

EXECUTIVE SUMMARY

OF THE

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

FOR THE

AFGHANISTAN TRANS-HINDUKUSH ROAD CONNECTIVITY PROJECT (P145347)

A. Introduction

1. The Government of the Islamic Republic of Afghanistan (GoIRA) has requested financing from the International Development Association (IDA) of the World Bank for the Trans-Hindukush Road Connectivity Project (P145347) (hereinafter referred to as *The Project*). The activities the project will fund are listed below, and these trigger the Banks Safeguards Operational Policies on Environmental Assessments OP4.01, Involuntary Resettlement OP4.12 and Physical Cultural Resources OP4.11. Consistent with OP4.01, the project has been assigned an EA category A requiring a full and comprehensive Environmental and Social Impact Assessment (ESIA). Therefore, the Bank's operational policy for Investment Project Financing OP10.00 requires that an Executive Summary of the ESIA (this document) be provided to the Association's Board of Executive Directors before the project is appraised.

B. Brief Project Description

2. The **Project Development Objective (PDO)** is improved road transport connectivity across the Hindukush mountain range.

3. The means to achieve this objective are (i) to rehabilitate the Salang Pass and to develop the Baghlan to Bamiyan (B2B) road to become a viable alternative to the Salang Pass, and (ii) to establish suitable arrangements for the management, maintenance and operation of those two roads. There are no other viable passes for normal traffic across the Hindukush mountain range.

4. The project would achieve the PDO through the implementation of the two project components described below. The total project cost is estimated at US\$ 255 million of which US\$ 250 million are to be funded through a proposed IDA Grant.

5. **Component 1: Road construction (US\$240 million).** This component will include (i) civil works for the rehabilitation and upgrading of two separate roads, namely the **Bamiyan to Baghlan (B2B)** road and the **Salang Highway**, (ii) consulting services, for the supervision of works for the same roads and for regular technical audits by an independent international auditor to verify that road works have been executed in compliance with the technical specifications, and (iii) goods, which will include a small number of equipment items which the Ministry of Public Works (MPW) may need to keep the two roads open during construction.

6. It is estimated that within the total cost of Component, 1 about US\$ 170 million will be spent on the Baghlan to Bamiyan road, US\$ 55 million will be spent on the Salang highway and tunnel, while the remainder of US\$ 15 million will be spent on goods and services benefitting both roads.

7. **Component 2: Institutional support and project management (US\$ 10 million).** This component will be comprised of several subcomponents:

- a) *Road Safety.*
- b) *Definition of asset management arrangements for the trans-Hindukush roads*
- c) *Information and communications campaign.*
- d) *Training and capacity building*
- e) *Project Management Support.*

C. Bank Safeguards Policies triggered by the Project

8. Both the Baghlan to Bamiyan (B2B) and the Salang Highway pass through heavily mountainous terrain (the Hindukush mountain range) typical of much of Northern Afghanistan. This terrain is characterized by steep slopes and undulating hills that are mostly unprotected as there is very little vegetative cover on most of these slopes. During the winter months, the slopes are covered with snow as the mean elevation is about 2500 m above sea level.

9. The existing B2B road which is 152 km in length is an unpaved 2-lane road and the planned project works will upgrade the road to a paved standard. The works will essentially take place within the existing right-of-way of the road. The planned civil works will consist mostly of the construction of a new asphalt concrete pavement along the entire length of the road. Works will also include the improvement of the drainage system, retaining walls, etc. The present width of the road is between 8 and 12 meters, with a few pinch points as narrow as 5 meters. The width of the rehabilitated road is expected to be 10 m (with two 3.5m lanes with 1.5m road shoulder on either side). The widening of the road at some points will require some land acquisition but rather limited resettlement.

10. With respect to the Salang highway (87 km length) which is located between Charikar and Pol-e-Khomri in the northern region of Afghanistan, civil works will be limited to repairs, rehabilitation and maintenance. These works will be located entirely within the existing right-of-way of the road, with NO widening which would affect slopes or would require land acquisition or resettlement.

11. Therefore, in addition to the GoIRA's own applicable environmental and land laws and regulations, the following World Bank safeguards policies have been triggered by the project:

- Environmental Assessment OP4.01
- Involuntary Resettlement OP4.12
- Physical Cultural Resources OP 4.11

D. Environmental and Social Package of Documents

12. To comply with the requirements of these policies, the MPW prepared a package of environmental and social safeguards documents.

13. When the road works on B2B were first conceived, an ESIA was carried out in 2011 with funding from USAID and SIDA. That ESIA covers the same civil works which are to be carried out under the proposed project. A review to the 2011 ESIA was conducted and the GoIRA and the World Bank agreed that it would be updated to reflect new information and details on the B2B and to include the proposed works on the Salang Highway which were never part of the original ESIA. The updated ESIA includes a

detailed Environmental and Social Management Plan (ESMP) that is critical for implementation of the project.

14. USAID had also commissioned a Social Impact Assessment (SIA) of the proposed B2B road in 2009, which has also been updated to re-assess any risks to affected communities and to consider alternatives to minimize land acquisition impacts. Furthermore, a household census of all affected households was undertaken as part of the updating of the Social Management Plan (SMP) prepared by MPW in 2012 which contributed to formulating the development strategies in the comprehensive Resettlement Action Plan (RAP) that was prepared for the project. The RAPs mitigate the project impacts on the social, economic, cultural, and livelihood activities of the affected communities.

15. *Preparation of detailed design for the B2B road.* The original detailed engineering design for the Baghlan to Bamyan road was prepared by the consultant consortium of LBI/B&V under USAID funding in 2009. MPW with the support of UNOPS is presently carrying out a review of the engineering design which will result in various improvements, including cost reductions and changes of the road alignment with the objective of minimizing the need for land acquisition and resettlement. The design review of the first segment (out of the six segments) including the revised cost estimates has already been completed during project preparation and the bidding documents will be ready for the launching of the procurement process by early October 2015. The design review and enhancement for the remaining five road segments is expected to be completed by April 2016.

16. *Preparation of detailed design for Salang Pass and tunnel.* Defining the scope of the needed civil work for the repair of the Salang Pass (including the road, tunnel, snow galleries and other structures) is technically more complicated than for the B2B road. MPW has already started a detailed condition survey of the pavement and structures along the Salang Pass which is planned to be completed in 2015. The preparation of the detailed engineering design for the civil works will require further technical assessments including geotechnical investigations and other specialized studies. As per the plan presented by MPW the detailed design work for Salang Pass will start in March 2016 and will be completed by June 2017. The design will be carried out by the MPW team with technical support from the Implementation Consultant.

17. Therefore, the environmental and social safeguards package of documents are closely aligned with the preparation of the detailed engineering designs and the procurement packages for each segment of the B2B road and Salang Highway.

