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ROADS SOCIO-ECONOMIC IMPACT ASSESSMENT

PART 1

KABUL-KANDAHAR AND KANDAHAR-HERAT ROADS

PART 2

NANGAHAR-KUNAR AND PANJSHIR VALLEY PROVINCIAL ROADS
BALKH DISTRICT AND KUNDUZ DISTRICT ROADS

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Acronyms

ADB	: Asian Development Bank
ADT	: Average Daily Traffic
Afs	: Afghani(s). Afghan currency
ANA	: Afghan National Army
ANDS	: Afghanistan National Development Strategy
ARAO	: Afghanistan Rehabilitation and Agricultural Organization
ASYCUDA	: Automated System for Customs Data
BSCC	: Blue Star Construction Company
BAL	: Balkhi Construction Company
BME	: Benefit Monitoring and Evaluation
CSO	: Central Statistical Office
CIDA	: Canadian International Development Agency
DAI	: Development Alternative Inc.
EST	: Evaluation Study Team
FAO	: Food and Agricultural Organization
HAPO	: Helping Afghan Farmers Association
ICARDA	: International Centre for Agricultural Research in Dry Areas
IMF	: International Monetary Fund
K-K	: Kabul to Kandahar
K-H	: Kabul to Herat
MAAH	: Ministry of Agriculture and Animal Husbandry
MRRD	: Ministry of Rural Rehabilitation and Development
MDG	: Millennium Development Goal
M&E	: Monitoring and Evaluation
NRVA	: National Risk and Vulnerability Assessment
NGO	: Non-Governmental Organization
OIEE	: Office of Infrastructure, Engineering and Energy
PDR	: Provincial and District Road
QIP	: Afghanistan Quick Impact Program
RAMP	: Rebuilding Agricultural Markets Program
REFS	: Reconstruction of Economic Facilities and Services
ST	: Study Team
SUPPORT	: Services Under Program and Project Offices for Results Tracking
SDLR	: Social Development and Legal Rights
SRR	: Southern Ring Road
SOW	: Scope of Works
SDLR	: Social Development and Legal Rights
UNOPS	: United Nations Office for Project Services
USAID	: United States Agency for International Development
WFP	: World Food Organization
ZOI	: Zone of Influence

ROADS SOCIO-ECONOMIC IMPACT ASSESSMENT

PART I

KABUL-KANDAHAR AND KANDAHAR-HERAT ROADS

DISCLAIMER:

The author's views expressed in this report do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Part I - Table of Contents

