit any attempts at protecting areas in the future. The area was proposed as a potential reserve region in 1981.

Threats and importance

agricultural intensification/expansion	high
selective logging/cutting	high
unsustainable exploitation	high

Citation BirdLife International 2003 *BirdLife's online World Bird Database: the site for bird conservation.* Version 2.0. Cambridge, UK: BirdLife International. Available: http://www.birdlife.org (accessed 3/5/2004

Table 3.2.2. Hari Rud Valley (IBA AF011)

BirdLife IBA Factsheet

	AF011 Hari Rud valley
Country	Afghanistan
Administrative region(s)	
Central coordinates	62.6333333333333, 34.35
Area	35000 ha
Altitude	1050 - 1830m
Criteria	A1, B2, B3

Site description A 112-km stretch of valley running from Obeh (1,830 m) west to Herat city (1,050 m) in north-west Afghanistan. The valley widens considerably towards Herat and even as far east as Obeh it is c.15 km wide, and comprises barren, desert hills and plains with sparse vegetation and cultivation. Along watercourses stands of *Tamarix* prevail and there are *Populus* groves and some apricot orchards.

Habitats and percentage cover

05. Wetlands (inland)	-
08. Desert	95
11. Artificial landscapes (terrestrial)	5

Land-use and percentage cover

agriculture	-
hunting	-
urban/industrial/transport	-
water management	-

Birds Other interesting breeding species include *Accipiter badius* (Herat), *Picus squamatus flavirostris* (Herat and Obeh), *Alauda gulgula*, *Motacilla citreola* and *Saxicola caprata*. *Phasianus colchicus principalis* formerly occurred in the valley, mainly to the west of Herat, but is probably extinct in Afghanistan through hunting and habitat destruction. The following are also likely to breed, given their presence 100 km further down the valley by the river and on the plains around Kohsan: *Ixobrychus minutus*, *Buteo rufinus*, *Porzana porzana*, *Cursorius cursor*, *Sterna albifrons*, *Melanocorypha bimaculata*, *Calandrella acutirostris*, *Acrocephalus stentoreus*, *Hippolais rama* and *Rhodopechys githaginea*.

Species	Season	Year	Min	Max	Quality	Criteria
Egyptian Vulture (*Neophron percnopterus*)	non-breeding					B2

The situation of the protected areas or environmental interest, close to the influence area of the road is as follows:

- Important Birds Area, Hari Rud Valley.- It occupies a section of Hari Rud river, between Herat and Obeh. Minor distance between the area and the road A-76 is 6,50 miles, near Herat.

- Important Birds Area, North-Western Stepp.- It occupies 80.000 ha and it is located on the West of Qala-I-Naw, from the bottom of Paromamisus mountains up to Turkmenistan border and Iran on the West, with Eastern end of the area at 10 miles of the road A-76.

- Ajar Valley Wildlife Reserve.- An error in coordinates has placed this protected area on the East of Sheberghan. Once corrected, the area became located in the province of Bamian, at 35 miles on the Northwest of its capital, near the border with Samanga province. Therefore, it is far from the study area.

In the above three cases, the boundaries of areas are approximate, because any digital cartography is available but only coordinates of a central points and a simple description (see IEE). A drawing with the approximate location of the above-mentioned areas is enclosed (drawing 3.2.3).

1.1.10. Natural resources

In spite of the dry climate and of the mountainous land, the natural resources are greatly agricultural. There exist a certain variety of mineral deposits, but the difficulties of transport, wars and the lack of specialized staff and technical equipment have prevented the total operation of such resources. Most of the natural gas is located in the north. It has also great iron ore reserve.

The dry climate and the mountainous land are the main causes of the relative agricultural ground shortage, so that the great cultivatable earth spaces in fertile valleys are the unique good developed natural resource in Afghanistan.

According to Afghanistan standards, the Sabzak Pass, located between the provinces of Herat and Badghis, is relatively heavily forested, representing an imporatnt natural resource for Afghanistan. The province of Badghis used to have significant wild pistachio forests. These were harvested by local people, but were owned in common, with the usual results of commonly owned property. People did not take proper care of the pistachio forests, and these have been substantially damaged or destroyed during the war.

Main rivers that flow in the corridor constitute the main water source for the population. In some points the phreatic level arises to surface, having itself not stated the advantage of these zones.

As far as the uses of the soil, only the fertile valleys of these rivers have agricultural advantage, being the rest of the territory, rolling or mountainous zones covered with pasture or short shrub without more use than the cattle dealer, without great development.

1.1.11. Environment Road Survey

During the field trip along the corridor from Ankoy to Herat, it was possible to identify different environments which can be identified as follows:

1. Landscape environments
2. Villages environments
3. Towns environments

According with these classification, it is possible to explain the situation for each of them.

3.2.9.1.- Landscape environments

A- Topography and soil

- Section 1: Andkhoy-Siring Tagab

From Andkhoy until Dawlatabad the terrain is an open plain sloping gently to the north. Prevailing elevations of the plain range form 250-290 meters in the north to 400-550 meters in the south. The surface of the plain is hilly, gently rolling, or flat, with hummocks and numerous closed basins covered by takyrs (claypans) or solonchaks (salt flats), which together with masses of barchan, ridge, dune and hummocky sands form the main obstacles to motorized off-road vehicles.

The road is surrounded by terrain, principally of sand, with small covert of the xerofila (vegetation of dessert vegetation) vegetation; there are patches of mud with sand, there are not gravel

sources close to the road and when the wind blows, the sand covers part of the surface of the road.

The water table is usually saline or bitter saline and lies from 5-35 meters below the surface.

Two rivers are located along the corridor; one is called Siring Tagab and the other one is called Qaysar. The existing road cross the rivers in several points until the town called Siring Tagab; these rivers provide water for irrigation.

It is reported that the area is seismically active.

- Section 2: Sirin Tagab - Maymana

From Sirin Tagab until Maymana the terrain increase in altitude, is mountainous and dissected the soils are predominantly rubble and rubble and stone in the south, and rubble and loam or rubble and sandy loam in the northwest. The intermountain basins are at 700-1300 metres above sea level; the soil are gently rolling or flat, less often hilly, dissected by irrigations canals, and intermittent rivers, which are the principal obstacles to motorized off-road vehicles.

The intermountain basins contain loessy loams, rivers bottoms have accumulations of boulders, less often (principally in the biggest rivers valleys) sand and gravel soils with considerable rubble inclusions. The water table in the valleys and basins lies 2-20 meters below the surface; the tops of the mountains are practically without water. At the foot of the mountains, sides the water table often reaches the surface as springs.

The area is seismically active according to information received from different sources.

- Section 3: Maymana - Gormac

From Maymana to Qaysar the road passes across more or less the same topography and the types of soils with same variants. The types of soils are formed by conglomerates, pebbles, sand, loess, loams, travertine‘s, and salt. In the middle of the way, the road, at the altitude of Almar, goes up until across of one of the descended hill from the northern part of the Turkestan Range and after descend until Qaysar. From there, it goes along the valley of the River Cap until Morgan crossing the feet of the several descendent hill of the Turkestan Range. In the area around Qaysir the soil is formed by sandstone, conglomerates, pebbles, clays, marls and salt, etc.

In the area around Gormac the soil is formed by limestones, marls, pebbles, conglomerates, sandstones, clays, etc.

- Section 4: Gormac - Murgab

From Gormac to Murgab the road traverse through more or less the same topography; soil at the anterior track change a little to more limestones and marls.

- Section 5: Murgab – Qala – I - Naw

From Murgab to Qalay Naw the existing runs inside the valley of the river Murgab crossing several small valleys and hills and also crosses the river Kasan. The topography is similar to the previous section and the soil is formed by siltstones, sandstones, conglomerates, limestones, clays and same volcanic rocks and cross same parts with more pebbles sandstones and clays. The water

table is generally as much as 10 meters below the surface in intermountain depressions and several dozen to several hundred meters below the surface on mountain sides. In the area of the Band –i-Turkestan Range, it often reaches the surface as springs. According with the existing information there are in this area some caves. The area is running at the altitude between 600-800 meters.

- Section 6: Qala – I – Naw - Herat

From Qalay Naw the existing road go up until the Safed Koh Range across the mountain valley until the pass called K. Sabzak in direction north to south. Before climbing up there are a lot round hills along the principal valleys. The prevailing elevations of the mountains are 900-1100 meters and the top is at 2995 meters, and the pass is at 2550 meters. The area around the pass during winter and early spring is covered by snow. The topography is similar at the previous corridors in the beginning of the slope and then change for more mountainous until the top in the Sabzak pass, the soil change several times from sandstone, clays, conglomerates to phyllites, quartzite and from them to limestone, sandstone. There are also volcanic rocks, dolomites. From the Sabzak pass until Herat the road pass across the Karux town trough the one of the extreme fork of the Safed Koh Range inside of a valley. The topography changes from mountainous to the valley topography until Herat.

The soil from the Sabzak pass to Herat pass across different quality; there are volcanic rocks, igneous rocks, sandstones, conglomerates, dolomites. The waters table lies 3-20 meters below the surface in river valleys, and 30-100 meters below the surface on mountainside.

- Conclusion: (sections 1-2-3-4-5-6)

a. The existing corridor extends from the north to the southwest through three different landscapes: 1º- over a plateau; 2º - over the rivers valleys, and 3º - over mountainous valleys and rivers valleys alternatively.

b. The existing corridor pass through different topography from north to southwest; in the northern part is relatively flat in the middle is relatively high, close to the end is very high and from that point to the end go over a slope until the last plateau.

c. The soil over the corridor valies, however, it is possible to identify three principal groups: one formed by conglomerates, pebbles, sandstone, clays, sands and salt; the second one formed by limestones, marls, siltstones, and the third formed by siltstones, sandstones, conglomerates, clays and volcanic rocks. Dolomites and greenstone and others volcanic rocks occur in two parts of the corridor.

d. Water tables occur from the surface until 100 meters deep.

e. The rivers in the corridor occur in mountain areas and in plateau. The basins of the major rivers are very flat and wide; the bottom is covered by stones of different size from 2 meters in diameter to a smaller ones, and up to one or two centimetres like rolling stones and sand of different measure.

   At the time of the road survey (end of April) water streams were observed in the deeper parts of the basins, however, as could be seen the levels of the rivers during floods were higher that the road. Therefore, the new road must be constructed over the bridges.

f. All region covered by the existing road is seismically active.

g. The corridor show different types of landscape: 1. Lowlands (north): Semideserts with wormwood-feather-grass and alophilous vegetation; Steppe with herbaceous ephemeral steppe; 2.- Uplands(Middle of the corridor) with juniper shrubs and woods (Archa); 3. Mountains (pass Sabzak) High mountain steppe with sweet flag and herbaceous meadow in the valley the steppe of the Eurotia and wormwood; 4. Valley bottoms: flat valley bottoms with willow poplar and oleander.

B. Vegetation

The vegetation is primarily semi-desertic along the corridor from the north to the southwest is very similar. Mainly is constituted by: resistant grasses (sand edge, wheat grass, etc) various saltworst and shrubs (tamarisk, sand acacia) In the north, there were leafless trees. The irrigated lands are planted with grains mainly wheat and industrial crops. Orchards and vineyards inside in the villages and towns.

In the village along the existing road, mainly cultivated areas with wheat, barley, corn, vegetables there are also fruit like grapes, melons and watermelons; potatoes and other vegetables.

Especially in same valley there are Acacia, Poplar in others are huge plantation of pistachio.

- Conclusion:

Primarily viewed, there are not any special species of plants to be considered for preservation during the construction of the new road.

C. Fauna

As to fauna, in the influence area of the road, several species of: camels, horses, donkey, caw, buffalo, sheep, goat as a domestic animal and domestic dogs used as shepherd can be found. The wildlife was reported as follow: long tailed marmot same crow, falcon, pigeon, partridge, sparrow, etc.

It was identified about 40 km. before Qalay Naw, in the left side of the existing corridor, some rounded hills with a huge community integrated by turtle and ferret or long tailed marmot and other rodent not identified as a rat. This community is extended approximately for 10 Km. along the corridor, only in the left bank of the corridor.

According with the information that we have, this community was never identified from the ecological point of view and necessary to be considered during the design of the new road, principally given the possibility to avoid the cross the road over the surface through same small pass under the corridor when they move from one side of the corridor to the other in its migrations for food, reproduction or looking for water.

- Conclusion:

Except for the community that include tortoises and some others species (probably ferret or marmot and rodent), which may be considered during the new road design, the rest of the animals identified do not pose any risk to the construction of the new road.

3.2.9.2. Village environment

There are many villages along the corridor, but less villages crossed by the corridor. The village environment does not present any special problems for the construction of the new road, except inside of same of them in which the corridor pass across the village and the space between the houses at both sides of the existing road are very narrow or also between cultivated ground on both sides of the road or in same village flow spring or pumped water jus along the corridor and that water is for irrigation purposes.

In small villages there are some trees along the corridor. Although they are not special trees transplantation of them during the construction of the new road should be considered.

- Conclusion:

From the point of view of the environment inside of the villages along the corridor there are few things to be considered during the new road design, except for proper measures to reduce the impact on the community.

3.2.9.3. Town Environment

Ankoy and Maymana present largest towns of the corridor; and Daram Qol , Sirin Tabag, Almar; Qaysar, Gormac; Murgab, Qalay Naw and Karux are smaller towns. The road passes inside of them but do not present any obstacle for behaviour of the populations at the present time as there are not much traffic the centre of the road in the round point the peoples utilize the road as a open market during same days of the week. Therefore is necessary to take same measures to reduce the impact in the behaviour of the populations.

Conclusion:

If taken same measures to reduce the impact of the increasing traffic after the construction of the new road, we believe that there are no special problems with the new construction.

During developing field tasks, the inhabitants of settlements, located throughout the road, were asked for some information about the crossed territory. The information supplied, related to environmental aspects, has been scarce, so thus, the idea of drafting a report to collect the limited supplied data was rejected. Therefore, the chapter 3.2.9. of the IEE was based on data gathered by the technical team which carried out the field tasks.