18. Consequently, the package of safeguards documents is as follows;

- ***Environmental and Social Impact Assessment (ESIA) for Segment 1 of the B2B Road (completed)***
- ***Resettlement Action Plan (RAP) for Segment 1 of the B2B Road (completed).***
- ***Environmental and Social Management Framework (ESMF) for whole project (to guide preparation of the documents for the remaining segments of the B2B and for the works on the Salang Highway) (completed).***
- ***Resettlement Policy Framework (RPF) for the whole project (completed).***
- ***Environmental and Social Management Plan (ESMP) for B2B Segment 1 (completed).***
- ***Environmental and Social Management Plan (ESMP) for B2B Segments 2-6 – will be prepared concurrently with the Detailed Engineering Designs for these Segments as required in the ESMF.***
- ***Environmental and Social Management Plan (ESMP) for Salang Highway – will be prepared by the Civil Works contractor as required by the ESMF.***

- **Resettlement Action Plan (RAP) for B2B** Segments 2-6- will be prepared concurrently with the Detailed Engineering Designs for these Segments.

It is noted that for the Salang Pass a RAP will not be necessary since no land acquisition or resettlement is expected.

E. Summary description of civil works for the rehabilitation of the B2B road and the Salang road and tunnel.

19. *Design of the B2B road.* The pavement of the B2B road will be designed from the start to a standard which will allow the road to withstand the full diverted traffic load of the Salang Pass during prolonged periods, and also the expected mining traffic generated by the various mines along the B2B road. The option of doing a “light” pavement (surface dressing) initially and adding a stronger asphalt concrete pavement later was rejected by mutual agreement between GIRoA and the WB team. The finalized technical design of the B2B road will include cable ducts and fiber optic cables which will become part of the "data highway" for Afghanistan and provide a backup loop for the existing trans-Hindukush cable along the Salang highway.

20. *Ancillary or Associated Facilities for the B2B road* will be the borrow pit areas, quarry sites and construction camps. Extensive cut and fill activities will be required along the projects alignment. The major construction materials required for the project are soil, sand, aggregates, bitumen, steel and cement. Selected soil required for the project will be procured from proposed borrows areas, which are located mainly outside or RoW. Based on the total requirement and availability of each soil type, estimates of soil quantity to be obtained from each of the borrow areas, three borrow -pit areas are proposed along the road corridor in accordance with the environmental management guidelines.

21. The first borrow area is located within 4+000 km of the road, second borrow area is in the 16+000 km in the first segment of the road and the third one is within 29+000 km of the road. The proposed borrow pits are located outside of the ROW in distance of more than 500 meters from local residents. There are not any forest lands or tress, water bodies and agricultures lands within the 500 meters. Five locations for construction camps are proposed along the road. These sites are located on government owned land.

22. *Civil works on the Salang road and tunnel* are expected to be phased during the entire length of the project. Initially, the focus will be on those works that do not require road and tunnel closures, such as the rehabilitation of pavements, bridges and other structures on the lower sections of the road. Once the B2B road is completed and is able to carry the full Trans-Hindukush road traffic, the focus will shift to those major works on the road, tunnel and snow galleries which require longer closures of the Salang Pass. The detailed design for the civil works to be carried out for the rehabilitation and strengthening of the Salang road, tunnel and snow galleries will be developed during the first year of project execution. For the *road*, works will consist of demolishing the remains of the existing concrete pavement and replace it by a new heavy-duty concrete pavement suitable for high-altitude roads with tight curves. In lower altitudes (below 2,500 meters approx.) the existing asphalt concrete pavement will be rehabilitated wherever possible by carrying out localized repairs and pavement surface milling, followed by adding new pavement layers. Where existing asphalt concrete pavement deterioration is too advanced for rehabilitation, full pavement reconstruction will be done using Stone Mastic Asphalt (SMA) technology to ensure that the rebuilt road can support the high share of heavy trucks and avoid pavement deformation. This technology has been proven especially in areas with high variations in ambient temperatures. Various types of Road Safety related works will also be included. For the *tunnel*, works will most probably consist of (i) rehabilitation

or reconstruction of the under-pavement drainage system, including electric heating elements at some locations to avoid freezing in winter; (ii) demolition and full reconstruction of the concrete pavement; (iii) lining of at least some parts of the tunnel wall surface, including tunnel wall drainage at some locations with high water penetration; (iv) structural repairs at some localized parts of the tunnel, at the tunnel entrances and at the snow gallery section of the tunnel; (v) repair and upgrading of the tunnel lighting, ventilation, safety and communication systems, and power supply.