EXECUTIVE SUMMARY……1

I. INTRODUCTION.....3

1.1 Description of Project Objectives 3

1.2 Description of the Ring Road Rehabilitation 3

1.3 Overview of Report.....4

II. METHODOLOGY.....4

2.1 Analytical Approach 4

2.1.1 Survey Questionnaires 7

2.1.2 Traffic Counts 8

2.1.3 Survey Enumeration.....8

2.1.4 Road Rehabilitation Impact Indicators.....9

III. FINDINGS 10

3.1 Traffic Counts 10

3.2 Impact Indicator Findings 13

3.2.1 Transportation Indicators 14

3.2.2 Social Impact Indicators.....19

3.2.3 Trade Indicators 25

3.2.4 Agricultural Indicators 26

3.3 Summary of Data Findings 28

IV. ASSESSING THE IMPACTS OF THE ROAD REHABILITATION 29

4.1 Transport Sector.....29

4.2 Rural Communities 31

4.3 Regional and National Economic Growth 32

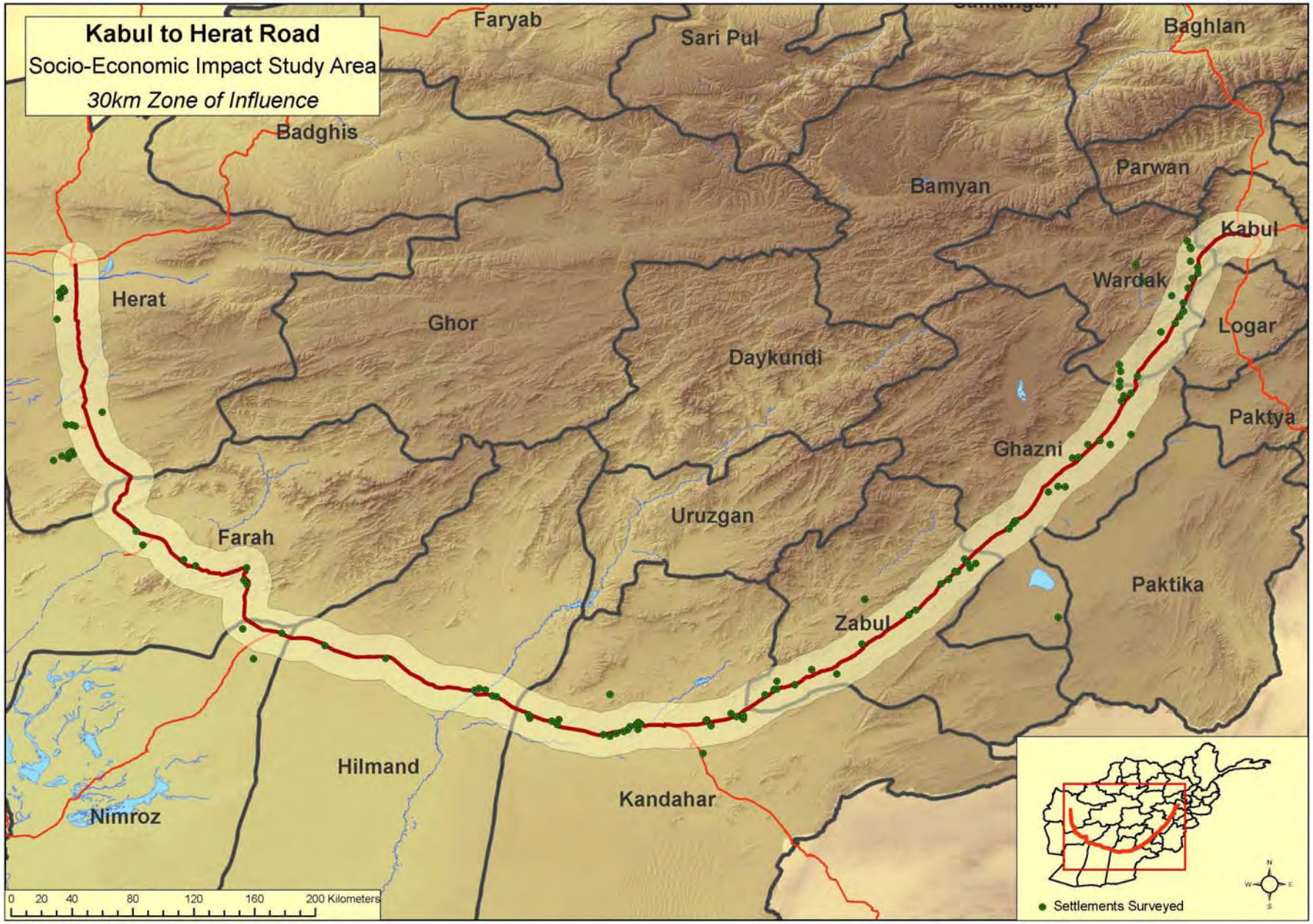
4.4 The Impact of Transportation on Poverty and Gender Inequality 33

V. SUMMARY AND RECOMMENDATIONS.....34

5.1 Summary of the Findings.....34

5.2 Recommendations.....35

Part II – Provincial and District Roads.....40


Kabul to Herat Road
Socio-Economic Impact Study Area
30km Zone of Influence
Faryab
Sari Pul
Baghlan
Badghis
Bamyan
Parwan
Kabul
Wardak
Herat
Ghor
Logar
Daykundi
Paktya
Ghazni
Uruzgan
Farah
Paktika
Zabul
Hilmand
Kandahar
Nimroz
0 20 40 80 120 160 200 Kilometers
Settlements Surveyed

EXECUTIVE SUMMARY

KEY FINDINGS - SOUTHERN RING ROAD

- The rehabilitation-reconstruction of 995 kms of the Kabul to Kandahar road and the Kandahar to Herat road (the Southern Ring Road) *has generated considerable travel benefits and has been coincident with a significant rise in enterprise and incomes within the roads' zone of influence* (ZOI - an area 15 km wide on either side of the road from Kabul to Kandahar and Kandahar to Herat). These findings are derived from traffic counts and surveys enumerated in the early summer of 2008, compared with similar data generated by baseline research undertaken in 2003. The ZOI included an area of roughly 31,680 km^2 along the Southern Ring Road.
- When traffic is disaggregated into vehicles by type, the data show *that bus traffic has increased on average across all sites by over 58 percent.*
- Moreover, data from the surveys of drivers and transport companies indicate that travel times for buses and minibuses *have been reduced by more than two thirds*.
- In constant value terms, bus and minibus ticket costs are up by 20 to 30 percent on 2003 prices. But as the time of travel has declined so much between the two studies, *non-ticket costs of travel are much reduced for consumers of travel services.*
- *Freight traffic has also generally increased*, though less universally, since the rehabilitation of the ring road.
- *Kabul and Kandahar both demonstrate greater freight traffic, but Herat has seen its freight traffic decline since 2003*. The fact that freight traffic into Kandahar from the west appears to have increased between sample periods indicates that other entry points have supplanted Herat as a transit point for freight shipped through Iran and points west.

With respect to enterprise and incomes inside the ZOI:

- *Villages and settlements appear to be cultivating more irrigated land.*
- *Both household and individual incomes are up in constant value terms.*
- *Gross sales of village shops are considerably higher in 2008 than in 2003, and*
- *More households now have cars, generators and wells within their compounds, as compared to 2003.*

With respect to social welfare:

- *School attendance rates appear to be up over all within the ZOI*
- *Frequency for having a clinic or a hospital within the village increased, and*
- *Travel times to a clinic or hospital have declined.*

The benefits that the road rehabilitation has provided for travelers and shippers and others, whose welfare depends on transport services, while considerable, are still constrained by several factors:

- First and foremost among these is the deterioration of security along the road. Anecdotal reports from drivers and other observers on the ground indicate that security along the southern ring road has declined since 2003. This decline in security has to do with both anti-government insurgents and corrupt practice by Afghan police and others.