Regarding social and economic information, attached to the specific report of the IEE, data have been obtained from two documentary sources: on one hand, the Consultants and on the other, the population which was consulted in order to reflect the reality and future perspectives of social and economic life of the areas affected by the project. Final report will include a table with the form and the results obtained.

In any case, it can be added that the public consultation held during the preparation of IEE report were conducted in very informal manner with the population living along the affected territory.

As a result of this consultation, it can be affirmed that, in general, the consulted community did not show any objection about the proposed project. But it can be also affirmed that they have no particular concerns on the potential impacts associated with it.

Therefore, it is also recommended that the MPW to carry out a public consultation during project implementation, particularly before starting the initial works.

SOCIOECONOMIC ENVIRONMENT

The socioeconomic survey is based on the data collected from bibliographical sources and from Internet, as a support for the on site survey done by the technical specialists who, by using available reports on towns next to the road, have compiled population figures, economic dedication figures, as well as their customs, establishments, etc.

The present survey includes some significant data for the socioeconomic characterization of the zone of influence of the corridor.

3.3.1 Population

3.3.1.1. Demographic data

The four provinces more directly implied in the project belong to different regions (UN Operation Regions):

- West Region: it includes the provinces of Hirat and Badghis.
- North Region: those of Fayab and Jawzjan.

Concerning the population evolution, we have included some data in table number 3.3.1. Although they come from different sources, so that the interpretation of the population growth might be distorted, there is a clear increase between 1979 and 1997 in the two outer provinces of the corridor, Hirat and Jawzjan, and a stagnation of population in the central provinces, Badghis and Faryab. These data are also included in a sketch figure in Additional Documentation 2 (figure 3.3.1.).

TABLE 3.3.1: POPULATION DATA PER YEARS				
	POPULATION PER YEARS			
PROVINCE	1979 (C.S.O.)	1990 (USAID)	1991 (UNIDATA)	1997 (C.S.O.)
HIRAT	700.000-800.000	900.000-1.000.000	900.000-1.000.000	1 - 2.000.000
BADGHIS	200.000-300.000	300.000-400.000	200.000-300.000	200.000-300.000
FARYAB	500.000-600.000	600.000-700.000	500.000-600.000	500.000-600.000
JAWZJAN	500.000-600.000	600.000-700.000	600.000-700.000	800.000-900.000
C.S.O.	Central Statistics Office			
USAID	United States Agency for International Development		Source: AIMS	
UNIDATA	United Nations Statistics Division			

This fact is explained by the isolation of the more central areas of the corridor, due to the insufficient communication, which represents an obstacle for the social and economic development of a region.

The distribution of this population within each province, according to the attached map (figure 3.3.2.), which gathers the estimated population for the year 2000 on the basis of the satellite interpretation, follows the guidelines described in table 3.3.2.

TABLE 3.3.2: DATA OF POPULATION DENSITY

	N. INHABITANTS 2000 (SATELLITE)			
PROVINCE	200,000-500,000	100,000-200,000	50,000-100,000	5,000-50,000
HIRAT	Injil, Gulran	Ghoryan, Adraskan, Guzara, Pashtun Zargun, Karukh, Kushk	Kohsan, Zinda Jan, Obe	-
BADGHIS	-	Janand	Oadis, Murghab, Ghormach	Kushk Kuhna, Ab Kamari, Qalay-i-Naw
FARYAB	-	Oaysar, Almar, Khwajasabzposh, Shirn Tagab, Dawlat Abad	Kohistan, Bilchiragh, Darzab, Qaramqol, Andkhoy	Maymana, Pashtun Kot, Khanichahar Bagh
JAWZJAN	Shiberghan	Saripul, Chaharbolak	Khamyab, Qarqin, Mingajik, Mardyan, KhwaiaduKoh, Aqcha, Chimtal, Sozmaqala, Sangcharak	Sayyad

This distribution shows once more that the most populated zones are located in the surroundings of the highway, mainly in the two extreme capitals communicated by this route.

Concerning the population density, that is, the inhabitants per km ^{2}, not calculated by provincial data or by districts, but by assessing the space distribution by interpretation of the Landscan images of year 2002 (map is enclosed as drawing 3.3.2 in Additional Documentation 2), there is a

clear increase in the surroundings of the present highway throughout all the section, except in the more northern region, where the population is denser only in the surroundings of the capital of the province.

The fact that the present highway follows the route of the river beds meeting with the main agricultural valleys causes both factors to act like a point of attraction for the establishment of the population. The rest of the territory is almost unpopulated as happens in mountainous and desert areas.

Table 3.3.3 details the data of inhabitants by districts and provinces for years 1998, 2000 and 2002, as well as the densities of population of each zone which is also included as figure 3.3.3. in Additional Documentation 2. The distribution of the establishments in the influence area of the road is located mainly around main centres and all along communication roads, as shown in drawing 3.3.2. The index of growth between 1998 and 2002 is of 8 %.

TABLE 3.3.3 POPULATION DATA BY PROVINCES AND DISTRICTS

DATA BY PROVINCES				DATA BY DISTRICTS						
PROVINCE	N. INHAB 2002 (OAK)	AREA (km^2)	D 2002 (HAB/km^2)	DISTRICT	N. INHAB 1998 (CSO)	N. INHAB 2000 (OAK)	N. INHAB 2002 (CSO)	AREA (Ha)	AREA (km^2)	D 2000 (HAB/km^2)
Hirat	1,178,096	44,892	26,2	Hirat	220,700	61,219	238,144	3,438	34	6,926
				Injil	183,200	289,401	197,680	157,383	1,574	126
				Guzara	101,700	110,273	109,738	174,426	1,744	63
				Pashtun Zarghun	70,900	114,727	76,504	176,216	1,762	43
				Karukh	43,100	111,661	46,507	193,925	1,939	24
				Kushk	65,300	156,030	70,461	309,141	3,091	23
				Gulran	45,000	214,279	48,557	578,888	5,789	8
				Kohsan	30,100	60,277	32,479	308,607	3,086	11
				Ghoryan	48,700	124,775	52,549	642,315	6,423	8

DATA BY PROVINCES				DATA BY DISTRICTS						
PROVINCE	N. INHAB 2002 (OAK)	AREA (km^2)	D 2002 (HAB/km^2)	DISTRICT	N. INHAB 1998 (CSO)	N. INHAB 2000 (OAK)	N. INHAB 2002 (CSO)	AREA (Ha)	AREA (km^2)	D 2000 (HAB/km^2)
				Zinda Jan	37,200	83,777	40,140	208,179	2,082	19
				Adraskan	30,500	170,723	32,911	739,055	7,391	4
				Obe	46,700	87,815	50,391	249,661	2,497	20
				Farsi	21,200	30,321	22,876	208,242	2,082	11
				Shindand	102,500	126,351	110,602	121,000	1,210	91
				Chishti Sharif	13,000	38,410	14,028	233,249	2,332	6
				Kushki Kuhna	32,000	39,326	34,529	185,442	1,854	19
Badghis	301,483	20,591	14,6	Qalay-I- Naw	35,200	36,305	37,982	106,142	1,061	36
				Ab Kamari	36,300	23,069	39,169	123,307	1,233	32

DATA BY PROVINCES				DATA BY DISTRICTS						
PROVINCE	N. INHAB 2002 (OAK)	AREA (km^2)	D 2002 (HAB/km^2)	DISTRICT	N. INHAB 1998 (CSO)	N. INHAB 2000 (OAK)	N. INHAB 2002 (CSO)	AREA (Ha)	AREA (km^2)	D 2000 (HAB/km^2)
Faryab	698,897	20,293	34,4	Qadis	58,300	74,655	62,908	320,294	3,203	20
				Jawand	49,200	109,391	53,089	792,504	7,925	7
				Ghormach	36,100	54,845	38,953	176,520	1,765	22
				Murghab	46,600	84,560	50,283	470,817	4,708	11
				Muqur	17,700	18,747	19,099	69,482	695	27
				Maymana	52800	39583	56,973	53,761	538	106
				Pashtun Kot	145800	40954	157,324	120,896	1,209	130
				Almar	20300	105737	21,905	180,180	1,802	12
				Qaysar	112000	148606	120,853	244,057	2,441	50

DATA BY PROVINCES				DATA BY DISTRICTS						
PROVINCE	N. INHAB 2002 (OAK)	AREA (km^2)	D 2002 (HAB/km^2)	DISTRICT	N. INHAB 1998 (CSO)	N. INHAB 2000 (OAK)	N. INHAB 2002 (CSO)	AREA (Ha)	AREA (km^2)	D 2000 (HAB/km^2)
				Kohistan	34900	74865	37,659	227,274	2,273	17
				Bilchiragh	34900	79295	37,659	286,992	2,870	13
				Shirin Tagab	60200	109721	64,958	222,731	2,227	29
				Dawlat Abad	35800	136844	38,630	270,648	2,706	14
				Qaramqol	15600	81777	16,833	149,288	1,493	11
				Khani Chahar Bagh	20300	47135	21,905	102,793	1,028	21
				Andkhoy	36500	79188	39,385	71,794	718	55
				Khwaja Sabz Posh	78600	101016	84,813	98,864	989	86
Jawzjan	1,364,371	11,798	115,6	Shibirghan	135,300	259,263	145,994	270,026	2,700	54

DATA BY PROVINCES				DATA BY DISTRICTS						
PROVINCE	N. INHAB 2002 (OAK)	AREA (km^2)	D 2002 (HAB/km^2)	DISTRICT	N. INHAB 1998 (CSO)	N. INHAB 2000 (OAK)	N. INHAB 2002 (CSO)	AREA (Ha)	AREA (km^2)	D 2000 (HAB/km^2)
				Khwaja Du Koh	24,300	72,515	26,221	191,896	1,919	14
				Darzab	54,700	53,427	59,024	133,747	1,337	44
				Mingajik	37,400	66,783	40,356	98,777	988	41
				Qarqin	57,900	75,988	62,476	127,654	1,277	49
				Aqcha	83,400	99,195	89,992	98,110	981	92
				Mardyan	35,600	64,273	38,414	85,127	851	45
				Fayz Abad	33,000	112,087	35,608	96,003	960	37
				Khamyab	9,800	52,180	10,575	78,490	785	13

C.S.O. Central Statistics Office

3.3.1.2 Education and culture

The level of illiteracy is very high; only about 30 % of the inhabitants older than 15 years are alphabetized.

3.3.1.3. Population and refugees

A new census is scheduled to be performed under the auspices of the United Nations. Moreover, data from this census becomes available. In the meantime it will be necessary to rely upon extrapolations from old data, which were questionable. Data concerning refugees is also somewhat unreliable. The study team will meet with UNHCR, in order to review whatever data may be available concerning refugee movements. Many Afghan refugees have returned to Afghanistan over the past two years. More are returning in 2004 and approximately two million Afghans are still said to be refugees in Iran, for example.

3.3.1.4. Gender issues

Gender discrimination is a key attribute that characterizes the poor. Incidence of poverty among women is higher compared to men and is characterized by low endowment of land and productive assets, unemployment, discrimination in the labor market and limited access to economic options and political processes.

It appears that, similar to adjacent countries, women in Afghanistan are generally denied inheritance rights, adequate food and nutrition, choice of education, and participation in the decision making process of household economic activities. Women in Afghanistan traditionally have a lower status than men despite the injunctions of Islam which does not differentiates the role and rights based on gender. Generally men exercise control over all aspects of women‘s lives in accordance with traditional values. Culturally, the gender role is limited to be confined to home or homestead as mothers and wives, and support in farming operations.

Men have a predominant role as breadwinner and decision-maker. The restricted mobility of women and dependence on men would continue the differential access of males and females to education and health services.

3.3.2. Economy

3.3.2.1 Majorities

Afghanistan has a low income per capital, around 200-300 US $. The economy is based on private property, with around 70 % of the population dedicated to agriculture and cattle, and there is a shortage of qualified workers because of the low index of studies.

Agriculture is the main source of income, with little margin for export, being the majority for internal consumption. The main agricultures are wheat, maize, rice, barley, vegetables, fruits and nuts. The industrial farming includes castor oil seeds, *Rubia*, A*saphoetida*, tobacco, cotton and beet.

In relation to cattle breeding, the most important cattle are the ovine, with an important production on the north of the country. There also exist other livestock like camels, horses, donkeys, cows, goats and poultries.

With respect to mining, the gold, silver, copper, beryllium and lapis lazuli deposits have been exploited for many years, in small amounts and in the mountainous zones. The salt production has increased in the last years, whereas coal production is being reduced. The great gas deposits are located in the north of the country and they were developed with the help of Soviet financing.

The industrial production is focused in the textile sector, exporting part of its production; most of the factories are located in Kabul. The main domestic industry is the carpet weaving.

3.3.2.2. Economic sectors

The main economic activity in the area of the project is agriculture, located in the main river valleys. In addition, there is also a certain cattle activity, more prominent in valleys located at the north of the corridor.

The commercialisation or interchange of agricultural products is developed at a small scale, very close to its origin, due to the difficulty to do greater travels and due to the isolation of the populations, in special at the annual times of greater climatic hardness.

This fact means that the great agricultural wealth of the region does not have the economic repercussion it should have, being the resource with greater possibilities if the present limitations derived from the isolation of the area were resolved.

For the primary beneficiary provinces, much of the agriculture and therefore much of the economy of the far western region of Afghanistan is based on dryland wheat farming (in good years, up to 25% of Afghanistan grain production comes from dryland rainfed farming), together with extensive livestock production in southern Faryab, Badghis, and parts of north and eastern Herat. The provinces of Faryab and Herat also produce some grapes and raisins, but given prevailing road and transportation conditions, it is difficult for farmers to ship most fresh fruits to markets. In addition to grapes and raisins, these provinces could also grow almonds, peaches, pears, apples, apricots and mulberries. At the present time, however, such crops are essentially grown for local household consumption, rather than being grown commercially.

3.3.2.3. Development by geographic regions

From economic development possibilities point of view, it is possible to differentiate, by its geographic situation, the most extreme sections of the corridor from its central regions. As differences are not important in terms of resources exploitation, accessibility determines the access to markets.

Thus, the most distant regions have greater access to communication with the rest of the country and therefore are ones with greater potential for development, whereas the locations in the more central regions are the more isolated areas of the corridor and are forced to take long journeys which limit the market access to their products.