F. Key Baseline Data

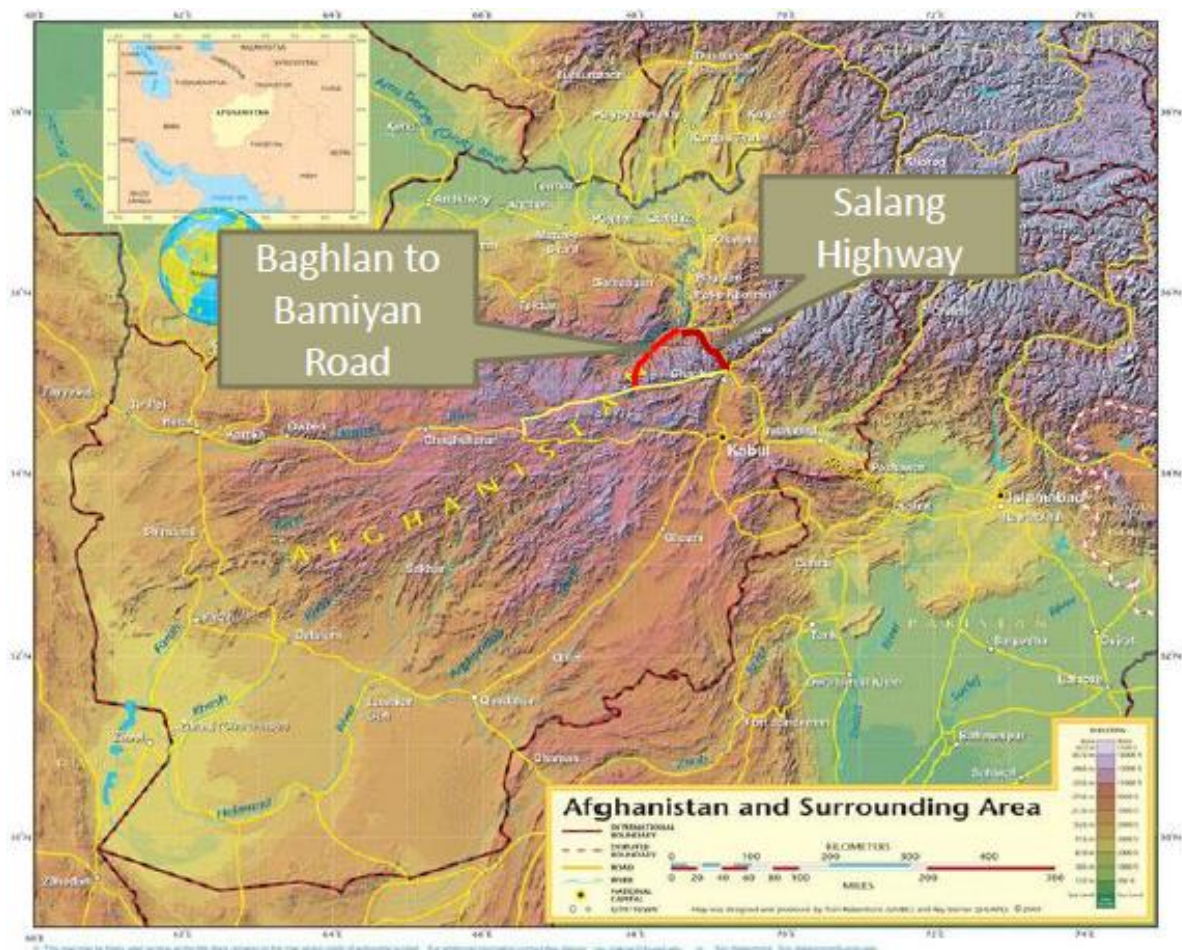


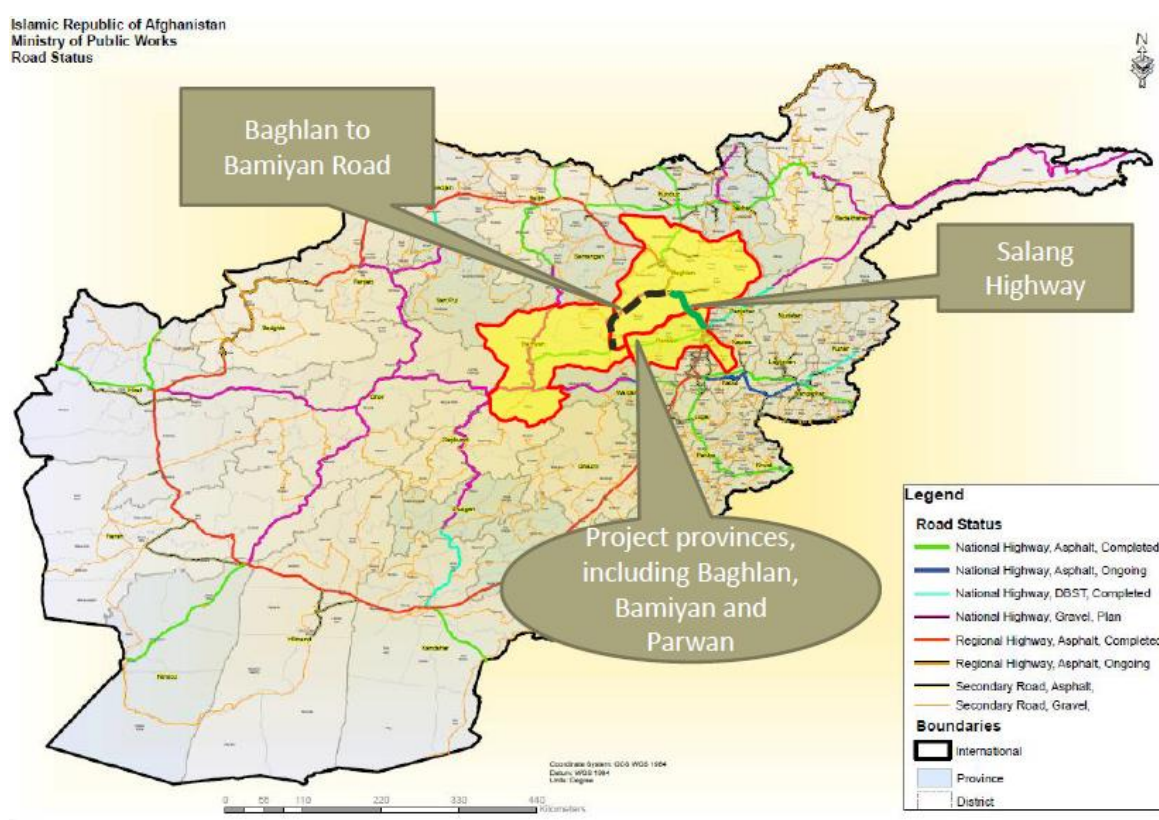
Fig 1: Map of Bamiyan to Baghlan and Salang Highway Corridors

The B2B road

23. The B2B road lies entirely in the Hindukush mountain range, starting in Dushi, Baghlan Province and winds its way south west to Bamiyan, the capital of Bamiyan Province. From Dushi to Tala, the first 80 kms of the road traverses agricultural land in the valley, occasionally the road rises out of the valley floor 30-40 meters as it rounds bends in the river. From Tala, the topography becomes more varied, the valley becomes narrower and the side slopes steeper. This continues to around Ghandak area where the road then enters a very narrow gorge area with steep, almost vertical side slopes for approximately 10 kilometers. Upon leaving this section at around Km150 the road re-enters more open valley slopes and agricultural land similar to the setting around the Tala section of the road. The elevation of the road changes

considerably over its extent, starting at around 820 meters above sea level in Dushi and finishing at around 2200 meters above msl. This equates to an average drop of 1 meter every 100 meters travelled from Bamiyan to Dushi.

24. The project area lies in a seismic zone related to its position at the western end of the Himalayas, falling within the Kunduz sub-basin of the Amu Darya River Basin, where the road crisscrosses the Kahmard, Saighan, Surkhab and Andarab Rivers. These river systems are fed by precipitation and snow melt from mountain peaks. The minimum mean temperature is about -2.7 degrees centigrade in the winter months and the maximum mean temperature is about 27.4 degrees centigrade in the summer months.



25. The landscapes and slopes remain mostly uncovered and unprotected by vegetation, due to decades of overgrazing, deforestation and erosion. The vegetation that is present is mostly sparsely spread and belong to the Ephemeris and Halophiles flora familia. The slopes are otherwise unremarkable with no record of threatened or endangered plant species in the project area.

Table 1: Land Cover in Kunduz Sub-basin

S. No.	Land Cover	Area (KM ²)	% of Area
1	Natural Forest	200	1.5
2	Irrigated(one crop per year)	1033	3.69
3	Irrigated (two crops per year)	257	0.92
4	Permanent snow	258	0.92

5	Rain-fed crops	3014	10.8
6	Rangeland	21086	75.25
7	Rock outcrop / bare soil	646	2.31
8	Sand covered areas	933	3.33
9	Water bodies	0.5	0.00

26. Afghanistan's National Environmental Protection Agency (NEPA) has officially released Afghanistan's first list of protected species. The species on this list are now protected against illegal hunting or harvest. NEPA, with help from the Wildlife Conservation Society, Kabul University and the Ministry of Agriculture, Irrigation and Livestock, created the Afghanistan Wildlife Executive Committee (AWEC) to facilitate the listing process. 138 species are currently on the list, which includes 74 mammals, 54 birds, 7 plants, one amphibian, one reptile and an insect. The list includes well known species such as the snow leopard (*Panthera uncia*), the wolf and the brown bear, as well as lesser-known species such as the Paghman salamander (*Paradactylodon mustersi*), goitered gazelle (*Gazella subgutturosa*), Saker falcon (*Falco cherrug*), markhor (*Capra falconeri*), and the Himalayan elm tree (*Ulmus wallichiana*).

27. However, none of these species were found or are known to be present in the project area. This is to be expected given that the proposed project area has a very limited value as a habitat for threatened and endangered (T&E) species because of the lack of vegetative cover or other suitable habitat. The area around the proposed project area is currently developed as a road, and is frequently disturbed by human activity. Six protected areas have been identified in the country. None of these are located within the proposed project area.