- The anti-government insurgents primarily target haulers of goods for the government or foreign aid projects, and drivers of such loads do so at considerable commercial and personal risk. The corrupt police who staff traffic stops along the road target any vehicle passing on the road, but their price for passage is much lower than that of the anti-government insurgents.

However, both of these practices increase the cost of transport. In the case of the anti-government insurgents, a risk premium is required to off-set the hauler's risk in losing his load, his truck or his life. In the case of rent-seeking police at traffic stops, their bribes become a cost of transport which must also be passed on to consumers as increased transport costs. Both groups capture rents accruing to the road rehabilitation that one would rather see spread more generally among the Afghan people.

In addition to security problems, the structure of supply in Afghan transport markets is burdened by practices that undermine the benefits to competition. Most long-haul freight traffic and passenger transport is organized through cooperatives that are empowered to allocate shipping slots to passenger and freight haulers. A carriage rotation is managed by leaders of these cooperatives in a way that appears to limit price or quality competition among haulers.

Associated with this system is an apparent over-capitalization of the transport industry. Except for Kandahar, shippers and passenger vehicle drivers got only a few trips per month on average, and most were not driving much more than they were driving.

A final constraint to the gains from the road rehabilitation discussed in this report is the lack of transparency with respect to the role of the Ministry of Transport in collecting road-use tariffs. The opaque collection of such tariffs, coupled with an inability to protect road users from bribe-takers along the road generates a lack of confidence in the government and its agencies, as well as economic inefficiencies.

The rehabilitation of the southern ring road has put in place the potential for significant gains in the transport sector and knock-on gains for those sectors that depend on transport. Clearly, however, benefits from the road rehabilitation appear extensive within the ZOI. However, the factors discussed above will also need to be addressed if the full potential of the rehabilitation are to be realized.

KEY FINDINGS - PROVINCIAL AND DISTRICT ROADS

- *Cars were the heaviest users of the provincial and district roads taken together* (8,058/day) *followed by minibuses* (2,001/day), *and freight vehicles* (1,673/day).
- In terms of per-km road use per day, *Nangarhar/Kunar provincial road had the lowest traffic volume* (43 vehicles/km/day). The corresponding figures for Panjshir Valley provincial road, and the Balkh and Kunduz district roads are 45 vehicle/km/day, 97 vehicles/km/day and 89 vehicles/km/day respectively.
- *District roads appear to be more effectively used by the transport operators as per-km volume of traffic is double on district roads compared to provincial roads. In this respect, district road rehabilitation may be preferred as a future road network development strategy.*

- Buses were the least frequent type of vehicle on the project roads. Cars were 1988 percent more frequent than buses, minibus were 418 percent more frequent, and freight vehicle operation 333 percent more frequent. Since cars and mini-buses tend to be used by the middle and higher middle class families, and freight by the business people, those families and entrepreneurs may be receiving a disproportionate share of the benefits of the road investments.
- *The district and provincial road projects have decreased travel times by 50 percent on average.* The Nangarhar/Kunar provincial road project reduced travel time for minibuses by 30 percent compared to pre-project period. On the Panjshir Valley Provincial road the corresponding figure was 75 percent. The district and provincial road projects have clearly created travel time savings for passengers.
- *The individual monthly income of (earning) household members in the ZOI villages was 1.6 times higher than in the control villages.*
- *A comparison between the traditional villages within the ZOI and the control villages indicates that the road rehabilitation may have increased individual incomes by over 51 percent.*
- Within the ZOI, the individual income reported by respondents in the progressive villages was only 8.20 percent higher than individual income in the traditional villages.
- Household income, on the other hand, was 23.58 percent higher in progressive villages compared to traditional villages. On the other hand, average household income in traditional villages within the ZOI was about 50 percent higher than in control villages, which implies that the road projects have had a significant positive impact on household income.

The provincial and district road projects have also impacted employment, although this effect was small:

- Average participation rate in ZOI villages was about 19.4 percent. This is about one-half of the national average of 40 percent, where as the traditional villages showed slightly higher employment rates (21.8 percent) compared to progressive villages (18.12 percent). Progressive and traditional villages together evinced 26 diversified occupations, whereas there were only three occupations in control villages. This could be taken to imply that road improvements along with market infrastructure help to create more diversified occupations.
- The monthly wage of a general laborer in the sample was about 4,500 Afs while a skilled laborer such as carpenter, or a mason, earned about 8,000 to 10,000 Afs (and more) per month. In control villages skilled labor was rare, but in both traditional and progressive villages in the ZOI there were more skilled laborers. This could imply that the road and market infrastructure together have helped to attract skilled laborers to the ZOI villages.
- The provincial and district road projects have brought about no discernable impacts on the employment of rural women. The survey sample included 3,905 family members, among whom only two women members were employed by other than the household. One was self-employed in tailoring, and the other was a nurse. The first of those two gainfully employed women maintained five family members with her work. The gender imbalance in Afghanistan's rural labor market may be aided by the road projects in the longer-term, if access to other places and ideas helps to motivate cultural change.

The percentage of children enrolled in primary schools was highest in the progressive villages (57.38 percent) and lowest in the control villages (32.01 percent). The overall access

of the children to primary schools in the ZOI villages was 47.23 percent, and that of control villages was 32.01 percent.