3.3.2.4 Landuse

- Agricultural and Economic Conditions: A land cover map derived from satellite data from 1993 (Provincial Land cover Atlas of Islamic State of Afghanistan, FAO/UNDP, March 1999), included as drawing 3.2.2, clearly shows the overall terrain and the general agricultural conditions for the three provinces that will be directly linked together by an

improved road. The three provinces show significant differences in terms of their overall environment and general agricultural conditions. General similarities and differences are summarized below.

Faryab: Like most of Afghanistan, this province has limited water. Much of the northern part of the province where the town of Andkhoi is situated is barren. The southern half of the province produces dryland wheat. Some vineyards are also found in Faryab, but the general conditions of the roads makes it difficult to move perishable crops to market. Some grapes are dried into black raisins. Additional fruit crops could be grown. There are substantial numbers of sheep and goats. These flocks have been badly decimated by the war, and the subsequent drought. Because of its herds, Faryab historically has had a good supply of wool, which has been used to produce higher quality carpets. As the herds come back, carpet production is expected to increase.

Badghis grows mostly rainfed wheat. Most of the province is either grazing land (74%), or suitable for rainfed grains, (22%). Irrigated land is rare; only 2% of the total area of the province is irrigated. As a function of its geography and precipitation patterns, Badghis has a large amount of livestock, and livestock byproducts, particularly wool. Because of the good quality wool, the province has been a major source of higher quality Afghan carpets.

Herat: Herat is essentially an oasis, located along the Hari Rud River. It is one of the major urban centers of Afghanistan, and the principal bazaar for the western half of the country. It has a rich history, and has been a center of art, culture, crafts, and some industry dating back centuries. In its eastern portions, Herat has grazing lands and some dryland agriculture, while most of the western half of the province representing nearly 50% of the total provincial land area is barren desert. By contrast with Faryab and Badghis, Herat also has a lot more irrigated agriculture, both in relative and absolute terms, since almost 5% of the province is irrigated agriculture.

Tables 3.3.4 and **3.3.5** sum up the percentage of each type of use in provinces directly affected as well as in Jawzjan. Originating data of another consulted bibliographical source are also enclosed.

Table 3.3.4.- Soil uses (1993, FAO project afg/90/002)

TYPES:		%				AREA (Ha)				COD		SURFACE (Ha)			
		HIRAT	BADGHIS	FARYAB	JAWZJAN	HIRAT	BADGHIS	FARYAB	JAWZJAN			HIRAT	BADGHIS	FARYAB	JAWZJAN
1	Urban	0.03	0.01	0.05	0.03	1,912	131	641	395	1	Urban	1,912	131	641	395
										2A	Fruit trees	628	45	7,681	163
										2B	Vineyards	2,119	0	0	2,717
2	Orchards	0.05	0.00	0.63	0.24	2,832	45	7,681	2,880	2C	Gardens	85	0	0	0
										3A	Irrigated-Intensively cultivated (2 crops/years)	450	298	0	0
										3B	Irrigated-Intensively cultivated (1 crops/years)	150,467	17,142	52,288	64,502
3	Irrigated Agr, Land	4.56	2.35	10.96	15.59	249,835	48,419	133,823	184,019	3C	Irrigated-Intermittently cultivated	98,918	30,979	81,535	119,517

TYPES:		%				AREA (Ha)				COD		SURFACE (Ha)			
		HIRAT	BADGHIS	FARYAB	JAWZJAN	HIRAT	BADGHIS	FARYAB	JAWZJAN			HIRAT	BADGHIS	FARYAB	JAWZJAN
4	Rainfed cultivation	6.99	22.42	51.29	8.37	382,582	461,565	626,006	98,756	4A	Rainfed crops-flat laying areas	123,853	44,040	5,418	654
										4B	Rainfed crops-sloping areas	258,729	417,525	620,588	98,102
5	Forest-pistachi	0.01	1.34	0.00	0.00	573	27,615	0	0	5	Pistachio forest	573	27,615	0	0
6	Forest natural	0.12	0.27	0.00	0.00	6,432	5,593	0	0	6A	Natural forest (closed cover)	221	2,271	0	0
										6B	Natural forest (open cover)	71	3,322	0	0
										6C	Degenerate forest/High shrubs	6,140	0	0	0
7	Range land	38.81	73.49	7.31	13.21	2,125,265	1,512,701	89,218	155,965	7	Rangeland/grassland/forbs/bar2,125,2 e soil/low shrubs	65	1,512,701	89,218	155,965

TYPES:		%				AREA (Ha)				COD		SURFACE (Ha)			
		HIRAT	BADGHIS	FARYAB	JAWZJAN	HIRAT	BADGHIS	FARYAB	JAWZJAN			HIRAT	BADGHIS	FARYAB	JAWZJAN
8	Barren land	48.97	0.05	29.62	61.19	2,681,812	933	361,587	722,214	8A	Rock outcrop	2,681,812	933	6,638	15,339
										8B	Sand covered areas	0	0	354,949	579,635
										8C	Sand dunes	0	0	0	127,240
9	Water bodies. marshes	0.29	0.06	0.06	1.36	15,758	1,168	680	15,995	9A	March land-permanently inundated	9,394	1,168	680	13,083
										9B	March land-seasonal	6,364	0	0	2,912
10	Water bodies	0.17	0.01	0.08	0.00	9,313	146	992	0	10	Waterbodies	9,313	146	992	0
11	Snow	0.00	0.00	0.00	0.00	0	0	0	0	11	Permanent snow	0	0	0	0

TYPES:		%				AREA (Ha)				COD		SURFACE (Ha)			
		HIRAT	BADGHIS	FARYAB	JAWZJAN	HIRAT	BADGHIS	FARYAB	JAWZJAN			HIRAT	BADGHIS	FARYAB	JAWZJAN
	TOTAL	100	100	100	100	5,476,314	2,058,3	28	1,220,61,180,2			5,476,314	2,058,316	1,220,621,18	24

TABLE 3,3,5 SOIL USES (1993. DAI/Earthsat)
Source: Report —Agriculture in Afghanistan: a contribution for a better understanding. 2002

TIPES:	%				SURFACE (Ha)			
	HIRAT	BADGHIS	FARYAB	JAWZJAN	HIRAT	BADGHIS	FARYAB	JAWZJAN
Rangeland	89.06	72.55	65.59	76.93	3,782,722	1,566,182	1,384,138	2,043,908
Forest/Shrub	0.36	1.72	0.09	0.07	15,429	37,131	1,854	1,908
Barrn/misc,	1.58	0.03	0.24	1.11	67,187	714	5,068	29,367
Irrigated Agr, Land	5.72	2.38	7.00	10.76	242,794	51,464	147,614	285,928
Rainfed cultivation	3.27	23.32	27.09	11.14	139,055	503,346	571,600	295,863
Total Ha					**4,247,187**	**2,158,837**	**2,110,274**	**2,656,974**

- Dryland versus irrigated agriculture:

In good years dryland agriculture may produce up to 25% of Afghan grain crops, but dryland agriculture is substantially less productive than irrigated agriculture.

Irrigation can be used to grow higher value crops, and if the water supply is sufficient, it can also be used for double cropping. This results in significant differences in the overall agricultural profitability and economic conditions in Herat Province, compared to Faryab, or Badghis. In broad terms, almost 7% of Faryab‘s total land cover is irrigated, while only 2% of Badghis‘s land is irrigated. Herat‘s total land area is more than double the land area of both Faryab and Badghis combined, and of this total area, 4.5% is irrigated. This results in significant economic differences among the three provinces, as shown in Table 5, below, and helps to account for the size of the Bazaar in Herat City, with its 10,000 shops Herat City‘s good location on a major trading route, plus its place as the point of entry for goods being shipped into Afghanistan from Iran also helps to account for Herat‘s relative affluence, along with the generally higher levels of education and professional skills of its population.

3.3.3. Infrastructure

The road under examination, with an approximate length of 580 km, is based at the present time in an existing dirt road that runs between Herat and Andkhoy.

The present route started being reconditioned 30 years ago, most of the bridges and earthwork (graveling) were done then. It is actually highly deteriorated (there are areas that cannot be travelled during the rainy season), and it is more similar to a track than to a road. The initial section has a very mountainous layout (narrow, many curves and with great slopes).

3.3.4. Mines

This term can describe two separate phenomena: the extraction of minerals from the earth, or explosive devices. From data collected during the initial reconnaissance survey, it appears that neither extractive industries nor explosive devices are significant issues along the length of the proposed roadway.

3.3.5. Ethnic groups and commerce

Table 3.3.6, below, summarizes the general ethnographic characteristics of the fourteen market towns found along the road from Andkhoi to Herat. While the three provinces are all ethnically somewhat heterogeneous, the different ethnic groups within each province are segregated by functions, and sometimes by district(s) within each province. Thus, in the far west, for example, the Pushtoons are largely semi-sedentary nomads, with a permanent home somewhere to over-winter with their herds.

In the spring when the weather warms up the nomads leave their homes and take their flocks out onto the desert pasture [—dashtll] to graze on the grass that grows up in the spring. The populations found in the bazaars of the three provinces, by contrast, tend to be Tajiks and Uzbeks, most of whom are traders and shopkeepers.

Table 3.3.6: Major Ethnic Groups, by Market Town (Andkhoi to Herat)

Market Town	Predominant Ethic Group	Secondary Ethnic Groups
1. Herat	Mostly Tajik	Pushtoons, Uzbeks, Aimaqs, etc
2. Maimana	Mostly Uzbek	Some Turkoman,
3. Qal i Nao	Mostly Pushtoon	Some Tajik and Uzbeks
4. Bal i Murgab	Mostly Pushtoon	
5. Andkhoi	Mostly Turkmen	Some Uzbek
6. Qarukh	Mostly Tajik,	Some Pushtoon
7. Qaisar	Mostly Uzbek	Some Pushtoon
8. Almar	Mostly Uzbek,	Some Tajik
Khoja Sabsposh	Mostly Uzbek	Some Turkoman
9. Daulatabad	Mostly Uzbek	Some Tajik and Turkoman
10. Chelghazi	Mostly Uzbek	
11. Gormach	Mostly Pushtoon	

Market Town	Predominant Ethic Group	Secondary Ethnic Groups
12. Darya Bom	Mostly Pushtoon,	Some Tajik
13. Moqor	Mostly Pushtoon	Some Tajik

3.3.6. Preliminary Poverty Assessment

About 53 percent of the population are classified as poor and live on less than $1 a day. To meet the Millennium Development Goals (MDG) and Targets, to eradicate extreme poverty and hunger, [2] Government has initiated a National Solidarity Program, and Emergency Public Works Program.

Though poverty is visible and evident from proxy measure indications, estimate of poverty incidence in the Project area is not available. The WFP has conducted a vulnerability assessment mapping vam of the rural settlements for the year 2003-2004 and the report is about to be released. It has been indicated by the WFP VAM team that a request by Consultants for the raw data for the selected villages could be entertained. Attempt will be made to estimate poverty incidence and construct deprivation index for the Project area, using the relevant data set.

According to last WFP VAM report, the prolonged war situation further exasperated by drought has severely affected the livelihoods of the local population. The declined farm productivity and loss of seasonal opportunities for agriculture labor is one of the main determinants of poverty. Various irreversible coping strategies were adopted that will have a long term effect on their ability to pull themselves out of poverty trap. The farmers resorted to depressed sale of land, tools and implements of farming, household assets, livestock (severely affecting nutrition uptake), early marriage of pre-pubescent daughters, indenture of school going boys for labor. In many cases the indebtedness and reliance on external support has significantly increased.

However, according to the abovementioned report, there are visible signs of recovery in farm and livestock subsectors.

ASSESSMENT OF POTENTIAL IMPACTS AND PROPOSED MITIGATION MEASURES

4.1 ASSESSMENT OF IMPACTS

4.1.1. Characteristics of environmental impacts. Matrix of impacts

To assess environmental impacts, a simple and clear methodology, suitable for the environmental examination of projects in developing countries was selected. This selection is based on the following main considerations:

a) The examination produced is a preliminary environmental report.

[2] MDG Target 1: Halve, between 1990 and 2015, the proportion of people whose income level ins less than $1 per day; and MDG Target 2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger.

b) Its objective is to identify main impacts and to establish the necessity for consequent in-depth studies for some outstanding aspects.

c) Environmental information in this area of the Afghanistan is not sufficiently comprehensive to explicitly identify the impact magnitudes on diverse parameters with quantitative accuracy at this phase.

Considering these factors, and among the possible impacts analysis methods, we have selected a "check-list" with additional information of magnitudes, applicable mitigation measures and impacts qualification. In consequent phases of the survey, a cause-effect matrix., matrix in which the impacts are identified by crossing the actions of the project that could potentially cause impacts with the aspects of the environment susceptible to receive them, can be used. This indicates the existence of changes in diverse environmental parameters.