28. Agricultural activities are extensive in the valleys which the project traverses. Most of the agricultural land is rain fed and only small portions of agricultural land are irrigation fed. Road rehabilitation works will impact upon these bands of fertile land and may result in a loss of productive lands.

29. The *traffic counts* provided the study team with a measure of the volume and composition of traffic passing on the Bamiyan-Dushi Road, and provided important background information for determining potential impacts of the rehabilitation such as increased traffic volume and total cost savings from decreasing travel times and travel costs in the follow-up years.

Table 2: Average daily traffic volume by vehicle type

Location	Direction	Passengers' Vehicles			Freight Vehicles		Total
		Cars	Minibuses	Buses	Two axle	Three axle	
Dushi	In-bound	75	64	17	18	8	182
	Out-bound	78	62	8	27	29	204
Middle (Karimark)	Towards Bamiyan	32	36	9	56	10	143
	Towards Dushi	32	37	8	64	9	150
Bamiyan	In-bound	21	10	33	190	19	273
	Out-bound	19	10	38	227	23	317

30. As seen above, only minibuses travel over the full length of the project road. Freight vehicles travelled only a shorter distance and at different sections along the project road. All these were private transport vehicles and no public transport was available on the project road. Average daily traffic frequency on the project road at the start up point in Dushi was 386 vehicles per day and the corresponding figure at the end point location in Bamiyan was 590 vehicles per day. At middle point location near Karimak, traffic counts indicated that 293 vehicles/day used the project road. On both the extreme sites (Bamiyan and Dushi), traffic volume was higher than the middle site (Karimak). Then again, traffic volume at Bamiyan site was about 1.53 times higher than Dushi site and 2.01 times higher than the Karimak. It was also obvious that the passengers vehicles were more concentrated at Dushi site whereas the freight vehicles are more concentrated at Bamiyan site. At Karimak site (middle of the road), both passengers and freight vehicles were dramatically low indicating that major volume of vehicles were not operating over the full length of the road.

- Passengers' **travel time** by minibus took 10-12 hours to cover the project length. Due to lack of security, bad condition of the road and high curvature of the road with the mountains, all vehicles only used the road during the day time.
- **Travel costs** were another important transportation indicator that the study team tracked across a number of road users. Ticket price was 800 Afs. (\$16) per passenger for travelling from Bamiyan to Dushi by micro-bus. Bus drivers tended to wait for a trip more than they are actually make them. On an average they performed two trips a week.
- Freight services could not cover the whole length of the project road because of the poor road conditions at different sections of the road though the minibuses were capable to overcome these constraints. Freight vehicles were found at different sections of the project road, and their movements were in limited scale. On an exercise it was estimated that Freight vehicle would take 22-24 hours under the present road conditions. Travel time will decline significantly on rehabilitation of the road. The freight travel time will decline to around 8 hours on improvement of the road as anticipated by the freight drivers.

31. The social and economic indicators in the Bamiyan to Baghlan road's Zone of Influence (ZOI) which is a 30km corridor along the entire 52 km road is provided below. The percentage of the district population estimated as falling within the ZOI is based on the percentage figure used in the Socio-Economic baseline by USAID (2009), as no major changes in settlement patterns have occurred in this timeframe.

Demographic Profile

Table 3: Population of Bamiyan & Baghlan Provinces

S. No.	Province	Total Population	% Population		Male Female Ratio
			Rural	Urban	
1	Bamiyan	439,900	97%	3%	51:49
2	Baghlan	894,900	80%	20%	51:49

Source: 'Estimated population of Afghanistan 2014-2015'-CSO

Table 4: Population Estimates for the Zone of Influence (ZOI)

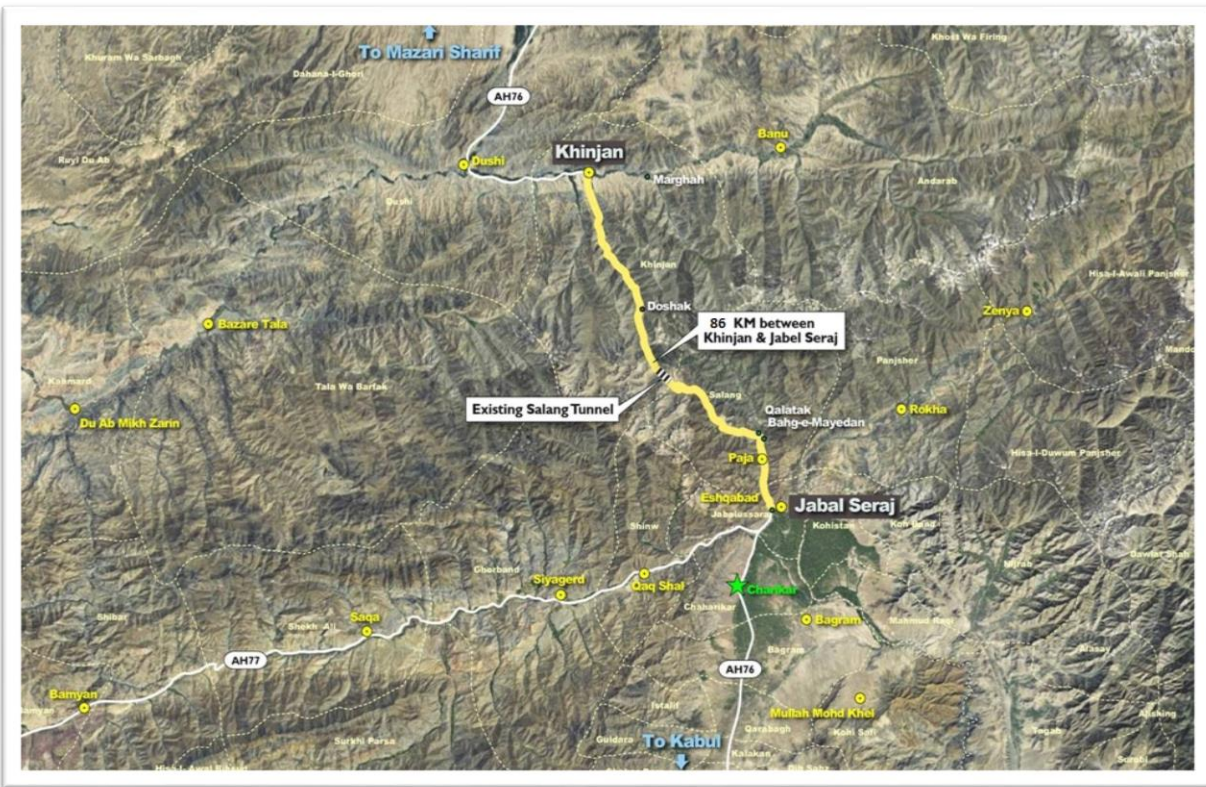
S. No.	Province	Civil Divisions in ZOI	Population	% ZOI Area	ZOI Population
1	Bamiyan	Bamiyan City	83,800	38%	31,844
2		Shebar	29,600	79%	23,384
3		Shaighan	24,100	16%	3,856
4		Kahmard	36,500	32%	11,680
A	Sub Total		174,000	-	70,764
5	Baghlan	Dahana Ghuri	59,200	56%	33,152
6		Dushi	67,200	65%	43,680
7		Khinjan	30,600	2%	612
8		Tala wa Barfak	30,300	44%	13,332
B	Sub Total		187,300	-	90,776
C	Total ZOI (A+B)		361,300	-	161,540