A comparison between the control villages and traditional villages indicates that the road improvement projects have had a significant impact on enrollment in primary education, though the overall access to primary school is still unsatisfactorily low:

- Roughly 75 percent of the children living in the control villages and about 52 percent of the children living in ZOI villages were not enrolled in primary schools. Of those attending primary school, female students formed the smaller portion, varying from 22 percent in control villages to 32 percent in the progressive villages. More female students than male students drop out at the end of primary school due to financial and cultural barriers such as early marriage.

Road improvements have also brought about a significant impact on access to health care centre:

- The highest frequency of visits to the healthcare centers is observed by the women living in progressive villages (22.3visits/year) in ZOI.
- Of the men and women who visited the nearest healthcare centre, 74.3 percent of them reported using the project road while visiting the centre.
- Overall 93.4 percent of the visitors living in the progressive village have used the project road to visit a healthcare center.

No extensive investigation could be done by the study on the incidence of poverty. Though road and market infrastructure and agricultural technology have affected both individual and household income in ZOI villages, a gloomier picture is evinced for those people and households in the lowest income quintile.

The 5th quintile is made up of those whose income averages only 1,236 Afs($25) per month. Household income for the lowest quintile is only 1,996 Afs ($40) per month. That is per capita income per month is only $6 for those who are living at the bottom stratum. Per capita income per month varies from $6 to $28 among the 2nd to 4th quintiles, indicating that 80 percent of the households in ZOI still live in poverty. An integrated, pro-poor development policy will be required to address this issue.

The road improvement project has resulted in a substantial increase in the number of shops within markets in ZOI villages:

- Overall, the number of shops has almost doubled from 96 to 190 since the road construction.
- More than 90 percent of the shop-owners interviewed reported that they use the project road to bring in their merchandise.
- Average sale volume per-day for the survey sample was 314,410 Afs ($6,288), and the average daily sales volume of individual shops was about 1,655 Afs ($33).
- In comparison with 2003 Baseline Surveys of K-K and K-H roads, the current study indicates that there is quite a significant increase in the volume of sales in shops in the ZOI of the two provincial and two district roads.

Afghan farmers appear to be adopting modern agricultural technologies, though not all farmers have equal access to these. Adoption of modern agri-cultural technology in ZOI villages and control villages are similar, which may indicate that the agricultural development interventions have extended to remote areas as well those nearer to the road. Most farmers are still producing output principally for household consumption.

The results of regression models run as a part of the study lend support to the hypothesized effect of road improvement:

- *Distance of house-hold from the road* is found to be negatively related to household income, implying that the longer the distance of a household from the road, the lower its income.
- In the progressive villages, an increase of 1 km distance for a household from the road, causes a drop in income of 0.112 Afs, whereas in the traditional villages the corresponding figure is much larger, 4.12 Afs.
- The overall affect of using seeds, fertilizers and pesticides as well as the existence of markets and the road have a significant impact on household income.

While the four road projects examined under this study show clearly positive economic returns, they potentially face several problems with respect to the lack of a "pro-poor" orientation and a lack of benefit monitoring and evaluation (BME) systems" and "sustainability parameters". If long-term maintenance of project roads depends on foreign assistance (which is not part of the project design), the projects lack long-term sustainability. There is some danger that maintaining social and economic benefits along the project ZOI and beyond will not hold in the long-run, unless a plan for long-term repair and maintenance, based on local resources, is integrated into the project design for each road.

In a final comment on the project, the authors commend the dataset that was generated from the surveys of households, shops and various parties in the transport sector. We believe that as a project output this dataset could have considerable utility for those seeking to understand change in socio-economic conditions in Afghanistan.

While the bulk of these surveys were enumerated within the ZOI of the roads targeted in the study, the control villages in the district and provincial road study are outside that set. And, even though the sample set largely shares the characteristic of proximity to roads that have been recently constructed or rehabilitated, it has a wealth of basic socio-economic data for that set of villages. In the case of the southern ring road, the dataset includes similar data from many of the same villages at two points in time. The current project was largely successful in satisfying the objectives outlined in the scope of work through descriptive statistics and analysis. However, the team believes that significant additional insights could be gained on how rural settlements are developing in Afghanistan by further utilizing the dataset that was developed at considerable cost and risk under this project.

I. INTRODUCTION

1.1 DESCRIPTION OF PROJECT OBJECTIVES

This report results from research targeting socio-economic impacts of the rehabilitation of the Kabul-Kandahar and Kandahar-Herat Ring Road and undertaken from May through August of 2008. It tracks closely with two reports written under the REFS Program in 2004[1] (Baseline Studies), which provided baseline socio-economic assessments of the ring road rehabilitation from Kabul to Kandahar and from Kandahar to Herat. By using methods similar to those used in the first two studies, simple comparative-statics provide estimates of the road rehabilitation's socio-economic impact with respect to the situation in the fall of 2003 and the current study period. As will be noted in the discussion, there is substantial evidence that some of the rehabilitation's impacts have not been linear and some benefits that temporarily arose have not been sustained to the present.

The comparators for this analysis are socio-economic indicators that address expected benefits of the road rehabilitation such as: lower travel and transport costs, improved access to travel and transport services, expanded labor markets and employment opportunities, improved access to agricultural inputs, improved rural product prices, expanded agricultural extension opportunities, and expanded regional, inter-regional and international (road-based) trade benefits, among others. These indicators are developed from cited literature and from surveys undertaken for the project.