Two matrices are shown below. The first one indicates the existence or absence of an impact and its character (positive or negative); and in the second matrix, those impacts are characterized in accordance with the following criteria:

- Existence: yes or no (y, n)
- Duration: long term or short term (LT, ST)
- Reversibility: reversible or irreversible (R, IR)
- Magnitude: minor, moderate or major (M, MO, MA)
- Causal relationship: direct, indirect, synergistic (DI, ID, SN)
- Importance: of the impact for the environment (1 to 10)
- Benefit/cost: positive or negative relation between both (+, -)
- Significance:
    - No Impact-NI
    - Insignificant impact- II
    - Significant impact - IF
    - Mitigated impact - MY
    - Unknown impact - UI

Table 4.1.1- Identification matrix					
Aspect	**Preventive and corrective measures**	**Valuation of the impact**	**Impact**	**W.**	**EX.**
Geology, Soils, Landscape	Restoration of batters	Minimum, Recoverable	Geomorphologic variations, erosion	*	*
			Works and road visibility	*	*
	Restoration of quarries	Minimum, Recoverable	Geomorphologic variations, erosion, loss of visual quality	*	0
Emissions	Preventive measures on work: state of machinery and vehicles, works timetable, etc.	Minimum, Recoverable	Emissions Level of works	*	*
Hydrology	Drainage design	Avoidable	Drainage network (barrier impact)	*	0
	Bridges construction	Exploitation, improvement	Safeguard of river beds and banks	*	0
	Preventive measures on work: provisional ponds, location of auxiliary areas, etc.	Exploitation, improvement	Pollution	*	+
Vegetation	Protection of vegetation, restoration of batters	Minimum, Recoverable	Occupation and destruction	*	*
Fauna	Fauna crosses	Minimum, Recoverable	Barrier effect	0	*
Demography	Signaling and marking: market areas, animals use by road, etc.	Exploitation, improvement	Conduction, security	0	+
	Improvement of layout and pavement	Exploitation, improvement	Life quality improvement (access to sanitary, educational centres, etc)	0	+
Economy	Improvement of layout and pavement	Exploitation, improvement	Local economical boostering	+	+
	Improvement of layout and pavement	Exploitation, improvement	General economical boostering	+	+
	Adequation cross-town, signaling and marking, economic compensation	Minimum, Recoverable	Punctual affections	*	*
0	No impact, Not applicable				
+	Positive				
*****	insignificant works				
W	Works (construction)				
EX	Exploitation (operation)				

Table 4.1.2: Characterization of Impacts

Aspect	Preventive and Corrective Measures	Valuation of the impact	Impact	Existence		Duration	Reversibility	Magnitude	Casual Relationship	Importance	Benefits/Costs	Significance
Geology, Pedology, Landscape	Restoration of batters	Minimum, Recoverable	Geomorphologic variations, erosion	Y	Y	LT	R	MO	DI	5	-	MI
			Works, and road visibility	Y	Y	LT	IR	M	ID	3	-	MI
	Restoration of Quarries	Minimum, Recoverable	Geomorphologic variations, erosion, lost of visual quality	Y	N	LT	R	M	DI	1	-	II
Emissions	Preventive measures on work; state of machinery and vehicles, works timetable, etc.	Minimum, Recoverable	Emission level on works	Y	Y	ST	IR	M	DI	3	-	II
Hydrology	Design drainage	Avoidable	Drainage network (Barrier Effect)	Y	N	LT	R	M	DI	6	+	MI
	Bridges construction	Exploitation, Improvement	Safeguard of river beds and banks	Y	N	LT	IR	MO	ID	8	+	SI
	Preventive measures on work: provisional ponds, location of auxiliary areas, etc.	Exploitation, Improvement	Pollution	Y	Y	LT	R	M	ID	4	-	UI
Vegetation	Protection of vegetation, Restoration of batters	Minimum, Recoverable	Occupation and destruction	Y	Y	ST	R	M	DI	5	-	MI
Fauna	Road crossing by fauna	Minimum, Recoverable	Barrier impact	N	Y	LT	IR	M	DI	3	+	MI
Demography	Signaling and marking: Market areas, animals use by road, etc.	Exploitation, Improvement	Condition, security	N	Y	LT	IR	MA	DI	8	+	SI
	Improvement of layout and pavement	Exploitation, Improvement	Life quality improvement (access to sanitary, educational centres, etc)	N	Y	LT	IR	MA	SI	9	+	SI

ECONOMY	Improvement of layout and pavement	Exploitation, Improvement	Local economical boostering	Y	Y	LT	IR	MA	SI	9	+	SI
	Improvement of layout and pavement	Exploitation, Improvement	General economical boostering	Y	Y	LT	IR	MA	SI	7	+	SI
	Cross-town adequation, signaling and marking, economic compensation	Minimum, recoverable	Punctual affections	Y	Y	ST	R	M	DI	1	+	II
SIGNIFICANCE:	no impact - NI insignificant - II significant - SI mitigated - MI unknown impact - UI											

4.1.2 Impacts on natural environment

4.1.2.1. Quality of air, noise and vibration

It is assessed that the air quality is good, since there are no significant sources of pollution; because the motor vehicle traffic along the present road is minimum. Hence, the noise and vibration levels are also very low.

The execution of the project will have an impact on these aspects during the construction phase, due to machinery operation, to traffic associated with the works, the transport and earth movement from one points to others, and to the presence of workers, etc. Also, an increase of air pollution due to increasing dust and other volatile chemical substance from asphalt plants is anticipated. These factors will increase the level of atmospheric polluting agents as well as level of noise. However, these impacts are considered as local (they will be move throughout the road together with the execution of the work) and totally reversible after completion of works.

During operation, even if the road traffic will increase with the new road as a result of improved access to the road, with the consequent increase in emissions and noise levels, a positive factor that supposes the conversion of the current route into an asphalt road needs to be taken into account, as the present traffic regime will improve, reducing exhaust gases emitted by the motors and the noise and vibrations levels produced.

In any case, the effect on air quality, acoustic environment and vibrations during operation of the road, will not be very significant, as the Average Daily Traffic (ADT), in spite of being increased, will continue to be very low, except for the cross-road towns where it will be slightly higher.

4.1.2.2. Hydrology

The road runs mostly through a series of valleys, coming near to fluvial courses and crossing them in some locations. These crossing points are considered most sensible from the hydrologic point of view, both for the hydraulic operation and the possible river bank contamination.

The construction works have serious impacts, if spilling will occur on water surface, by run-off or accidents. There is also a possibility of disruption of water courses due to construction of bridges and other earth work in the valley areas. However, some precautions will be taken to diminish this possibility, as it is shown in the section describing preventive measures.

As for operation phase, the reduction in the risk of accidents by substantially improving the road will imply a lower probability of spilling occurrence, and therefore, it will reduce the risk of contamination of these streams. Good hydraulic operation of the rivers intercepted by the road needs to be ensured, to avoid the road barrier effect.

4.1.2.3. Geomorphology, soils and landscape

The road construction will cause very few geomorphologic variations; this will occur with higher probability in the sections with more accentuated geomorphology. On the other hand, at the end of the construction works there will be areas without vegetation, with different inclination in function of the final projected batter, in which erosion may increase if measures are not taken, as described

in the next chapter. Furthermore, there is a potential impact of land slides associated with elevating some part of the road.

However, from the landscaping point of view, it must be noted that the number of receivers in the area is very low and that the new road respects the existing layout, so that it does not suppose the opening of a new road corridor, diminishing therefore landscaping repercussion. Certain corrective measures are proposed in addition to integration of the infrastructure in the landscape.

From the point of issues raised in this section, zones occupied by possible leftover earth garbage dumps and borrow pits also must be taken in consideration, ensuring their better integration in order to reduce impacts.

4.1.2.4. Flora and fauna

The impacts on the biocenotic aspects of the area, vegetation and fauna, and as a consequence on the quality and conservation of the protected areas and in general of the natural resources, are caused as well during the construction process of the area as later due to the greater awaited transit of vehicles.

First of all, we must start off of two basic considerations:

- The biotic natural resources, even if they are renewable, it is at medium and long term and only if certain measures of control of the impact are taken.

- The difficulty in this territory to apply measures to the construction later on, as much by the shortage of economic resources as well as infrastructure and equipment, recommends we give priority to the preventive measures, that is to say, to avoid the impact from first stage of the project beforehand.

The main causes of the impact which are estimated in the environment and its consequences derived, considering the aspects mentioned in the chapter, are the following ones:

- **Increase of the population during works, referred the work staff**. The necessity of permanence in the zone during the time of all the work staff will lead to the appearance of temporary settlement positions for which it can be necessary to eliminate the vegetal cover in those zones. In addition, it is to wait for the raising of activities to the self-support of these workers, being the most significant cutting trees and shrubs to obtain firewood and wood, the hunting as a complement to their diet and even the deflection or the returned one of rivers for the water provision.

- **Explanation, earthwork**. Although this project is considered as an improvement in the layout of the existing route and its asphalt paving, with precise corrections, it will be essential throughout the route to eliminate the vegetation cover on the sides of the route and other zones (correction of curves, deflections, etc), minimizing the impact to the habitats surface for the fauna.

- **Machinery traffic during the works phase and vehicles in later phase of operation**. Basically they affect the animals, as much causing its death by running over as its scaring away because of the increase of noises. The latter impact will be

insignificant because the level of users will not be too high in opened lands, as those of the zone of influence of the highway, reaching significant levels. With respect to the risk of running over, also existing at the present time although in smaller degree it is possible to mention the area described with great populations of Russian turtle. **Contribution of materials for the base of the highway.** The necessity to extract appropriate materials as bases for the highway will cause the retirement of the vegetation cover in natural areas under human influence, causing the same consequences of loss of vegetal mass, habitats, etc. The general approach of the project is favourable to a minimum impact.

4.1.3 Impacts on the socioeconomic environment

The impact on the society and the economy of the area of influence of the highway is valued as very positive, because it will enhance the economic development of the region reducing poverty, it will improve the conditions of life, it will suppose an aspect that will attract more population to the environment of the highway, it will facilitate the transport, etc. One arrives to this conclusion after considering, as it was indicated in the descriptive section, that the present lack of road communication imposes fort limitations to the population of the corridor, in special to the ones located in the most central zones.

4.1.3.1. Implications from increased travel

The current Average Daily Traffic along the road is estimated at approximately ten vehicles a day. Substantially improving the quality of the road will result in a dramatic increase in the number of vehicles traveling along the road. (extrapolating from the recent improvements of the Kandahar to Spin Boldak highway, which has also been funded by the Asian Development Bank).

For the proposed Andkhoi to Herat Highway, the increase in daily traffic may prove to be approximately comparable to what has happened for the Kandahar to Spin Boldak Highway, or on the newly paved highway between Kabul and Kandahar. However, several external variables will influence overall traffic flow patterns. Expected traffic movements along the highway can be divided into two general categories:

- Internal traffic for products coming from or going to the two the terminus towns of Andkhoi and Herat;
    - Intra-Afghan Trade movement from other provinces Northern Afghanistan shippingproducts to or from Iran; and
    - International through traffic that uses the proposed new road to move goods from Iranthrough Afghanistan on into Central Asia, or to export goods from Central Asia out onto world markets via Afghanistan.

It is easier to extrapolate internal and intra-Afghan traffic (categories one and two) compared to international transit traffic (category three.) For internal traffic (meaning shipments drawn mostly from local farm production and originating somewhere between Andkhoi and Herat,) almost inevitably there will be a substantial increase in the number of vehicles and a comparable reduction in transport costs. Some of this internal traffic will also pass through the three provinces that are classed as secondary beneficiaries, including Jawzjan, Sari Pul, and Balkh. For intra-Afghan trade, particularly for the provinces of Kunduz, Baghlan, Samangan and Takhar, there will also be an increase in the their range of possible markets, as they begin to ship products West to Iran as well as East to the Sub-Continent. The Northern parts of Afghanistan currently have

only one access route to world markets, since currently they have to export their products to market via the Salang Pass and from there on to Kabul, Pakistan, India, etc. If the Salang Tunnel is blocked, as happened during the summer of 2003, their access to markets is almost totally blocked.

For international transit traffic, moving goods through Iran and on to Central Asia, however, alternative existing paved routes that bypass Afghanistan already exist via Iran and Turkmenistan. The condition of these roads outside of Afghanistan is relatively good, but the general policies and regulatory environments regarding customs, duties, etc, in Iran and Turkmenistan will need to be studied. If Afghanistan can put into place a trade and transit regime that is competitive with or better than Iran's and/or Turkmenistan's, we assume that a substantial amount of additional freight will be hauled along the new Herat to Andkhoi Highway, enroute to Central Asia from Iranian ports. If Afghanistan fails to establish a positive environment for whatever reason, then there will be far fewer international shippers who elect to use the proposed roadway. Thus, international shippers have a range of options for moving their goods. At the present time, residents living between Andkhoi and a point somewhere North of Herat currently are confronted with a monopoly situation, because they have only the road along which they live as their medium for transporting goods, with no meaningful access to alternative routes. When the circumferential highway is completed around the entire country, then Afghan farmers and other businessmen will be able to overcome this infrastructure monopoly, and increase their range of options for shipping goods onto world markets.

4.1.3.2. Positive impacts and benefits

Particularly, the operation of the new road will entail the following main consequences on the society and the regional economy:

- **The economic boosting** and to facilitate, in many cases making possible, the transport, so that the products, fundamentally agricultural, would have a greater scope of distribution or commercialization (now it is very limited). On the other hand, the improvement in the transport also allows the access to materials, products, tools, etc. that allow an improvement in the present methods of work.
    - If the new highway is graveled, graded, and generally improved, trucks and other vehicles can probably double their average speed from slightly more than 20 km/hour to maybe slightly more than 40 km/hour, or essentially cut in half transportation time, and probably reduce transport costs by a comparable amount. If this happens, then the number of shops might also double over a few years' time. If the road is further upgraded and paved, the number of shops and the level of economic activity might increase several fold for major towns, and there would be a comparable increase in the size of most all of the other 11 remaining market towns. In particular, towns like Bali Murgab and Qala-I-Naw, which are approximately midway between Herat and Maimana, would probably experience dramatic exponential growth. There would be collateral benefits to other nearby towns and provinces outside the direct path of the road. This would include the provinces of Jowzjan, Sari Pul, and Balkh, and towns like Imam Sahib (on the Iran/Afghan border past Herat City,) Shibergan, Mazari Sharif, and Termez on the Afghan/Uzbek border. Smaller villages along the route of the highway that are not large enough to be considered market towns, and towns that are not located along the path of the highway would also experience some growth from increased trade and commerce. And provinces of northern Afghanistan like Kunduz, Baghlan, Samangan, and Takhar will also benefit because they would have the option of

shipping products to Iran via the new road, as well as shipping them to Pakistan and India via the Salang Pass as they currently do.

- The establishment and development of new socioeconomics activities in some zones of the corridor, derived from the improvement in the transport and the effect of the highway as a point of attraction for the population.

- **Oil and Gas**: There are confirmed reports of several substantial gas deposits located
  - along the Afghan side of the Afghan-Turkmen Border. These are said to be of commercial interest to international oil and gas companies. In looking at the proposed highway, it will be important to keep in mind the implications connected with the potential development of gas fields, particularly in Badghis Province.