Source: 'Estimated population of Afghanistan 2014-2015'-CSO

Table 5: Female & Male Population Estimates for the Zone of Influence (ZOI)

S. No.	Province	Civil Division	Population		ZOI %	ZOI Population	
			Female	Male		Female	Male
1	Bamiyan	Bamiyan City	41,900	41,900	38%	15,922	15,922
2		Shebar	14,300	15,300	79%	11,297	12,087
3		Saighan	11,800	12,300	16%	1,888	1,968
4		Kahmard	17,800	18,700	32%	5,696	5,984
A	Sub-Total		85,800	88,200	-	34,803	35,961
5	Baghlan	Dahana Ghuri	28,800	30,400	56%	16,128	17,024
6		Dushi	32,800	34,400	65%	21,320	22,360
7		Khinjan	15,000	15,600	2%	300	312
8		Tala wa Barfak	14,600	15,700	44%	6,424	6,908
B	Sub-Total		91,200	96,100	-	44,172	46,604
C	Total ZOI (A+B)		153,600	184,300	-	72,216	82,565

Source: 'Estimated population of Afghanistan 2014-2015'-CSO



Salang Road Corridor

32. The Salang Road Corridor is a section of the strategic transportation infrastructure that provides the primary overland connectivity through the Hindu Kush Mountains. The rehabilitation of Salang road starts from Jabalsaraj to Ulang with 32 Km, Ulang to Doshakh with 29 Km and from Doshakh to Khenjan with 25 Km of length with the total length of the road being 86 Km.

33. The Salang Tunnel, situated at kilometer 113.9 on the Kabul-Salang-Dushi Road within Parwan Province, is considered among the most important stretches of road in all of Afghanistan. The 2.6 kilometer long tunnel and the 21 avalanche galleries along the road (15 galleries on the south side and six on the north side) has served as the major conduit for traffic traveling from Kabul to the northern provinces and beyond to Uzbekistan and Tajikistan since its construction by the Soviets in 1964. At an elevation of 3,319m, the tunnel cuts through Salang Pass (elevation 3,880m), one of the highest passes in Afghanistan.

34. There are no fully paved alternative routes for transit between northern and southeastern Afghanistan. Existing alternate routes also traverse through rough mountain passes at high elevation and most include long sections of narrow, unpaved trails with variable stream and river crossings.

35. The Salang Tunnel has been in service since 1964. In 1982, the detonation of an explosive-loaded truck caused major damage to mainly the Northern part of the tunnel. The tunnel underwent repairs in 2003



and 2010/2011. In addition, there have been numerous rehabilitation and emergency repair projects in recent years to slow or stop the continued deterioration of the tunnel and to keep it operational. For the most part, these efforts have served only as minor and temporary measures as the tunnel's structural flaws and the unabated flow of overloaded trucks quickly overwhelm the repair and return the tunnel to a dangerous and degraded condition.

36. Despite restoration efforts, the Salang Tunnel and its avalanche galleries are in a severe state of disrepair. With poor ventilation, minimal lighting, failed drainage (tunnel and pavement), significant water inflows, heavily deteriorated pavement, and poor traffic control, the tunnel is a safety hazard. Traffic accidents are frequent and fatalities are common. Accidents and breakdowns can result in severe traffic jams, and truck drivers are forced to spend hours and sometimes days waiting to get through the tunnel. Major snowfall in the winter closes the tunnel for weeks at a time and avalanches have resulted in many deaths over years. Passengers wait long periods in the upper galleries or in the tunnel result are exposed to extremely high levels of vehicle exhaust fumes. As a result, carbon monoxide exposures are such that deaths have been reported. Civilian and military movement between Northern and Southern Afghanistan, as well as from the other Central Asian Republics, have led to an increase in overall traffic volume and the number of military vehicles. More recently, after the pullout of ISAF military forces, military traffic has decreased again. The general increase of traffic over time, based on economic and population growth, and lack of alternate routes will further exacerbate the problems associated with the condition of the tunnel. The existing Salang Pass saves more than 60 hours of travel time when compared to current alternate routes between Kabul and the Northern provinces.

37. The present condition of the Salang Pass is very poor and dilapidated. Due to the long term deferred maintenance and over usage, the general condition of the road and tunnel have deteriorated to the level that

it is posing danger to the travelling community. The current condition severely effect on the travel cost in term of money and time to the community.

G. B2B Project Environmental and Social Impacts

Direct impacts related to the project

Construction Related Impacts

38. Given the mountainous terrain through which this corridor passes, extensive cut and fill works will be required. Initial engineering surveys indicate that approximately 3.2 million cubic meters of material will be cut and 4.2 million cubic meters will be required as fill and significant cut material will be reused as fill material. This would require large excavators, compactors, graders and other large construction equipment to remove, place, store, dispose and otherwise manage these large volumes of material. These activities would have significant impacts on air quality, surface water quality, and land and will pose significant road safety concerns. Similar activities will also take place at quarry and borrow pit locations with likely similar impacts.

39. Management of erosion will also be critical, as slopes will be disturbed or further exposed following the removal of vegetation cover, excavation and blasting works, etc. as part of the cutting and filling process, requiring good construction and engineering management so as to reduce the transportation and deposition of soil material downstream.

40. Construction and worker camps will also be established and these will pose potentially significant impacts associated with managing and disposing of fuel, oils and other lubricants (new and used), sewage and solid waste generated by workers, which if not managed appropriately could impact water quality and pose public health concerns for nearby communities.

41. These impacts pose significant risks to the hydrological characteristics of the corridor as well.

Operational Stage Impacts

42. Once the construction works are completed, and the road is commissioned and operational, the nature and intensity of the impacts will change and be reduced significantly. The operational impacts will mostly be attributed to air quality impacts due to larger traffic volumes (freight trucks) plying the corridor and road safety concerns. Habitat fragmentation and loss, and other impacts on flora and fauna are deemed to be of low risk given that the road has been operational in these areas for years and the absence of flora and fauna of significant ecological value or conservation value in the immediate area of the B2B corridor.

Impacts on Physical Cultural Resources

43. The project area is also home to several notable historic items resulting from various influences dating back to the 5th century and its location along the ancient silk route. Given the rich cultural heritage of Bamiyan, it could be possible that chance finds could occur during project works. An adobe castle structure has been observed at KM 134, at a distance of 50 meters off the project road. According to Bamiyan National Environment Protection Authority (NEPA) representative, this structure exists from the Buddhist time and is the only observed cultural heritage site within the vicinity of the road.