The study is partial with respect to many of the coincident factors driving Afghanistan's economic development and its level of social welfare. But to the extent practical, account is taken of some of the more binding constraints on achieving benefits from the road rehabilitation. In particular, security issues, road-side rent-seeking and structural aspects of supply in transport markets are addressed in the discussion. In addition, factors that may have generated similar benefits even without the road rehabilitation, such as some infusions of foreign development assistance, will also be taken into account.

1.2 DESCRIPTION OF THE RING ROAD REHABILITATION

The ring road rehabilitation[2] has been undertaken as a part of a wider donor-supported effort to restore economic infrastructure in Afghanistan. The southern ring road, as defined in this report, connects Kabul with Kandahar in the south and Herat in the west. Eventually, it is intended that the rehabilitation will continue around the northern half of the country from Herat to Mazar-i-Sharif and back down to Kabul.

Of the 482 km from Kabul to Kandahar, 439 km have been rehabilitated. The first 43 km of the road going south from Kabul was not included in the rehabilitation. Of the 439 km remaining, USAID was responsible for 389 km and Japan funded and managed the final 50

[1] USAID Reconstruction of Economic Facilities and Services (REFS); Afghanistan Socio-Economic Baseline Study: Kabul to Kandahar Highway, 3/12/04, and, USAID Reconstruction of Economic Facilities and Services (REFS); Afghanistan Socio-Economic Baseline Study: Kandahar to Herat Highway, June, 2004.

[2] The convention of calling this activity a "rehabilitation" is followed in this document, although much of what has been done on the southern ring road qualifies as re-construction.

km into Kandahar. Work started on the rehabilitation at the end of 2002. The Kabul to Kandahar portion was completed at the end of 2003.

The Kandahar to Herat section of the road is 556 km long. USAID was responsible for 326 km of the total, while Japan funded 114 km and Saudi Arabia 116 km. Construction on the Kandahar to Herat section did not begin until the middle of 2004 and most of the work was completed by the end of 2006. The Japanese portion is not yet completed.

Rehabilitating 995 km of the southern ring road has cost about US$686 million. The United States Government has funded about US$492 million of this total. In addition to this money cost, 162 contractors working on the road lost their lives between 2003 and March of 2008[3] and 202 were wounded or injured in attacks. The southern ring road rehabilitation has clearly been a difficult and costly undertaking.

1.3 OVERVIEW OF REPORT

The following section of the report provides detail on the context within which the impact indicators were developed and field research that was undertaken to populate them. The indicators themselves are also defined.

In Section 3, findings of the traffic counts are reported and the impact indicator findings are also developed. In addition to reporting impact indicators from the current research, 2003 impact indicators are introduced for comparison in this section. The indicators are broken out as transport, social, agricultural and trade indicators.

In Section 4 of the report, we review the expectations explicit in the Baseline Studies with respect to the impact of rehabilitating the ring road on the economic activity and social welfare within the ZOI. Using the findings of the impact indicators to compare against those expectations we also discuss some of the constraints that continue to restrain road rehabilitation benefits. In section 6.2, we summarize and make recommendations.

[3] GAO Draft Report "Afghan Reconstruction", July 2008.

II. METHODOLOGY

2.1 ANALYTICAL APPROACH

Following the procedure used in the Baseline Studies, primary data gathering focused on a 30 km zone of influence (ZOI) surrounding the ring road from Kabul to Herat. A ZOI of this scale made sense with respect to the Kabul to Kandahar road because much of that road tracks a valley of approximately that width. It was retained for the Kandahar to Herat road largely for the sake of consistency and practicality. In the case of either road segment, it is highly likely that the benefits of the road rehabilitation extend well beyond these arbitrary boundaries. However, the ZOI provides a replicable focus for assessing direct road rehabilitation impacts.

Table 2.1.1 provides estimates of the population in 2003 and 2008 in provinces and districts along the Kabul to Kandahar segment of the ring road. The ZOI percentage column provides the estimate of the portion of total population in a given district that falls within the ZOI. This percentage is multiplied by Central Statistical Office (CSO) district population estimates to generate the ZOI population estimates reported for each year.

Table 2.1.1 Kabul to Kandahar ZOI Population Estimates - 2003 & 2008 (CSO data).

		ZOI Percentage	2003 ZOI Population	2008 ZOI Population	% Change
Kabul	Kabul	100%	2,799,300.0	2,831,400.0	
	Pagman	100%	120,000.0	110,000.0	
	Total		**2,919,300.0**	**2,941,400.0**	**0.76%**
Wardak	Maidan Shar	67%	23,878.6	24,412.2	
	Nirhk	67%	25,879.6	34,550.6	
	Sayd Abad	100%	79,200.0	105,700.0	
	Total		**128,958.2**	**164,662.8**	**27.69%**
Ghazni	Jaghatu	33%	7,887.0	9,537.0	
	Ghazni	100%	110,000.0	146,200.0	
	Andar	67%	58,896.1	75,704.5	
	Qarabagh	67%	71,435.7	86,643.3	
	Ab Band	67%	13,340.0	16,675.0	
	Muqor	67%	24,612.3	30,481.9	
	Gelan	80%	35,840.0	42,160.0	
	Total		**322,011.1**	**407,401.7**	**26.52%**
Zabul	Shajoy	80%	39,280.0	42,560.0	
	Qalat	90%	26,100.0	28,710.0	
	Tarnak wa Jaldak	100%	14,400.0	21,400.0	
	Total		**79,780.0**	**92,670.0**	**16.16%**
Kandahar	Daman	100%	24,800.0	31,500.0	
	Kandahar	100%	468,200.0	481,100.0	
	Total		**493,000.0**	**512,600.0**	**3.98%**
Kabul – Kandahar Totals			**3,943,049.3**	**4,118,734.5**	**4.46%**