- **Employment and Training issues**: Construction of the new highway will have
  - substantial impact upon both short and long-term employment opportunities for the people living along the right of way, as well as in collateral towns, cities, and provinces beyond the immediate range of the highway. The construction of the road will employ thousands of men, both as skilled and unskilled laborers. The contractor(s) should put substantial emphasis upon the use of labor-intensive technologies in order to employ as many unskilled laborers as possible. (An over-reliance upon capital-intensive approaches is strongly contra-indicated.) The construction of the road will also involve extensive training in various construction skills, including surveying, alignment, carpentry, welding, reinforced concrete work, heavy equipment operations, etc. In addition to the immediate employment involved with the construction of the road and necessary bridges and culverts, there will be secondary employment benefits, some of which will be short-term, but many of which will provide longer-term benefits to the people of the western region. In the short term, laborers working along the right of way will require food and housing, and other immediate services, generating employment in the various bazaars along the length of the road. More significantly, the increased traffic flows from the new highway will generate higher levels of trade and commerce, which will result in the long-term creation of sustainable employment for farmers, traders, shopkeepers, teamsters, livestock producers, and so forth.

- - The costs for importing products including pharmaceuticals, textbooks, magazines,and other essentials will be reduced as transportation costs go down. In terms of communications, entertainment, and social interactions, the people of the far west now often look to Iran. Much of the television watched in the bazaars of Faryab, Badghis, and Herat, for example, is Iranian television. Improving the transportation linkages will tie the people of the far west more closely to other regions of Afghanistan, and associations with Iran may become diluted over time, as western Afghans begin to look more closely to Mazar Sharif, Herat, Kabul, and other parts of Afghanistan.

- Other factor derived from the traffic improvement that must be taken into account, isthe facility and rapidity in **the transfer of patients** or injured from very isolated points to the closer hospitals or health centres.

4.1.3.3. Negative impacts

However, specific aspects that can have negative impacts on the population must be mentioned:

- The construction will impact on the market areas, located at both sides of the urban connections and around the existing traffic circles. The modification of these surroundings by the project, will cause occupation of the RoW currently destined to this purpose. This fact must be considered when preparing the final design, to solve this issue.
- The site-specific impacts on some buildings by the road in the populated areas, when widening is anticipated. In these cases, involuntary resettlement as mentioned in the chapter on mitigation measures is anticipated.
- The interference between the traffic of vehicles by the future road and the one of domestic animals as camels or horses, is a fact to consider in the constructive development of the project by means of signaling.
- The residents of communities living along the current road from Andkhoi to Herat are somewhat buffered from the outside world by their relative isolation. This will change as more cars and trucks begin to pass through towns, bringing them the possibility of imported urban values.
- On the other hand, certain negative impacts on the environment caused by the traffic can be mentioned, such as increase in emissions and levels of noise. However, it is estimated that the project's benefits for the population make clearly more favorable to these last, reason why the accomplishment of the project in study is considered of great social and economic interest for the region.
- In addition, during construction phase, the resident population living in vicinity of the road will suffer from some inconveniences, due to increase in noise and air pollution, caused by the machinery used in the works, plants of granular materials, asphalt plants, etc.
- Concerning the possible increasing of facilities for transporting any sort of contraband (opium, etc.), this must be carried out with or without new roads. This circumstance will not be considered as a valid reason to reject this project.
- Although it is not indicated as an anticipated impact, as the environmental team did not get information concerning the presence of archaeological and paleontological sites or elements of historic or cultural heritage in the right-of-way, it is necessary to mention that there is a possibility of chance finds during implementation of earthworks in the construction phase. In this case, appropriate measures to ensure their conservation must be adopted, in order to avoid the loss or destruction of historical, cultural or scientific values of this type.

4.2. PROPOSED MITIGATION MEASURES

4.2.1. General issues

The applicable measures to avoid or to diminish the impacts can be divided into three types:

- Design.- They affect the road alignment design: choice of the most favourable itinerary, design of the plan and structures, etc.
- Preventive.- Measures tending to avoid or to reduce the impact from first stage of works: identification of ecological values to safeguard, etc.
- Corrective. - Measures to adopt in order to recover the affected resources and to return to the initial situation or to even improve it as far as possible: fauna crosses, plantations in population centres, etc.

General goals of the measures proposal are based on indications from Ministry of Irrigation Water Resource and Environment, included in the Elaborated Guideline for all roads construction and rehabilitation projects of the country. They are the following:

- The road to be constructed on the existing path.
- While construction in progress utmost care should be given to the forests and wooded areas as to protect the forest from destruction.
- Historical and archaeological site must be protected and the ministry of Information and Culture is to be contacted for the identification of these sites.
- Wild life is to be protected while the work is in progress and their habitat should not be disturbed.
- Construction of the road may not interfere with the mining in this area. Information regarding the location of these mines may be obtained from the Ministry of Mining and Industry.
- The irrigation structures located on or around the road may not be destroyed in case this action is necessary it may be re constructed according to the standards.
- In case the need arises for acquiring land for the road the land owners to be compensated for their land.
- The construction of the road may not change the direction of the rivers or irrigation canals, as this may cause problems with local farmers.
- The construction of the road may not destroy villages, hospitals, schools, mosques, or religious shrines. If in doubt regarding the shrines or religious sites communication with local authorities is necessary.
- A clean up program should be in place after the completion of the project to insure the correct disposal of the material used for the construction.
- On the duration of the project warning and regulatory traffic signs should be erected along the road.
- Both side of the road to be designed by planting trees.
- Since the area along this proposed project is affected by flash floods care should be given to this problem.

In this section some of these measures are proposed, based on the description of the environment and the predicted impacts.

4.2.2. Mitigation measures for natural environment

4.2.2.1. Air quality and noise

Certain preventive measures can be taken during works in order to reduce the impact on the population due to the increase in emissions and noises. Such measures can be aimed at avoiding the night-time works in the areas near the populated areas, to avoid the noisiest tasks in the surroundings of greater faunal interest, to cover the transport vehicle trucks of earth with canvases, to use silencers in the machinery, to water the zones of work nearer populations to reduce the dust rise, to define the routes to use during works so that they avoid the populations, to try the best possible maintenance of the machinery and vehicles to reduce the emissions, to locate the

surfaces of machinery and other auxiliary surfaces in the works place in points sufficiently moved away from the population centres, etc.

Concerning the operation, certain norms of circulation in the crossings with the populations can be established in order to assure the best circulation, avoid the traffic congestion, reduce the speed, etc. In principle measures of the type of anti-noise screens are not considered applicable, because of their consideration of very difficult landscaping and social integration in population centres. However, in the development of the project in later phases, these measures can be considered in the most sensitive surroundings such as hospitals, schools, etc.

4.2.2.2. Hydrology

During construction phase, preventive measures must be taken to avoid accidents and spills of polluting substances, counting on a system of waste management by the collection of those potentially polluting for its controlled retirement of the zone. In addition, more specific measures can be proposed, associated to the machinery zones and to those zones where most polluting tasks are implemented, executing provisional hitches during the works that will be removed on termination of the works, that would gather the possible spilling produced for their retirement and control.

On the other hand, the definition of the auxiliary surfaces to the works, will considerate the proximity of the river‘s beds, locating them to sufficient distance of such.

Regarding the operation phase, it is considered that the correct design of drainage and structures of the highway will support the correct hydraulic operation of the areas.

4.2.2.3. Geomorphology, soils and landscape

The measures to adopt, that will reduce the possible impact on these factors will go directed to restoration of the work‘s surfaces to its conclusion of the same one: slopes, roundabouts, and auxiliary zones affected or occupied during the construction. The application of regeneration of grass cover techniques (re-vegetation) in these surfaces are going to be valued, at least in environments near to populations or visible from these ones, in those surfaces with greater risk of erosion, etc.

Another important measure to avoid the potential land slide is to stabilize road embankment side slopes. This can be done designing them with a low degree and with a complete revegetation.

4.2.2.4. Flora and fauna

The preventive and corrective measures that can be adopted to preserve the vegetation and the fauna of the influence zone of the highway are raised on the basis of two main premises:

- Magnitude and real importance of the caused impact.
- Objective possibilities of measure‘s application.

In this aspect, cost-benefit relations and the final availability of resources will be considered, as much as the possibility of obtaining the materials to use (breeding ground plants, etc.) and disposition of technicians who make the follow-up on the efficiency of the adopted measures.

With these conditioners, the measures raised are the following ones:

During works, personnel of the technical equipment responsible for the construction specialized in environmental subjects will make a follow up of works, to the aim that the surfaces and plant formations outside the band of the performance will not be affected. Also, it will be tried to recover every animal exemplary that could be as can be run over by the machinery, moving them to a safe distance in the same surroundings of the capture (turtles, chickens in nests, etc.)

Although the work chronogram will principally be conditioned by the seasonal climatologic variation, it will be procured as much as possible, that the works that suppose a greater level of noises will be make out of the baby‘s epoch of the most sensitive animal species (mainly birds).

In order to reduce the risk of running over of turtles (Russian turtle) in the left side of the corridor based 40 km before Quala-I-Naw and in order to facilitate the mobility of its populations, the highway‘s transversal permeability will be increased by installation the small fauna passages under the road, in this zone, in embankment situations. These steps, showed in the scheme of drawing 4.2.1 (Additional Documentation 2), consist on small works of section‘s factory of at least 40 x 40 cm located to approximately 20 cm on the base of the embankment to avoid its obstruction by dragging land and the necessity of later cleaning.

Concerning the landscaping integration of the work, we will analyze the possibility of realizing plantations in the slopes, seeding seeds and small plants (in case of being available in breeding grounds) of existing species in the environment. The objectives of these plantations are:

- to integrate the highway in the landscape.
- to avoid processes of erosion in the slopes.
- to favour the protection of the next habitats.
- etc.

As complementary measure regarding the affection to natural values, it can be considered the possibility of developing a campaign of environmental education for the inhabitants of the influence area of the road with the aim of becoming them aware of vegetation (mainly forests) and wild life protection.

4.2.3. Measures for socio-economic environment

As mentioned in the chapter on impact assessment, the road construction will have positive impacts, the possible impacts on the population are minimum and very well located. in any case, it can be resolved during the development of the project, if these following questions are attended:

- It will be considered, that in the passages and roundabouts located in the urban nucleuses, an adjacent zone to the pedestrian crossing path, as a sidewalk with a layer of earth, gravel, etc, so that the vehicle‘s passage zone it will be visually differentiated from the pedestrian‘s zone. In addition, the necessary space for the establishment of marked zones will be considered in these surroundings, conjugating this factor with the presence of houses, so that the highway‘s putting into operation does not suppose the displacement from these markets to remote zones from this transport route.

- When these local markets will be placed in wide zones, free of houses or another elements that can prevent the preparation of these zones, the design of roundabouts for the highway‘s passage is considered into the project, with extend parking areas in the periphery of the road next to the market‘s place. A sidewalk that continues by the urban centre will be arranged between the zone of parking and the establishments. This performance is complemented with the corresponding, horizontal and vertical signalling, that differentiates the road from the rest of the asphalted platform.

  In Aditional Documentation 2 it‘s included a detail drawing (4.2.2.) with a design proposal - type for this kind of zones, that must be fitted and defined in later phases of the project.

- In the cases of house's occupations, the economic compensation to the affected ones will be assumed in the project, for the transfer of residence, or in case of being economically viable, a new house of the same characteristics would be provided to them.
- On the other hand, the highway signalling will be attended in the project, in agreement to specific circumstances in each zone that must be noticed, with the purpose of improving the traffic and reducing the risk of accidents by upsetting of pedestrians or domestic animals.

- In order to avoid the increasing of accidents in towns, particularly in villages in which markets are taking place along the road, the best possible method will be studier by estimating in a preliminary way that obvious corrective actions here may be to install speed bumps, which are common throughout Afghanistan.

- The highway signalling, to make it a way of communication in wide sense, will have informative posters in populations and groupings of houses (establishments) that will contend general aspects of social interest, such as the existence, direction and distance of sanitary and administrative centres, local security forces, etc.

- In order to increase the positive effect of the highway during the works, local workforce should be used when possible during the construction; in this sense the construction will represent an increase of income, by this concept and indirectly by the associated consumption to cover the basic necessities of lodging and feeding.

- The establishment of camps for construction workers will be placed in the area to avoid social conflict. This camps will need to be completed with adecuate sanitation facilities and waste management to avoid disruption to the communities.

- It is also recommended that the construction materials that contains hazardous and
- toxic substances such as petroleum or asphalt, will be stored in proper place and managed in accordance with the available international standards.

As it has been indicated in the chapter dedicated to the estimation of possible impacts, in case that during the earthwork could appear any archaeological or paleonthological type of rest, the convenience of raising a small change of layout that avoids its affection or its transfer based on any matters considered necessary by the competent Afghan organization will be analyzed. In any case, the future workings that this organism considers necessary will be facilitated.

4.3. IRREVERSIBLE AND IRRETRIEVABLE IMPACTS

Irreversible and irretrievable impacts are aspects defined identification and characterisation tables, section 4.1.1.

It is convenient to stress that non irreversible and irretrievable impacts that can not be avoided or at least minimized are foreseen, by means of applying measures proposed in chapter 4.2.

Some impacts with less possibilities of being irreversible are those affecting animal turnovers and destruction of specific habitats as a consequence of the higher frequency during the functioning phase.

4.4. TEMPORARY EFFECTS DURING PROJECT CONSTRUCTION

All along sections 4.1.2 and 4.1.3 the anticipated impacts of the new road are described, indicating should they are produced during the construction phase or later on, during the functioning stage. This aspect is also reflected on impact matrix (section 4.1.1).

To sum up, most of potential negative impacts will occur during the construction phase and they will be temporary. They will be previously minimized or during works; the affected parameters will return to similar values (situation without project). Some impacts are: increasing of noise levels, circulation difficulties, damaging vegetation, animals turnovers etc.

Regarding increasing of noise and pollutants in the surrounding areas due to construction works that can affect local populations, the following preventive measure is proposed: the auxiliary sites, such as asphaltic plants, quarries, machinery workshops, etc. must be placed at least 1 km from the populated areas.