Induced Impacts

44. The Ajar Valley Wildlife Reserve is located 45 km west of the middle portion of the road. The Band-e Amir National Park is also located in Bamiyan Province near the Ajar Valley Wildlife Reserve. The Park is located approximately 50 kilometers west of Bamiyan town. Both sites are located upstream from the project road thus precluding any potential impacts to surface water. Distance to these sites also reduces any potential groundwater impacts in these parks. However, rehabilitation of the road will improve access to these areas. On the positive side more tourists will be able to access the site thus bringing much needed cash into the economy of this very poor region. Tourism is being actively encouraged in Bamiyan Province and by improving access to these areas, specifically from Kabul, trade along the road and within the region in general will increase access for tourists. However, additional tourism could put pressure on these sites if they are not managed in the correct manner. Illegal hunting and habitat destruction could result from increased tourism.

Cumulative Impacts

45. The cumulative impact assessment is not relevant for this project, as the Bamiyan to Baghlan road and the Salang Highway are both existing roads that are only being rehabilitated and upgraded. Hence there are no or very little cumulative impacts from the addition of this project as the road already exists in these corridors for many years. Therefore, based on the land use and geophysical terrain of this corridor, it is to be expected there will not be many additional concurrent investments in other modes of transport in this fragile region as well. For these reasons, the rehabilitation and upgrading works planned under this project are not expected to have cumulative impacts.

Social Impacts

46. The road improvements are expected to have positive social impacts in the form of improved access to social services, markets and jobs for nearby communities, and therefore contribute to improving living standards in the project area. The road improvements are also expected to result in improvement in the incomes and result in reduction of poverty in the Zone of Influence (ZOI). According to findings from the follow up socio economic survey about 60% households were found to be 'Extremely Poor' with an income of less than US\$1 per capita per day.

47. However, based on the project's preliminary design, the Bamiyan to Baghlan road will also involve land acquisition and resettlement impacts. The road is expected to be widened to 10m, the existing road width is between 5 to 12 meters.

48. The project is anticipated to have an impact upon properties and agricultural land that currently occupies the right of way. It is considered likely that rehabilitation works will impact an area of land between 3-5 meters wide on each side of the existing pavement. An assessment of aerial photographs of the alignment reveal that around 20% of the road passes either adjacent to, or between agricultural land. That would equate to an area anywhere between 10 and 30 hectares of land (50-160 jeribs). A jerib of land in this area can fetch between 8,000 – 10,000 USD, thus potential costs to landowners could range between 400,000 and 1,600,000 USD. The amount of productive land in the area of segment 1, for which the ESIA is applicable, is much smaller, about 11 Jeribs or 2.2 hectares.

49. 34 families-farmers will lose a part of their agricultural land within the area of segment 1. Of these, 14 farmers are losing more than 10% of their total agricultural land-holding and are vulnerable to loss of income and livelihood.

50. Furthermore, the B2B road will impact community structures and displace road-side business. A total of 39 PAFs will lose their shops within the area of segment 1. There are two irrigation structures located in the area of segment-1, which runs parallel to road for about 900 m. The current finding shows the project is not expected to disturb/block irrigation system during construction period.

51. In order to assess alternatives to avoid acquisition and the financial implications of it an exhaustive Social Impact Assessment (SIA) has been undertaken. This includes development of the project socio economic baseline study, which was commissioned by the USAID in 2009. A follow up survey was conducted during September-October 2014 to establish the validity and reliability of the data in the current context. As per the current assessment estimates, as much as 650-700 affected families will lose a part of their residential, commercial or agricultural properties along the Bamiyan to Baghalan road corridor. A detailed 100 % household census was carried out by the Project Management Unit (PMU) team to collect socio-economic information on the status of affected families in the first segment of the road project, where 97 Project Affected Families (PAFs) will be impacted. There has also been a strip plan prepared for the first segment, which includes inventory of impacted land and properties.

52. It is essential to note, the Salang highway rehabilitation works are not expected to involve any adverse social impact, as the rehabilitation work does not take place in the area with any potential or usable lands for resettlement.

Right of Way

53. The existing alignment and right of way along the project corridors varies from 5 m to 12 m. Encroachment is evident along the existing carriageway with shops and residences in the project corridor. The proposed improvements require a Corridor of Impact (COI) of between 10 m to 30 m. Most of the cross sections fit within the proposed Right of Way (ROW). The project is anticipated to have an impact upon properties and agricultural land that currently occupies the right of way. It is considered likely that rehabilitation works will impact an area of land between 3-5 meters wide on each side of the existing pavement. An assessment of aerial photographs of the alignment reveal that around 20% of the road passes either adjacent to, or between agricultural land. That would equate to an area anywhere between 10 and 30 hectares of land (50-160 Jeribs). The amount of agriculture land under segment 1 is 11.5 Jeribs or 2.2 hectares. In addition, there have been a total of 27 families who will lose a part of their residential houses and will have to move back for road-widening.

54. The following table below summarizes the type of loss and number of PAFs affected by project activities within the area of segment one:

Type of Loss	No. of PAFs
Loss of Agriculture land	34 PAFs are losing their agriculture land, out of them 7 PAFs are losing both Orchard and Non Orchard land. 26 PAFs are losing only Non Orchard land and 1 PAF is losing only Orchard land.
Loss of Residential Structure	27 PAFs are losing their house structures/ Buildings

Type of Loss	No. of PAFs
Loss of homestead land	38 PAFs are losing their homestead land where their houses are built, and other land on the homestead plot having cattle yards, kitchen garden and for other uses
Loss of other structures	39 PAFs are losing their shops and 12 PAFs are also losing other building/ structures
Loss of boundary walls	28 PAFs are losing their boundary walls
Expenses on relocation, shifting of residence	27 PAFs are losing their house structures/ Buildings will require relocation
Loss of income and livelihood due to severe agricultural land impacts	14 PAPs are losing more than 10% of their total agricultural land holding and are vulnerable to loss of income and livelihood
Loss of income and wages	In addition to the PAPs losing their agriculture land, 39 PAPs are also losing their shops

H. Analysis of Project Alternatives

The No Action Alternative

55. The “No Action” Alternative in this instance is defined as a decision not to undertake the proposed rehabilitation of the Baghlan - Bamiyan Road. The “No Action” Alternative would result in the continued deterioration of the road, bridges and drainage structures along the Right of Way (RoW), thereby severely impeding the economic recovery of the Project Area and the country as a whole. All benefits would be foregone. The significant environmental impacts described in earlier sections would be avoided in the short-run. In the long-run, however, the steadily declining state of the roadway would severely cripple Afghanistan’s recovery efforts. In light of these considerations, the “No Action” Alternative is deemed to be neither prudent and not in the best interest of Afghanistan.

Site Alternative

- Site alternatives generally include alternative routes, re-alignments, by-passes and similar actions. In this instance, due to the topographical conditions of the region no site alternatives can be considered as there is no alternate route from Baghlan to Bamiyan.

Design Alternatives

- In the corridor area between stations 143+100 and 144+100, multiple alignments were studied to minimize the impacts and reduce project costs. Due to the terrain and the minimum design speed of 40 kph, forcing a road that mimics the existing alignment would require removal of a significant portion of the mountain side. Therefore, two other options were studied. One option tunneled through the mountain and eliminated approximately one kilometer of roadway. This

option was eliminated because it would be too expensive to tunnel (approximately \$50,000 per meter). The other option was to add two bridge crossings and avoid the mountainous terrain. This option was recommended because it eliminates the need for massive excavation.