Table 2.1.2 reports population estimates for the Kandahar to Herat segment of the ring road. While the Kandahar to Herat segment ZOI shows a much larger percentage population increase, this is from a smaller base and is driven by population increase in Herat and Farah. Although there were quite significant increases in the population of Wardak and Ghazni on the Kabul to Kandahar road segment, these provincial populations were not large enough to effect change in the ZOI population for the whole road segment.

Table 2.1.2. Kandahar to Herat ZOI Population Estimates - 2003 and 2008 (CSO Data).

		ZOI Percentage	2003 ZOI Population	2008 ZOI Population	% Change
Kandahar	Arghandab	60.0%	34,380	23,640	
	Kandahar	100.0%	468,200	481,100	
	Shah Wali Kot	15.0%	5,460	8,460	
	Daman	90.0%	22,320	28,350	
	Panjwayi	70.0%	57,960	57,400	
	Maywand	50.0%	20,350	26,700	
	Total		608,670	625,650	3%
Helmand	Sangin	3.0%	1,380	1,389	
	Naw Zad	3.0%	1,173	720	
	Lashkar Gah	40.0%	30,440	37,080	
	Nahri Sarraj	80.0%	78,400	85,200	
	Nad Ali	35.0%	34,720	22,750	
	Washer	85.0%	11,050	15,810	
	Total		157,163	162,949	4%
Nimroz	Khash Rod	9.0%	1,701	2,079	
	Total		1,701	2,079	22%
Farah	Bakwa	9.0%	1,809	2,907	
	Gulistan	35.0%	7,490	13,790	
	Bala Buluk	50.0%	24,200	32,500	
	Total		33,499	49,197	47%
Herat	Shindand	50.0%	56,100	81,300	
	Adraskan	40.0%	13,320	19,560	
	Guzara	90.0%	100,080	120,240	
	Injil	100.0%	200,200	222,500	
	Herat	100.0%	254,800	386,600	
	Total		624,500	830,200	33%
Total ZOI			**1,358,160**	**1,670,075**	**23%**

Villages in the Baseline Studies were selected by looking at a map and trying to distribute sample sites evenly across the length of each road segment. Within that objective, the researchers also attempted to identify villages with varying degrees of access to the ring road so as to capture the range of socio-economic impacts in the ZOI. Similarly, to the extent that

such information was available, the Baseline Studies attempted to select across the range of villages by size. The 2008 field enumeration targeted the same villages in its surveys as were enumerated in the 2003 study. Of the 78 villages enumerated in 2003 along the Kabul to Kandahar segment, approximately 72 were enumerated again in 2008. In the Kandahar to Herat ZOI, 51 villages were sampled in 2008, and of these most were repeats of the 54 villages sampled in the Baseline Studies.

Within each sample town or village, three survey instruments were enumerated including household, shopkeeper and settlement demographic targets. In addition to those surveys, in the larger towns and cities, drivers, passengers and freight transport companies were interviewed. These survey questionnaires are described in greater detail, below.

2.1.1 SURVEY QUESTIONNAIRES

To gather data comparable with the Baseline Study indicators, the current project employed the services of the Afghan Consulting Firm SDLR. Staff from that firm enumerated 3 different surveys in 123 different villages along the ZOI of the Kabul to Herat ring road. These included: a household survey, a settlement demographic survey, and a shopkeeper survey. The actual survey instruments are provided in an appendix to the report and the main interest of each is described below.

Household Survey: Households are an important and fundamental socio-economic unit in Afghanistan. These were therefore targeted for basic questions about employment status, wealth and assets, education and healthcare practices, and travel habits. The data generated from these survey questionnaires allow a comparison between the Baseline Study findings and the present field work with respect to potential road rehabilitation socio-economic impacts.

Settlement Demographic Survey: At the village level, a second survey instrument was used to ascertain: distance from and access to the ring road, population, schools and clinics, agricultural land base, and available amenities. Those questionnaires were enumerated though interviews with village leaders. The data generated by these surveys provides quite specific measures of change between the Baseline Studies and the current study period.

Shopkeeper Survey: The third survey instrument enumerated in each village targeted shops and shop-owners to ascertain goods sold, product prices, ownership, and use of the ring road for transporting things to or from the sampled enterprises.

In addition to those three surveys which were enumerated across the ZOI, the project also enumerated surveys targeting drivers and owners of transport companies operating in Kabul, Kandahar and Herat. These included a survey instrument targeting drivers (passenger or freight vehicles), transport companies or unions, and passengers.

Driver Survey: These surveys sought basic information about drivers' frequency of travel, travel routes, equipment, prices, costs, and industry structure.