As an exception to this measure, caused by the necessities of establishing this type of auxiliary sites in plain and easy-accessed zones, that usually coincide with populated areas, this distance could be reduced with the approval of the Works Director in those cases in which the only adequate surfaces are included into said radium and there is not any other reasonable alternative. For example, this circumstance can occur in the following situations, among others: when the village is surrounded and near the mountains, at a distance less than 1.000 meters; if there is cultures in a distance higher than 1.00 meters; if accesses determine the election of the land, etc. These circumstances can occur in Darreh-ye-Bum as well as others located in narrow mountainous valleys.

On the contrary, beneficial effects derived from the project will appear at short term and they will be permanent, such as those related to decreasing of accidents and travelled time, connection between markets, rapid access to medical centres, etc.

INSTITUTIONAL REQUIREMENT AND ENVIRONMENTAL MONITORING PLAN (EMP)

1.2. MONITORING AND EVALUATION. INSTITUCIONAL RESPONSABILITY

The household survey analysis identified what many residents consider to be their most pressing infrastructure-related problem: roads. It also assessed the people‘s willingness to pay for improved services. This social analysis provides the framework for a monitoring and evaluation (M&E) system, whose purpose is to ensure that the Project is delivering benefits to the target populations.

Even though implementation of mitigation measures during the construction stage will be the responsibility of the contractor, the Ministry of Public Work will be responsible for implementing overall environmental monitoring and management as part of the IEE. In the last phase of the project design a detailed M&E plan, including impact evaluation and identification of positive changes in the environment of the project towns, will be prepared. The impact on poverty will also be monitored.

With the assistance of the construction supervision consultants, afghan authorities (Ministry of Public Works-MPW) will carry out monitoring and evaluation to ensure that the project facilities are managed effectively and efficiently and that their development impact is maximized. For this purpose, Afghan Government (MPW) will carry out appropriate surveys to establish baseline dates at the start of project implementation, immediately after project completion, and three years later.

Monitoring indicators to be collected will include traffic volume by vehicle type, vehicle operating costs, travel time, passenger fares and freight rates, traffic speed, agriculture, commercial and industrialist production patterns, incomes and expenditure levels, vehicle ownership and uses, travel and migration patterns, incomes and expenditure levels, vehicle ownership and uses, travel and migration patterns and social Access to public and private services and utilities, and employment generation. The findings and supporting data will be added to the project progress report and project completion report. The Government will evaluate the project impact in accordance with the schedules and terms of reference to be agreed upon with the Asian Development Bank.

1.3. INSTITUTIONAL REQUIREMENT AND ENVIRONMENTAL MONITORING PROGRAM

From the environmental point of view, this control program is considered with the following basic indications:

- The Project is not expected to require establishing of a new or expanding existing institution to monitor environmental issues. Monitoring of air quality, noise, and water quality will be undertaken by the Ministry of Irrigation Water Resources and Environment, in line with the requirements of the law. MPW will ensure that contractual language requires contractors to abide by the mitigating measures specified in Chapter 4, to reduce the potential impacts of construction on air shed and noise environments.

- If construction workers need to be housed in a construction camp, MPW will ensure that contractors provide reasonable accommodations to workers, including adequate water, sanitation, and access to health care, food, and transportation.

- Zones or locations with great occurrence of accidents (if exist), especially in populated areas will be controlled , by assessing if some additional signaling measures of other type are necessary.

- An analysis of the effectiveness of the designed passes for fauna will be done, adapting new measures in case of being considered advisable.

- Periodically, the condition of the planted trees will be verified, replacing the dried ones or increasing the density, in case of unplanted surfaces or in case if significant erosive processes become evident.

- The issues that will require further study is how to operate and maintain the road best. One issue, for example, requiring serious discussion is the imposition of tolls for vehicles using the road. Such user fees will need to be collected through some mechanism, whether it is a direct user fee through tolls, or an indirect tax on gasoline. Some mechanisms for giving responsibility to a regional authority (perhaps involving two or three

provinces), or putting responsibility directly at the level of each province might be explored. In any case, the people of Afghanistan will need to assume responsibility for operating and maintaining the new highway, and will need suitable revenue collection mechanisms to cover recurring cost issues.

- Finally, a public information program will be developed by MPW to appraise the residents of the affected areas of the details of the Project and provide an opportunity for individuals and groups to express their opinions and provide feedback about the Project. This public information program will include and outreach effort to find groups such as other government agencies and non-government organizations that may have an interest in the Project and that could play to constructive role in its implementation in an environmentally and socially acceptable manner.

Table 5.2.1.- Template for Summarizing Mitigation Measures

Project stage	Project activity	Potential Environmental Impacts	Proposed mitigation measures	Institutional responsibilities	Cost estimates
Pre- Construction Phase	Project Specific studies Land-acquisitions Workers camps	Loss of housing agriculture culture lands. Waste, sanitation.	Design of the platform, structures. Sanitation facilities. Economic compensation	Ministry of Public Works Ministry of Irrigation and Environment	10 % = 2.050.000 $
Construction Phase	Traffic and machinery handling Earth-works Asphalt plants	Noises, dust, pollution, circulation difficulties, vegetation and fauna destruction River beds alteration	Maintenance of machinery, avoidance of evening works, alternative routes Plantations, fauna passages,		30% = 6.150.000 $

Project stage	Project activity	Potential Environmental Impacts	Proposed mitigation measures	Institutional responsibilities	Cost estimates
Operation and Maintenanc e Phase	Road presence Circulation	Loss of visual quality. Animals turnover Accidents New impacts not predicted Land slide	Landscaping integration (revegetation) Clearance of fauna passages, signaling New measures Stabilize road embankment.		60% = 12.300.000$

Table 5.2.2.- Template for Scheduling and Reporting

	Year 1				Year 2				Year 3			
Activity	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Mitigation Measures	X	X	X	X	X	X	X	X	X	X	X	X
Monitoring	X	X	X	X	X	X	X	X	X	X	X	X
Institutional Strengthening		X		X		X		X				X
Training				X				X				X

X: 1 report ending each station.

Environmental Management Plan

Roles and Responsibilities of Functionaries

All personnel in the Project Team, from the Project Director to site personnel are responsible for protecting the environment by ensuring that environmental protection measures are established and enforced, and established environmental management systems are followed.

For all the Project personnel, environmental responsibilities arise from relevant legislation and approvals. In addition, the field officers have the responsibility for ensuring that environmental management systems are in place, and are followed as desired.

Management Plan

In order to ascertain whether environmental management system is functioning properly it is necessary to include a program to monitor. The EMP will include environmental management procedure based on environmental study of the Prefeasibility Study of Qiasar to Laman Road Project (Ring Road).

The EMP will focus on the implementation of mitigation measures during project construction. The project implementation will be carried out under the overall supervision of the Planning and Development Section of Ministry of Public Works (MPW).

Reporting Procedure

Routine Monitoring on Environmental Performance of the project will be reported by project Division/Consultant of MPW/Ministry and copy of the report will be made available to the ADB.

Table 5.2.3 shows the details project activities, its potential environmental impacts, mitigation measures, organization or person responsible for monitoring.

Table 5.2.3 Environmental Management Plan (EMP)

Project Activity	Potential environmental impacts	Proposed mitigation measures	Institutional responsibilities		Cost estimate (in US$)
			Implementation	Supervision Monitoring Agency	
A. PRE-CONSTRUCTION PHASE					
Site clearance	Loss of trees and vegetation	Obtain permission from concerned authority before commence of tree cutting Restricted tree cutting to bare minimum area Compensatory tree plantation	MPW- PMO	NEPA/CONCERNED authority contractor Engineer	Engineering cost
Land Acquisition	Loss of agricultural land (about 3452.19 acres); and Resettlement Issues	Mitigation measures will involve careful alignment and route selection by the designer to minimize the impact; and adequate budget will be provided in the Project cost for the compensation to the affected people as per Land Acquisition Act, 1894 and ADB Safeguard Policy Statement 2009.	Engineer	Contactor– Engineer	Engineering cost
Physical and cultural resources	Disturbance to people visiting public; properties i.e. mosque, schools, and graveyards etc.	Incorporate technical design features to avoid any interference with cultural heritage site and public property as far as possible; and provide pedestrian and vehicular underpasses in the design to minimize the social issues.	Contractor	Engineer	Engineering cost

Project Activity	Potential environmental impacts	Proposed mitigation measures	Institutional responsibilities		Cost estimate (in US$)
			Implementation	Supervision Monitoring Agency	
Biodiversity Conservation and Natural Resource Management	Cutting of 9511 trees of various species along sec-1 i.e. Masumi, Khos, Morgh, Seni, etc.; and Disturbance of movement of animals due to fragmentation of habitat	Incorporate technical design measures to minimize removal of these trees; Plan for compensatory planting for eight trees against each fallen tree of similar floral function; Provision of compensation in the Project Budget for the loss of trees to the affected people according to Land Acquisition Act, 1894 and ADB Safeguard Policy Statement 2009 Disallow introduction of invasive/ exotic species and native species should be recommended for plantation; and Provision of animal corridors for the free movement of faunal species, especially, near the attractive sites such as grazing lands, and water bodies. Care should also be taken for provision of crossings for the free movement and access to River Hero of pastoralists coming in the area of influence of the project during different seasons	Contractor	Engineer	Engineering cost

Project Activity	Potential environmental impacts	Proposed mitigation measures	Institutional responsibilities		Cost estimate (in US$)
			Implementation	Supervision Monitoring Agency	
Identification of site for Construction camps, asphalt & batching plant and crushers	Disturbance to the Public may occur; and Tree cutting may involve for the construction of camp site, Asphalt and batching plant site.	Site must be 1km away from the localities & cultural sites and 100m away from the existing road; Asphalt, batching and crushing plants must be installed in the down wind direction of residential areas.	Contractor	Engineer	Engineering cost
Clearance of unexploded ordnance (UXO)	Risk of injury or death as a result of UXO	Clearance of UXOs is the responsibility of the Government, which must certify areas have been cleared of UXOs before any construction activities take place	Contractor	Engineer	Under MPW Routine Cost
Seismic Hazards	Impact on construction of structures	Considered in deigning of all major structures like bridges ,culverts and pavements In 2006 the federal highway administration [FHWA] published a major revision to the 'seismic retrofitting manual for highway bridges ,it will followed during construction	Contractor	Engineer	Engineering cost

Project Activity	Potential environmental impacts	Proposed mitigation measures	Institutional responsibilities		Cost estimate (in US$)
			Implementation	Supervision Monitoring Agency	
B. CONSTRUCTION PHASE					

Project Activity	Potential environmental impacts	Proposed mitigation measures	Institutional responsibilities		Cost estimate (in US$)
			Implementation	Supervision Monitoring Agency	
Formation cutting embankment/sub grade/pavement construction	Dust generation due to loading and unloading of earth material earth work operation i.e. excavation backfilling etc. Soil erosion from excavated area stockpile of earth Material Localized flooding/ponding at excavated area Disruption of access to abutting shops and houses Disruption of traffic Disruption of services during shifting utilities i.e. water supply pipe, power cable telephone cable	Dust control delineating construction zone, necessary water sprinkling. Covering friable material transported by track, tippers, dumpers etc. Providing temporary drainage catch pit sedimentation tank/ silt trap etc., wherever possible for minimizing soilerosion and preventing downstream siltation. Providing temporary bypass drain wherever possible, pumping out the water, proper construction planning to avoid prolonged excavation. Design to prevent soil erosion and maintain slope stability Construction in the dry season	Contractor	MPW-PMO Engineer	Engineering cost

Project Activity	Potential environmental impacts	Proposed mitigation measures	Institutional responsibilities		Cost estimate (in US$)
			Implementation	Supervision Monitoring Agency	
Site clearing and removal of cut trees	Loss of vegetation may occur; Soil erosion & instability of the soil; Surface water pollution; and Occupational health of workers and community may be Affected. Debris and weedy dispersion	Assure minimum disturbance to native flora during construction especially where the asphalt, batching and crushing plants will be installed Minimize the amount of clearing. Clear small areas for active work one at a time; Clear without destroying large plants and turf where possible and preserve them for replanting in temporary nurseries; Move earth and vegetation only during dry periods. Store topsoil for re-spreading. If vegetation is required to be removed during wet periods, disturb ground only just before actual construction; Install temporary erosion control features when permanent ones will be delayed especially near Qala . Stockpile spoil at designated areas and at least 5m away from traffic lane	Contractor	MPW-PMO	Engineering cost

Project Activity	Potential environmental impacts	Proposed mitigation measures	Institutional responsibilities		Cost estimate (in US$)
			Implementation	Supervision Monitoring Agency	
Construction crews and camps condition	Construction And operation of crew camps may pollute the surface & groundwater; And Workers working at site may raise conflicts with the locals	Provision of site accommodation for crew, restrain of site camp with surrounding fencing. Avoid as much clearing of vegetation as possible, for example, by creating defined foot paths; The contractor will provide plan for removal and rehabilitation of site upon completion; Photographical and botanical inventory of vegetation will be prepared before clearing the site; Provide temporary sanitation on site, such as pit latrines (assuming the water table is low enough and soil and geology of temporary sanitation on site, such as pit latrines (assuming the water table is low enough and soil and geology of appropriate composition); Use local or regional labor; Screen potential crew members for HIV/AIDs, tuberculosis and other communicable diseases; Maintain emergency response system; Maintain emergency response system; Located of sewage well at least 20m away from any ground water extraction source/hand pump; Strictly prohibit poaching, and cutting of trees; Provide adequate quantities and good quality of food; Provide gas cylinder for cooking; Water used for construction purpose should be clearly demarcated; and No domestic pets or livestock should be allowed on the site	Contractor	MPW-PMO	Engineering cost