- The alignment for the structure near station 145+500 was also studied for alternate solutions. The existing bridge alignment is too sharp of a curve to meet the 40 kph design speed. One alternate solution was to place the bridge in a curve. This option was eliminated due to complexities of the structural design. The option as shown on the plans places the bridge on a tangent with minimum horizontal curves on both sides of the structure. Due to the short tangents, this bridge will be placed on a constant super elevation of 8% the entire length. In the next design phase, the alignment after the bridge between stations 145+700 and 145+900 will be studied for possible cost savings. It may be more feasible to add bridge crossings to eliminate massive cut and fill.
- The chosen design includes traffic signage along the road for speed control along with barriers near villages, schools, toll booths and livestock passage areas.
- Furthermore, along with the existing road alignment, the team recommended 10 vehicle parking spaces and rest stop facilities be designed and constructed along the both sides of the road adjacent to toll booths. It will provide good facilities and refreshment for drivers and passengers.

Technology Alternatives

56. All projects conducted as part of ARTF and IDA are required to maximize the use of (locally hired) manual labor to the extent possible and to use Afghan professional staff to the greatest extent possible, to mentor them, and to give them greater management and implementation responsibility. Consideration of technologically advanced and capital intensive approaches to road construction in these circumstances was, therefore, eliminated from detailed consideration.

Consultations on Alternatives

57. There were a series of consultation conducted with local communities to discuss alternatives, and to avoid/ minimize adverse impacts. The consultation process and the analysis of alternatives led to the significant reduction of the adverse impact of this project. For example, consultations with affected people, within the area of segment 1, led to the decision to divert the road for 0.3 km in order to avoid existing irrigation facilities (Kariz system) in the area of first segment. This change in project design reduced the number of irrigation structures directly affected by the project from 3 to 2 and minimized the impact of the project on irrigation and other community structures.

I. Proposed mitigation measures

58. The ESIA and ESMF require the preparation of site specific Environmental and Social Management Plans (ESMPs) for each segment of the B2B road and for the Salang Highway. The ESIA contains mitigation measures to address water quality, air quality, protection of soils, control of erosion, management of borrow pits, control of spills and leaks, protection of flora and fauna, protection of historic

and cultural resources, protection of irrigation systems and other rural infrastructure like power lines, requires a traffic control plan and measures to manage noise impacts. These measures are contained in Annex C of the ESIA and these measure will be included in the ESMPs which will be implemented in two phases, one for the construction stage and one for the operations and maintenance stage when the completed road segment is in use. Specifically, the ESMP Segment 1 has been completed include these specific mitigation measures for each corresponding impact, monitoring arrangements to ensure these measures are implemented and the required institutional arrangements including for capacity building and for adequate budget provisions.

59. The resettlement Action Plan (RAP) for segment 1 includes compensation details for the affected families, including livelihood restoration details. The ESMP Segment 1 has the specific mitigation measures for each corresponding social impact, such as road-side business and irrigation structures. Shop owners losing their shops will be entitled to preferential allotment of shops in the proposed shopping arcades to be constructed on the road side. The cost for developing/construction of these shopping arcades has been incorporated in the budget provided in the ESMP/ESIA. The site specific ESMP Segment 1 includes proper mitigation measures for avoiding adverse impact on agricultural crop and orchards during construction or irrigation canal.

Involuntary Resettlement - Entitlement Matrix

60. The following entitlement matrix has been developed for the project to address involuntary resettlement impacts

Type of impacts	Eligibility	Compensation Assistance	Responsibility
Loss of arable land	PAFs losing lands who have ownership title, including customary title.	Cash compensation @ AFN 530,000 per Jerib for Orchard land and AFN 450,000 per Jerib for Non Orchard land is payable to them	PMU/ District/Provincial Governors,
Loss of Residential land	PAFs losing lands who have ownership title, including customary title.	Cash compensation @ AFN 225 per Sq. Mtr. of built-up area is payable to them.	PMU/ District/provincial Governors,
Loss of Assets (1) <ul style="list-style-type: none"> Residential Structures Front walls of houses Gates 	All PAFs losing assets irrespective of ownership of title to land.	Cash compensation @ AFN 550 per Sq. Mtr. of built-up area is payable to them.	PMU/ District/Provincial Governors,
Loss of Assets (2) <ul style="list-style-type: none"> Shops 	PAFs losing assets irrespective of ownership of title to land.	Cash compensation @ AFN 550 per Sq. Mtr. of built-up area is payable to them.	PMU/ District/provincial Governors,

Type of impacts	Eligibility	Compensation Assistance	Responsibility
<ul style="list-style-type: none"> Access walls of business places 			
<ul style="list-style-type: none"> Loss of Assets (3) Loss of boundary walls 	All PAFs losing assets irrespective of ownership of title to land.	Cash compensation @ AFN 512 per Mtr. of wall length is payable to them.	PMU/ District/provincial Governors,
Compensation for relocation	PAFs losing houses (& require relocation to another location) irrespective of ownership of title to land.	A relocation allowance of AFN 10,000 per family is also payable	PMU/ District/provincial Governors,
Loss of income/livelihood due to severe agricultural land impacts	PAPs losing more than 20% of their total agricultural land holding and are vulnerable to loss of income and livelihood	In addition to compensation for loss of land, these PAPs will be entitled for an additional allowance of AFN 12.5 per sqm of the land lost. Also these PAPs will be provided training and capacity building support and priority	PMU/ District/provincial Governors,
Loss of income/livelihoods due to lost assets (e.g. shops)	PAPs losing their shops and other sources of livelihood	These PAPs will be provided preferential allotment of shops at the shopping arcades to be developed on the highway. These shops will be allotted to them on subsidised rentals.	PMU/ District/provincial Governors, implementing NGO
Any other loss not identified	Owners	Not anticipated impacts, will be compensated at market/replacement value	PMU/ District Governor,

J. Consultations and Disclosure

61. *Consultations and disclosure.* B2B Consultations were first carried out during 2009 with male and female community members under the socio economic study commissioned by USAID. Subsequently, in 2014 and 2015, consultations on the ESIA, ESMP segment 1 and ESMF were carried out along the B2B road alignment together with the stakeholder agencies, as well as consultations with the affected communities and beneficiaries of the first segment of the B2B road. Separate consultations were conducted with women, particularly with the affected families in the first segment of B2B road. Consultations with the affected communities and beneficiaries of the five other segments will be held and these consultations will be reflected in the subsequent ESMPs and RAPs.

62. The consultation teams visited communities and held meetings and interacted with elders, men, youth and women as separate groups. In communities where CDCs and other visible organizations are identified, there was interaction with those groups also. Separate consultation meetings were held with each affected family within the first segment.

Figure 2: Consultations with community members, elders by ESM team of PMU, MoPW



63. Structured formats have been designed for use at the meetings and information collected from them including the proceedings of these meetings are recorded. Public announcements have been made and notices were posted on the public places to inform the communities about the project and to invite them for consultations. Before the initiation of the consultation and data collection processes, a detailed briefing of the ESIA team at PMU was held with the objective to explain the processes and practices to be followed in this exercise.

64. Consultations were also held with provincial and district government officials, CDC members and office bearers, DDA, NGOs, and some communities.