Passenger Survey: Passenger surveys were enumerated at bus terminals in Kabul, Kandahar and Herat and sought information on origin/destinations, travel times, fares and other travel costs, and income levels of the respondents.

Transport Company Survey: These surveys sought information on firms' routes, scale of operations, costs, prices and market information.

2.1.2 TRAFFIC COUNTS

Traffic counts were undertaken by SDLR staff at three different sites along the Kabul to Kandahar segment and at the two endpoints of the Kandahar to Herat segment of the ring road. These counts were undertaken over a seven day period from six in the morning until six in the evening. As will be discussed in greater detail in the report on the findings, these counts are not perfectly comparable with the counts undertaken in the Baseline Studies. First, the mid-point for the Kabul to Kandahar segment was Ghazni in the Baseline Study. In the current study the mid-point was Zabul. Because Zabul is smaller than Ghazni, there is likely less background, local traffic in the count.

Secondly, the Baseline Study for the Kandahar to Herat segment undertook 24 hour counts, while both all of the 2008 field research and the 2003 Kabul to Kandahar counts only counted during daylight hours. Moreover, the Kandahar to Herat Baseline Study did not undertake a count at Kandahar, but rather used Delalarm (Farah) and Herat as their two counting points. The 2008 study posted counters on the western edge of Kandahar and the eastern edge of Herat. It is highly likely that the 2008 Kandahar traffic counts are picking up more local traffic than the 2003 count at Delalarm.

While these and other differences are noted and, when possible, accounted in the discussion of the field results, they highlight the need for caution in interpreting the traffic count results. It must also be pointed out that the 2003 traffic counts were undertaken later in the summer than the 2008 counts and it is quite possible that seasonal effects confound the comparison of these two counts. One cannot say, without greater understanding of seasonality in Afghan traffic patterns, how much or in which direction.

2.1.3 SURVEY ENUMERATION

The southern ring road survey was enumerated by SDLR staff from early May 2008 through mid-June 2008. Teams of enumerators entered each village and contacted local leaders to inform them of their desire to ask questions about socio-economic conditions in the settlement. Within each village, a settlement demographic survey was enumerated with village leaders.

Three to five households in each settlement were then surveyed with a household questionnaire. And, finally, a shopkeeper's survey was enumerated among small shops in the village. If the settlement was large enough to have more than five shops, a market overview survey was undertaken.

In addition to information about villages and households living in the ZOI of the ring road, SDLR also enumerated surveys of freight and passenger transport companies, drivers, and passengers. All of these survey efforts mirrored the work undertaken during the 2003 Baseline Studies.

Tense security along the ring road posed a challenge for the survey enumerators. Some of the villages fell within areas held by Taliban insurgents and at the boundary between those and

government-held areas, problems developed. Fortunately none of those were deadly. However, GPS devices used to locate villages and cell phones were confiscated by both Taliban and ANA. Enumerators were detained by both sides in separate incidents.

These problems not-withstanding, 558 households in 123 settlements were surveyed by SDLR staff. 143 village shops were surveyed and 29 market overviews enumerated under the field work. For the transport component, 41 transport companies were surveyed, along with 143 drivers and 165 passengers. The data generated by these surveys form the basis of the discussion below.

2.1.4 ROAD REHABILITATION IMPACT INDICATORS

As noted in the introduction, the purpose of this paper is two-fold. It seeks both to report the analysis of the current field-work, undertaken in 2008, and to compare this with the analysis reported in the Baseline Studies, based on the 2003 field research. The focus of the current analysis is largely driven by what was done in 2003. The Baseline Studies used a set of measurable factors that help to describe social and economic conditions within the ZOI. These and other factors relating to travel and transport along the road were addressed under the rubric of road rehabilitation impact indicators. That practice is followed here and the indicators are listed and briefly described, below.

Transportation Indicators: These include traffic volumes as determined under the traffic counts, travel times for both passenger vehicles and freight shippers, and travel costs for both passenger and freight transport.

Social Indicators: These include quantitative measures of social welfare such as: 1) the number of schools and the numbers of male and female children attending schools, as well as travel times to and from school, 2) the numbers of clinics and hospitals within reach of rural residents and the costs and travel times incurred in reaching them, and 3) other community amenities that may or may not exist in communities within the ZOI.

Trade Indicators: Including quantifiable information about markets and goods sold in markets in communities within the ZOI. The impact of the Kabul to Kandahar highway on local markets is likely to be mixed, to the extent that it diminishes travel costs for people carrying goods out or bringing goods into their villages. The EST made an attempt in this study to establish broad estimates of the numbers of shops in settlements within the ZOI and to develop comparative prices between urban and rural areas on commonly traded goods.

Agricultural Production Indicators: These indicators seek to determine farm-gate prices and to provide estimates of agricultural production in areas that the highway passes through. They include; product prices for various agricultural crops, disposition of agricultural production (e.g., home consumption, local sale, market sale), and cropped area.

The highway rehabilitation impact indicators were specifically designed to provide quantitative measures that could be compared with similar measures in follow-up studies. The objective of comparing these measures over time is to assess the impact of the highway on the socioeconomic profile of the ZOI. As noted in the introduction, there are also other factors at play that will need to be taken into consideration in measuring the impact of the highway.