Project Activity	Potential environmental impacts	Proposed mitigation measures	Institutional responsibilities		Cost estimate (in US$)
			Implementation	Supervision Monitoring Agency	
Material Extraction form borrow area/quarrying	Change in landscape may occur by quarry and borrow areas; Water ponds may be formed where reproduction of mosquitoes may occur; and Deterioration of air quality Material Collection. Compliance with environmental Law, 2006. Payment of Royalty for extracting natural resources for commercial purposes	Preparation of a plan for required and available quantity supported by survey data and profiling of the quarry at the material collection point. Collect permission from NEPA, M/O Mine and Local authority (if any) for extraction of stone from quarry. Pay royalty for borrow and Quarry materials obtained as applicable as per the Rule of law of the Islamic Republic of Afghanistan. Use material from local road cuts first, if possible; On removal of material, the area should be restored and be treated with erosion control measures; Take photos of site before initiating excavation so restoration can match Original site characteristics as much as practically possible. Restore site quarries and gravel pits so that they are not visible to the road users; Monitor adherence to plans and impacts of extraction and modify as necessary; Restore area so it is suitable for sustainable use after extraction is completed; Install drainage structures to direct water away from pits;In case borrow pits fill with water, measures have to be	Contractor	MPW-PMO Engineer	Engineering cost

Project Activity	Potential environmental impacts	Proposed mitigation measures	Institutional responsibilities		Cost estimate (in US$)
			Implementation	Supervision Monitoring Agency	
Handling /transportation of construction material, and hazardous	Toxicity, soil contamination and air pollution are the major impacts which may occur by mishandling of hazardous waste during transportation.	Prevent dumping of hazardous materials specially near Rivers Proper labellingof containers, including the identification and quantity of the contents, hazard contact information etc. Emergency Response plan should address the accidental spillage of fuels and hazardous goods. Immediate collection of spilled oils/fuels/lubricants through collection of Contaminated soils and skimming oils from surface water through appropriate technologies. Prohibit use of waste oil as cooking fuel.	Contractor	MPW-PMO Engineer	Engineering cost

Project Activity	Potential environmental impacts	Proposed mitigation measures	Institutional responsibilities		Cost estimate (in US$)
			Implementation	Supervision Monitoring Agency	
use and maintenance of construction machinery and equipment		Minimize use of heavy machinery; Source-control of noise through proper maintenance of haul equipment. Heavy equipment should not be parked under the tree to avoid soil compaction and damage to the roots of the trees; Traffic management plan shall be prepared in cooperation with Gov. traffic Policy in order to avoid the accidents specially at the junctions of existing roads like at Dahana Tagab Asmail up to Poil Shahr E Qali E Now 141+000 – 144+140. Well maintained equipment will be used to avoid the air and noise pollution especially near the following sensitive receptors: Schools in Dahani Tagab Asmail, Sangi Punja, zad E Shahi, Lasai laman , Bazari laman Mosques in Sani , Nadami , Zad e Shahi , Balghor ,Shrine in Khoja Do Baradar. Provide impervious platform and oil and Grease traps for collection of spillage from construction equipment	Contractor	MPW-PMO Engineer	Engineering cost

FINDINGS AND RECOMMENDATIONS

Overall, the construction of the road will not cause any critical or unmanageable environmental impacts. The positive effect on the population of the surroundings much bigger than the punctual problematic on certain aspects, which on the other hand is valued as avoidable or recoverable with certain preventive or corrective measures to be defined in the final project. If can be affirmed that this proposed road will benefit both men and women. The construction of the proposed new road will be carried out almost entirely by men. Women will not benefit from direct employment opportunities working on the construction of the highway, because women do not do this kind of work in Afghanistan. However, everyone along the length of the road will benefit from reduced transportation times, reduced transportation costs, and improved access to other parts of Afghanistan.

There will be a dramatic growth in the number of shops and other facilities along the length of the road, and women will be participants and beneficiaries of this economic growth. A new road will reduce transportation times, and this will improve communications and access to social services. Women will find it somewhat easier to reach schools, clinics, and hospitals along the road, and to reach major market centers and provincial capitals like Herat, Maimana, Shibergan, and Mazar i Sharif. Opening up the highway will improve access to schooling for both boys and girls, as well as improving access to regional medical facilities in towns like Herat and Mazar. An improved road will increase access to health, education, and other social services for families living along the highway between Andkhoi and Herat. Improving transportation links usually correlates strongly with an improving economy, and this is expected to happen in the three provinces to be linked together most directly by the Andkhoi to Herat Highway, as well as the three other nearby provinces that are enroute to Central Asia.

Improving an economy almost by definition means increasing the discretionary incomes available for individual families. Typically, families will invest some of their newly available additional money into improved health care, and extending educational opportunities for children, including both boys and girls. Teachers, health care staff, and other social service professionals also will be more willing to relocate to the far western provinces if travel time to and from these provinces is reduced.

So, the necessity to improve this route of, unique in the surroundings, must be considered, from the point of view of the local population, as well as the global improvement of the road network in the country that it represents.

CONCLUSION

As it is justified in this PEA, on the basis of the compiled information and the terrain reconnaissance in the visit done for the accomplishment of the work, it is concluded that the proposed project does not imply important negative effects, being the anticipated ones minimum in comparison with the benefit of the road and, in any case, which can be mitigated with the measures anticipated in this document and with the ones that could be defined in successive phases. These measures must be considered in the final design of the constructive project and be put into practice during works and operation of the highway. However, continued monitoring should be carried out.

Therefore, the conclusion is that a complete Environmental Impact Analysis (EIA). is not required, as considered the captioned, it is not justified.

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LEGAL AND ADMINISTRATIVE FRAMEWORK

The preservation of congenial environment of Afghanistan is ensured by the Environmental Act which came in effect January 2006 through an official gazette (Issue No: 873, 19th January 2006).

2.1 Afghanistan Environment Act

18. The Environment Act was promulgated to be effective on Article 15 of the Constitution of Afghanistan and provide for the management of issues related to rehabilitation of the environment and the conservation and sustainable use of natural resources and living and nonliving organisms. The Environment Act consists of 82 articles written in nine chapters. The prime purposes of this act are:

i. Improving livelihood and protect the health of humans, flora and fauna

ii. Maintaining ecological functions and evolutionary processes

iii. Securing the needs and interests of present and future generations

iv. Conserving natural and cultural heritage

v. Facilitating the reconstruction and sustainable development of the national economy.

19. Chapter 2 of the Act is about the functions and powers of the National Environmental Protection Agency (NEPA). Article 22 is related to EIA Board of Experts and the following points are mentioned in it.

i. The National Environmental Protection Agency shall appoint an EIA Board of Experts to review, assess and consider applications and documents submitted by proponents for obtaining permits and make technical recommendations in regard to whether to issue permits, as well as the conditions that should be attached to any permit that is granted.

ii. The EIA Board of Experts shall be composed of not more than eight competent and technically qualified members.

iii. The Director General of the National Environmental Protection Agency may appoint, on an application-by-application basis, not more than four additional competent and technically qualified temporary members.

2.2 EIA Policy Document

20. The EIA policy document was drafted on 12 February 2006 and approved by the National Assembly of Afghanistan through Gazette No. 912, dated 25 January 2007. The purpose of this document is to take the first step in developing a formal EIA procedure in Afghanistan. This procedure will form the basis of an administrative process which can be adopted by the Government of the Islamic Republic of Afghanistan.

21. The EIA policy vision of Afghanistan is as follows:

22. The vision will be implemented by (i) developing a sound capacity within the government so that it is able to develop and implement the EIA; (ii) ensuring the work of donor organizations to enhance the government capacity to understand the EIA principles and processes; (iii) encouraging proponents to work closely with the government on proposed projects with potentially “significant adverse impacts”.

23. The policy approach will be to develop a limited EIA system that NEPA can implement in line with its existing capacity and future development. It must be recognized that UNEP is a key partner for NEPA and will support the development of capacity around this approach. This policy will develop a staged approach that supports the provisions of the promulgated Environment Act.

24. Additionally, all line Ministries of the government and the private sector will be supported by capacity development activities to ensure their capability to comply with legal requirements is enhanced.

25. The key points of the EIA policy are as follows:

i. The EIA process administered by NEPA will be an abbreviated system, focused on screening, scoping, reporting, decision making and approval.

ii. It will require proponents to adhere to screening and scoping provisions prior to work commencement.

iii. NEPA will make a decision on the level of assessment and scope of an EIA report through assistance from the EIA Board of Experts.

iv. NEPA will release a conditional approval for the commencement of works within a designated time period following the receipt of sufficient information to allow for a decision on the level of assessment and scope of EIA.

v. The conditional approval does not require proponents to submit a full EIA report to the project works which have commenced.

vi. For certain projects subject to an EIA, a pollution control permit may also be required as stipulated in the regulations.

vii. The conditional approval of a proposed project will require all prepared reports to be submitted and lodged with NEPA with a completed environmental management plan.

viii. On submission of an EIA report to the satisfaction of the NEPA, the proponent will be provided with a permit of compliance.

ix. Proponents will be required to report to NEPA the implementation of the Project Environmental Management Plan.

x. NEPA will monitor, if necessary, the implementation of any environmental management plan and direct proponents, if and as required, to improve the plan. This policy document presents the environmental problems and institutional settings, including lack of relevant regulations, standards and data as well as weak institutions and their unclear mandates. In this respect however, this policy paper recognizes the following important points:

xi. An Environment Act (EA) for Afghanistan which provides a framework for the development of this policy and the relevant stages of EIA.

xii. The establishment of an independent National Environmental Protection Agency in Afghanistan. Even though this organization is still in a nascent stage it will develop over time and this policy recognizes that this organization has sole responsibility for the implementation and management of EIA processes in Afghanistan.

2.3 Administrative Process for the EIA

26. Article 15 of the Environment Act is about prohibited activities which entail the following:

i. No person may undertake an activity or implement a project, plan or policy that is likely to have a significant adverse impact on the environment unless the provisions of Article 18 have been complied with.

ii. No ministry or national authority may grant an authorization for the execution of an activity or implementation of a project, plan or policy that is likely to have a significant adverse effect on the environment unless the provisions of Article 18 of this Act have been complied with. This requires the proponent to apply to NEPA for a permit to undertake the activity under Article 18.

iii. If the NEPA, acting on the advice of the EIA Board of Experts, considers that all the environmental impacts and concerns are adequately addressed by the environmental impact statement, the final record of opinion or the comprehensive mitigation plan, it shall grant a permit for the project, plan, policy or activity subject to whatever terms and conditions the National Environmental Protection Agency, acting on the advice of the EIA Boards of Expert, considers appropriate to ensure that the significant adverse effects of the project, plan, policy or activity are effectively avoided, mitigated and remedied.

iv. The NEPA shall refuse to grant a permit in respect of a project, plan, policy or activity if the National Environmental Protection Agency, acting on the advice of the EIA Board of Experts, considers that the implementation of the project would bring about unacceptable significant adverse effects or that the mitigation measures may be inadequate to satisfactorily mitigate the significant adverse effects of the proposed project, plan, policy or activity, provided the National Environmental Protection Agency presents written reasons for the refusal.

v. The NEPA may withdraw a permit granted if the proponent fails to comply with any of the terms and conditions to which the permit is subject.

vi. A permit will lapse in the event that the proponent fails to undertake the activity or implement the project, plan or policy for which the permit was granted within three years, MPW of the date at which the permit was granted.

27. NEPA has a process to identify whether a project needs an EIA study or not. This initial stage process is called screening the project.

28. NEPA has classified the projects in Afghanistan into three categories defined as follows:

29. **Category (1):** A project is classified as a Category (1) if it is likely to have significant

adverse environmental impacts that are sensitive, diverse, or unprecedented, and affect an area broader than the sites or facilities subject to physical work.

30. **Category (2):** A project is classified as Category (2) if its potential adverse environmental impacts on human populations or environmentally sensitive areas (e.g. wetlands,

forests, grasslands and other natural habitats) are less adverse than those of Category (1) projects. These impacts are site specific and few are irreversible.

31. **Category (3):** A project is classified as Category (3) if it is likely to have minimal or no adverse environmental impacts. According to the guidelines of NEPA, Qaisar-Dari Bum Road Project falls under Category (2), i.e. it is not likely to have significant adverse impacts since the project is aimed at developing the existing road which will facilitate re-construction of 151 km of road.

2.4 Other Relevant Laws of Afghanistan:

32. The following are the relevant laws which are available in the Department of Law in the Ministry of Justice:

i. Water Law, 1981

ii. The Forestry Law of Islamic Emirate of Afghanistan, 2000

iii. The Islamic Emirate of Afghanistan Law for Land Ownership, 2000

iv. Nature Protection Law, 1986/2000

v. Agricultural Quarantine Services Law, 2000

vi. Veterinary Services Law, 2000

vii. Hunting and Wildlife Protection Law, 2000

viii. Range Management Law, 1970 / 2000

ix. Agriculture Cooperative Development Law, 2000

x. Charter for Department of Fertilizer and Agro-Chemicals, 2000

xi. Seed Improvement Department Charter, 2000

xii. Mines Law of Islamic Republic of Afghanistan, 2006

2.5 International Treaties:

33. Afghanistan is a signatory of many international environmental agreements and treaties. The treaties relevant to the proposed development are given below:

i. The Convention on Biological Diversity is an international treaty that was adopted at the Earth Summit in Rio de Janeiro in 1992. The Convention has three main goals:

- Conservation of biological diversity (biodiversity);

- Sustainable use of its components;
- Fair and equitable sharing of benefits arising from genetic resources.

ii. The United Nations Framework Convention on Climate Change (UNFCCC or FCCC) is an international environmental treaty produced at the United Nations Conference on Environment and Development (UNCED), informally known as the Earth Summit, held in Rio de Janeiro in 1992. The treaty aimed at reducing emissions of greenhouse gas in order to combat global warming.

iii. The United Nations Convention to Combat Desertification came into force, on 26 December 1996. The Convention was as much about rural development, agricultural growth, and poverty alleviation, as it was about combating desertification.

iv. CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival. Afghanistan became a member of treaty in 1986.

2.6 Conformity of the Project with Laws of the Country and Relevant Guidelines

34. The IEE conducted in accordance with the environmental guidelines of ADB, concludes:

i. that the project road does not pass through any environmentally sensitive area

ii. The project does not encroach upon precious ecology and historical cultural areas

iii. The project does not involve alteration of surface water hydrology

iv. Short duration and minor siltation is anticipated during construction of bridges and culverts but considerable deterioration of water quality and morphology is not anticipated

v. The project involves limited dislocation or involuntary resettlement of people and

vi. Most of the anticipated potential adverse impacts will be limited in spatial and temporal extent, i.e., short-term during construction and possible to mitigate.