65. Summary of views and expectations of the consulted communities are summarized below:
- i. People living in the villages along the proposed road came up with their own **expectations from this road improvement project**. Majority of them feel the:
 - a. Road will bring faster access to Kabul and other parts of Afghanistan.
 - b. Better public transport and load carriage facilities will be available after the road is built.
 - c. Significant increase in land prices along the road.
 - d. Better security environment.
 - e. Increase in small enterprises and trade opportunities.
 - f. Improved access to health and medical facilities.
 - g. Improved access to education facilities.
 - h. Improved average price realization for crops/fruits.
 - i. Overall sustainable economic development of the area.
 - j. Improved all season access to other parts of country.
 - k. Improved quality of life for women & children.
 - ii. Similarly the consultations also brought out **some issues and concerns** of the public at large and specifically some of the potential affected persons and these are;
 - a. Many people expressed their reservations about adequate amount of compensation for the loss of cultivable land and other private affected properties. Higher market rates were demanded.
 - b. Some people also expressed their concerns about weakened security conditions after withdrawal of international security forces and safety to ensure smooth progress of the project.
 - c. Some of the community members were doubtful about smooth resettlement & the processes for payment of compensation due to lack of clear titles and ownership documents.
 - d. Concerns were raised by many people about the possibility of getting employment in the road construction project.
 - e. Lack of clarity on grievance redress systems and how to approach them.
 - f. Some concerns were raised about existing public structures (i.e. irrigation structures, etc) and graves etc.
 - g. People also mentioned that the construction company should be firm on design considerations which have been disclosed to them.
 - h. Concerns were also expressed by persons losing shops etc. demanding livelihood compensation from the Government.
 - i. People also raised speed control and road safety issues.
 - j. Drainages, culverts, road crossings and road side shelters were also demanded by some of the community members.
66. The overall project design, and particularly the RAP and ESMP documents have taken these concerns into consideration.
67. Consultations on the Slang Pass will occur during the preparation of the ESMP as required by the ESMF.

68. The ESIA, ESMF and RPF were disclosed locally on June 7, 2015 and at the Infoshop on June 22, 2015.

69. The ESMP documents which are yet to be prepared for Segments 2 to 6 of the B2B road and the ESMP for the Salang Highway will be subjected to meaningful and participatory public consultations in the project area. Furthermore, the RAPs and ESMP's will be locally disclosed in English and also in Dari and/or Pashto, which are the languages spoken in the project areas.

K. Grievance Redress Mechanism

70. A comprehensive grievance redress mechanism has been developed to address the concerns of project affected persons. This system will be in place immediately after the project is approved. In the meantime an intermediate system of GRM on similar lines has been put in place. Grievance redress committees have been constituted in the first segment's project area, along the GRCs at Project level and HQ level.

Grievance Redress Committee (GRC)

71. The following diagram presents the multi-stage Grievance Redress Mechanism, which has been adopted for the project.



Functions of GRC

1. Ensure that handling of grievances is in accordance with Afghan law and World Bank procedures.
2. Ensure that follow-up actions in response to grievances are taken within an agreed time-frame. Maintain record of all registered grievances in a database, along with details on the nature of the issues raised the case history, and actions taken.
3. Report on resolved/unresolved grievances a weekly basis to the PMU.
4. Coordinate with Government departments, at district, provincial and national level and civil society organizations for resolving the grievances of the local communities.
5. Coordinate with community representatives on the efficacy and usefulness of grievance redress procedures and recommend changes if any required to MoPW.
6. Assign member(s) to undertake site visits to assess issues raised as and when needed.

L. Institutional Arrangements for Safeguards Management

72. ***Institutional arrangements for safeguards.*** The project will be implemented by the Ministry of Public Works (MPW). MPW has appointed a high-level official to ensure close oversight of the project implementation and its coordination with stakeholders. MPW has established a Project Management Office (PMO) which is led by a Director. Within the PMO there are specialized units for engineering, procurement, administration, financial management, safeguards management, etc. The PMO will draw on existing staff of MPW to carry out its functions and will also hire some individual consultants to strengthen its capacity. Some of the PMO staff will eventually be located in MPW's Provincial Departments of Public Works (PDPW) in the provinces where the project roads are located.

73. The PMO will establish an ***Environmental and Social Safeguard Management Unit (ESMU)*** which will have overall responsibility for coordinating, implementing and compliance monitoring of the Environmental and Social safeguards commitments and requirements of the Project. The ESMU so far has one qualified and experienced environmental specialist and will soon hire a social safeguards specialist. MPW will also delegate some of its civil service staff to the ESMU so that they work alongside the two experienced specialists and acquire the necessary skills and capacity for such positions. At least one of the staff of the ESMU shall be female to facilitate the consultations and interactions with female project-affected persons. The ESMU will place some of its staff at the regional office of MPW closest to the project site during the civil works.

74. The key ***responsibilities*** for the ESMU include;

- To support project management, including coordination, monitoring and reporting;
- Implementation of the Resettlement Action Plan, including land acquisition and payment of compensation to the Project Affected Persons (PAPs);
- Ensuring the implementation of the Environmental and Social Management Framework (ESMF) and Environmental and Social Management Plans (ESMPs)
- Liaison with the ministries / or other institutions / agencies / ministries etc. as required;
- Contract management and settlement of claims and disputes;

75. ***Environmental and social management by civil works contractor.*** The civil works contracts will require that each contractor has a full-time ***Environmental*** and **Social Safeguard Officer** on the site who will be responsible for all environmental and social safeguard issues and implementation of the respective ESMP's.

76. **Capacity Building and Training.** The ESMU will make ensure that all project staff and counterparts who are involved in project implementation receive sufficient training to ensure that they are effective in carrying out their environmental and social safeguard responsibilities under the project.

77. **Estimated Budget for the Implementing the Environmental and Social Management Plans (ESMPs).** The costs of the mitigation measures themselves as stated in the ESMP's are to be included in the Bills of Quantities. This would ensure they are fully funded as part of the civil works contracts. Whereas, the cost for preparing the ESMPs for Segment 2-6 for the B2B and the ESMP for the Salang Highway, the cost of monitoring the implementation of the mitigation measures, the cost of the staff of the ESMU and their training will be included in the Operations budget of the ESMU.

ABBREVIATIONS AND ACRONYMS

ARTF	Afghanistan Reconstruction Trust Fund
B2B	Baghlan to Bamiyan
DPW	Directorate of Public Works
ESIA	Environmental and Social Impact Assessment
GIROA	Government of the Islamic Republic of Afghanistan
GRM	Grievance Resolution Mechanism
GRS	Grievance Redress Service
ICR	Implementation Completion Report
ICT	Information and Communication Technologies
IDA	International Development Association of the World Bank

LBI/B&V Louis Berger Intl. / Black and Veach Consultants Consortium

MOF Ministry of Finance

MPW Ministry of Public Works

O&M Operations and Maintenance

PDO Project Development Objective

PMO Project Management Office

RAP Resettlement Action Plan

SMA Stone Mastic Asphalt

THiRC Trans-Hindukush Road Connectivity

UNOPS The United Nations Office for Project Services

USAID United States Agency for International Development