35. So, according to ADB Safeguards Policy Statement of 2009, Appendix 1: Safeguard Requirements 1: Environment, the proposed Qaisar-Dari Bum Road Project is not deemed environmentally sensitive and been classified and treated as a Category “B” project.

36. As per the criteria of NEPA of Afghanistan the Federal or Provincial highways or major roads (except maintenance, rebuilding or reconstruction of existing roads) with total cost of $800,000 and above and widening of existing roads falls under Category 1 and the same may require an Environmental Impact Assessment (EIA). But the road project under study mainly

endeavors to rebuild an existing road and it is not likely to have any significant adverse impacts as will be revealed from the successive chapters; rather this will have enormous positive benefits and hence it does not require an EIA. As such, an Initial Environmental Examination (IEE) has been carried out since no significant adverse impacts have been envisaged.

PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

A. General

LARP preparation has primarily involved information disclosure, consultations and focus group discussions with village estate councils (*manteqa shuras*) to develop, agree upon and finalize the i) entitlement matrix, ii) grievance redress mechanism, iii) replacement costs for infrastructure and land, the price for the latter (only as a recommendation for the consideration of the Council of Ministers); iv) a socio-economic context overview of affected communities through *manteqa shuras* and other key informants; and v) an estimated budget for the LARP

No participatory appraisals or field surveys could be conducted due to the prevailing security situation in the project area and the threat to life this poses, in the absence of an effective extended security cordon, for outsiders and government staff. Information to develop an understanding of the socio-economic context in which involuntary land acquisition and resettlement of affected households that will take place was collected from focus group discussions. These were conducted in Qala-e-Nau, the capital of Badghis province, with representatives of village estate councils (manteqa shuras) representing constitutive sub-groups of communities the Project road will pass through and is liable to impact. Village estate council members from both Badghis and Faryab provinces were invited by the provincial governor at the request of MPW for three days and received per diem and a reimbursement of their travel cost.

- The group discussions were basically organized for public disclosure and consultations with project affected communities to validate the adequacy and appropriateness of entitlements for APs, and of the institutional arrangements for the implementation of the resettlement process. The presence of knowledgeable key informants from locales along the entire 151 km road project area was leveraged to qualitatively build a socio-economic profile of the Project road.

Information disclosure by MPW

MPW explained in details project design components and potential negatives impacts the project may bring about and their implications, both direct and indirect, to communities. Information disclosure discussions covered the following key points:

i) Government's intention to build the road and deal with involuntary resettlement in accordance with Afghanistan's land acquisition law and ADB's SPS (2009)

ii) LAR surveys – process accompanying final design --Census survey of Aps; detailed measurement survey; and a socio-economic survey

iii) Approximate road construction implementation schedule: Final design, tendering for supervision consultants and construction contractors; approximately by Summer of 2018

iv) Community driven development works accompanying the road construction Small works selected by the community for maximum collective benefit

v) Continuing information dissemination and consultation with affected communities till road completion

Summary of three- day MPW Consultation with APs.

Sunday, 28th May 2017, the Project Management Office (PMO)/Ministry of Public Works (MPW)[3] traveled to Qala-e-Naw, Badghis Province, to brief local communities along the Dara-e-Bum to Qaisar road site about the project. The PMO visited the Governor's Office and met H.E Governor regarding the local consultation program. H.E Governor was briefed by the PMO staff regarding the new planned Road Project Area, Dara-e-Bum to Qaisar, 151 Km. The Governor was requested to call the local community elders of the project area to come to Qala-e-Naw and attend the public consultation and information disclosure session for the proposed project.

The Governor appreciated the initiative of the PMO/MPW regarding the Road Project and encouraged the local Shura representatives to attend the public consultation and information disclosure sessions being conducted by the PMO/MPW.

- 

Monday, 28th May, the delegation met with the Director of the MPW of the Badghis Province and a special support regarding the workshop was requested from. Thanks to the Director Mr. Sayed Abdullah that provided the conference of the directorate and called his team to arrange all possible facilitation for the upcoming three days' workshop.

- The workshop was held the following three days. Representatives from 38 villages located around the project area attended the workshop (list of participants is provided in *Annex-*

[3] Represented by Engineer Salahuddin Kabeer (Social & Environmental Safeguards Coordinator) and Engineer Aminullah HAMRAZ (Project Implementation Engineer)

2); their participation was facilitated through travel and food per-diem. The sessions focused on project objectives, project planning, project design and implementation stages. The PMO emphasized to the community participants all potential positive and negative impacts and their implications for them. All potential issues and negative externalities were also presented in detailed. The sessions saw open discussion and candid sharing of views.

1. Day 1. The Social and Environmental Safeguards Coordinator briefed community focus group participants on the current status of the road project and provided information on recent decisions regarding the project taken by the the Govt. Islamic Republic of Afghanistan as well as ADB. Information on new sections of the road and the length of road sections, as well as the name of the project as “Dara-e-Bum Qaisar, the 151 Km Road Project” were shared with the participations. Discussions focused on getting a better understanding of all villages located along the project area. Local village elders also explained how the land in project areas was used in recent years and the kind of dwellings located along the road alignment area to get a better idea of the socio-economic context of the project area.

Day 2. Several one-on-one key information discussions were conducted with community elders about each specific village, tribe and community to gather more information to start painting a more accurate picture of the socioeconomic context. The PMO went over in detail the questionnaire they had developed to gather information for community profiles and the LARP, covering topics such as population, location, economic, social and occupation to better ascertain community profiles.

Day 3. The PMO/MPW presented the ARAAZI regulations as well as the principles and

procedures of ADB Safeguard Policy and the LARP. Entitlements and compensation for households in the affected communities were also explained and discussed in detail. The need and process of establishing a Grievance Redress Mechanism (GRM) and how it works was also explained to participants. A detailed question and answer session was conducted and responded to in a manner satisfactory to participants.

-

2. Conclusions. The workshop was very successful as a means of disclosing detailed project information, conducting public consultations, and establishing socioeconomic context of households within the affected project communities. Overall, the proposed project received much support and commitment from local village communities. Community representatives communicated their appreciation to the PMO to explain well the proposed project and all potential risks and direct and indirect negative and positive impacts of the project. Questions form participants were answered in great detail and all unclear points clarified to their satisfaction. The local community representatives who participated were unanimous in their support for the project – they echoed views of their fellow village communities regarding how critical the construction of and their access to this road was. They were clear that road design and quality should not be comprised even if that meant households had to be relocated or that the road would go through their fields – as long as they have access to the road, they were accepting of the number of people who would be impacted through land acquisition and resettlement. Workshop discussions were evident of the fact that the local communities see the road project as an opportunity for better access to markets, livelihood and socio-economic conditions.

Participants List

PROPOSED QAISAR-DARI BUM ROAD PROJECT

INFORMATION DISCLOSURE AND CONSULTATION WITH AFFECTED COMMUNITIES OF BADGHIS AND FARYAB PROVINCES, AFGHANISTAN

QILA-i- NAU, BADGHIS 29-31 MAY, 2017

S,No:	Name	Father Name	Tazkira No:	District	Cell No:
1	Haji Sher Ahmad	Haji Baaz Muhammad	151943522	Ghormach	0700950606
2	Ghulam Jailani Khan	Ali Muhammad	12433529	Ghormach	0787262840
3	Ghaus Uddin	Ghulam Farooq	29523	Ghormach	0787725821
4	Muhammad Daud	Barkat Khan	19146	Ghormach	0777572743
5	Ghulam Farooq	Haji Abdullah Khan	28417	Ghormach	0779306104
6	Ahmad Khan	Rangin	14284932	Murghab	0781238260
7	Ibrahim Khan	Muhammad Kabir	-	Ghormach	0796075410
8	Najibullah Khan	Hasibullah Khan	106136674	Ghormach	0785796237
9	Haji Abdullah	Bahauddin Khan	4119334	Ghormach	0747273222
10	Khan Wazir Khan	Abdul Qados Khan	225484	Murghab	0707423644
11	Shah Muhammad Khan	Wali Jan	15201	Mueghab	07006065

12	Muhammad Masoom	Haji Juma Khan	8227704	Murghab	0708410077
13	Bahram	Zia ul haq	202060	Murghab	0706233528
14	Majeedullah	Nematullah	-	Murghab	07022786890
15	Shah Wali	Abdul Baqi	-	Murghab	0703644219
16	Labaki Khan	Ali Muhammad Khan	9385646	Murghab	0780900970
17	Ghulam Sakhi	Haji Habibullah	3708397	Ghormah	-
18	Ghulam Nabi	Mangal	15106251	Ghormach	-
19	Naimatullah	Najibullah	-	Ghormach	-
20	Muhammad Naeem	Muhammad Ibrahim	-	Ghormah	-
21	Akhundzada Abdula Hakim	Muhammad Rahim	-	Murghab	-
22	Abdur Rahman	Shah Muhammad	516157	Murghab	0703600491
23	Jamil	Shabir Ahmad	32848	Murghab	-
24	Mahmood	Abdur Rahman	516153	Murghab	0708494049
25	Shah Wali	Abudl Baqi	537835	Murghab	0703644919
26	Javid	Haji Akhter Muhammad	9367035	Murghab	0706916725
27	Saif Uddin	Haji Mula Akhter	990559	Murghab	0704929304
28	Muhammad Ibrahim	-	-	Qala e Naw	-

دولت جمهوری اسلامی افغانستان
وزارت فواید عامه

دافغانستان اسلامی جمهوری دولت
د تولنیزو چارو وزارت

ISLAMIC REPUBLIC OF AFGHANISTAN
MINISTRY OF PUBLIC WORKS

Program Management Office (PMO)
دفتر تنظیم برنامه های بانک انکشاف آسیایی
دآسیایی پراختیا بانک د کړنلارو د سمبالښت دفتر

No:
Date: 9/03/1396

لیست نماینده های اهالی قریه جات (مسیر سرک دره بوم-قیصار) که در ورکشاپ مورخ 9 الی 11 ماه جوزا، سال 1396

شماره	اسم	ولد	شماره تذکره	قریه	والسوالی	شماره تماس	ورکشاپ 3 روزه			مبلغ	امضاء
							روز اول	روز دوم	روز سوم		
1	حاجی نذیر احمد	حاجی باز محمد	۱۰۱۴۴۳۵۲۲	سرتخت	غورماچ	0700950606	✓	✓	✓	2500	
2	غلام جیلانی خان	علی محمد	12433529	آب زرگک	غورماچ	0787262840	✓	✓	✓	2500	
3	غوث الدین	غلام فاروق	29523	خاتون	غورماچ	0787725821	✓	✓	✓	2500	
4	محمد داود خان	برکت خان	19146	دهن سوزگک	غورماچ	0777572741	✓	✓	✓	2500	
5	غلام فاروق خان	حاجی عبیدالله خان	28417	مستوفیل	غورماچ	0779306104	✓	✓	✓	2500	

1

شماره	اسم	ولد	شماره تذکره	قریه	والسوالی	شماره تماس	روز اول	روز دوم	روز سوم	مبلغ	امضاء
6	احمد خان	زنگین	14284932	قلعه ولی	مرغاب	0781238260	✓	✓	✓	2500	
7	ابراهیم خان	محمد کبیر	–	شرچشمه	غورماچ	0796075410	✓	✓	✓	2500	
8	نجیب الله خان	حبیب الله خان	136674	کاریز محمد خان	غورماچ	0785796237	✓	✓	✓	2500	
9	حاجی عبدالله	بهاوالدین خان	4119334	قلعه بلاق	غورماچ	0747273222	✓	✓	✓	2500	
10	خان وزیر خان	عبدالقدوس خان	255484	لمسر بیرگه	بالامرغاب	0707423645	✓	✓	✓	2500	
11	شاه محمد خان	ولی جان	15201	نوآباد	بالامرغاب	0700606526	✓	✓	✓	2500	
12	محمد معصوم	حاجی جمعه خان	8227704	خاصدر	بالامرغاب	0708410077	✓	✓	✓	2500	
13	بهرام	ضیاءالحق	202060	کابلی	بالامرغاب	0706233528	✓	✓	✓	2500	
14	مجیدالله	نعمت الله		جوی گنج	بالامرغاب	0702786890	✓	✓	✓	2500	مجیدالله
15	شاه ولی	عبدالباقی		جوی خواجه	بالامرغاب	0703644219	✓	✓	✓	2500	
16	لبکی خان	علی محمد خان	9385646	بیس خم	بالامرغاب	0780900970	✓	✓	✓	2500	
17	غلام صبحی	حاجی حبیب الله	3708397	بیس خم	غورماچ		✓	✓	✓	2500	
18	غلام نبی	منگل	15106251	بیس خم	غورماچ		✓	✓	✓	2500	

2

19	نعمت الله	نجیب الله	—	بیس خم	غور ماچ	—	✓	✓	✓	2500	
20	محمد نعیم	محمد ابراهیم	—	بیس خم	غور ماچ	—	✓	✓	✓	2500	
21	اخندزاده عبدالحکیم	محمد رحیم	—	توت خم	مرغاب	—	✓	✓	✓	2500	
22	عبدالرحمن	شاه محمد	516157	توت خم	مرغاب	0703600491	✓	✓	✓	2000	
23	جمیل	شبیر احمد	32848	مرغاب	بالامرغاب	—	✓	✓	✓	2000	
24	محمود	عبدالرحمان	516153	مرغاب اکازی	مرغاب	0708494049	✓	✓	✓	2500	
25	شاه ولی	عبدالباقی	537835	اکازی	مرغاب	0703644919	✓	ناج ایشان قبلاً نوشته			
26	جاوید	حاجی اختر محمد	9367075	جوی خواجه	مرغاب	0706916725	✓	✓	✓	2000	
27	سیف الدین	حاجی ملا اختر	990559	سراج غزنی	مرغاب	0704929304	✓	✓	✓	2000	
28	محمد ابراهیم	رئیس خدمات کشوری ولایت بادغیس		قلعه نو	بادغیس	—	✓	✓	✓	3000	
29											
30											
مجموعه										66,000/=Af	