III. FINDINGS

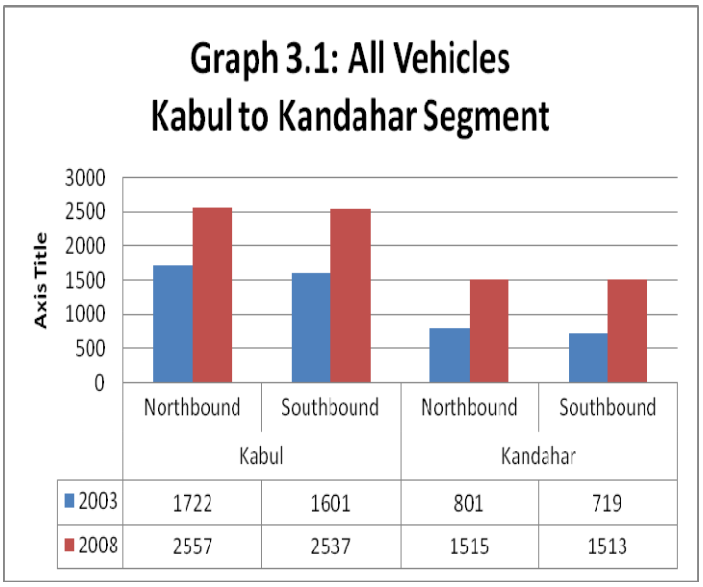
3.1 TRAFFIC COUNTS

As noted in section 2.3, under the current study seven-day, twelve-hour traffic counts were executed at five different sites along the southern ring road from Kabul to Herat. On the Kabul to Kandahar segment, 2008 counts were undertaken: 1) at the southern edge of Kabul City, 2) in Zabul town, near the bazaar, and 3) just north of Kandahar, at the junction of the Kabul road and the road to Spin Buldak. On the Kandahar to Herat segment, 2008 counts were undertaken at: 1) Bhaghi Pul on the western edge of Kandahar, and Mir Daud, just east of Herat.

For the 2003 Baseline Studies, counts along the Kabul to Kandahar segment were undertaken: 1) at the southern edge of Kabul, 2) just north of Ghazni, 3) just south of Ghazni, and 4) just north of Kandahar.

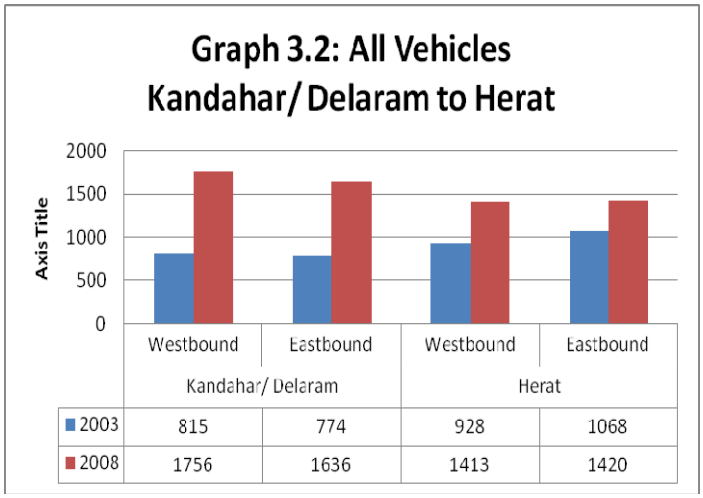
On the Kandahar to Herat segment in the 2003 Baseline Study, counts were made at Delalarm, halfway between Kandahar and Herat and just east of the Herat airport. The two 2003 Kandahar to Herat counts were made over full 24 hour days, while all other counts only captured 12 daytime hours of traffic (i.e., 6 AM to 6 PM).

Graph 3.1 and its accompanying data table report the 2008 and 2003 average daily traffic counts for all vehicles at the Kabul to Kandahar end-points of the road segment. As noted, above, these two count sites are comparable with respect to placement and length of counts, though the 2003 count was undertaken in late August of that year and the current counts were undertaken in June.



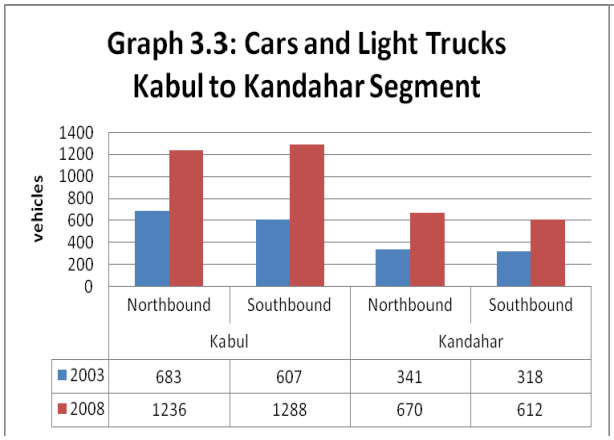
Growth in total traffic volumes in both directions at both sites is clear from this graph. In percentage terms, traffic at the Kabul end has increased by about 54 percent while traffic at the Kandahar end has increased by almost 100 percent – albeit from a smaller base. Graph 3.1 confirms on a general level that traffic volumes have increased significantly since the road rehabilitation.

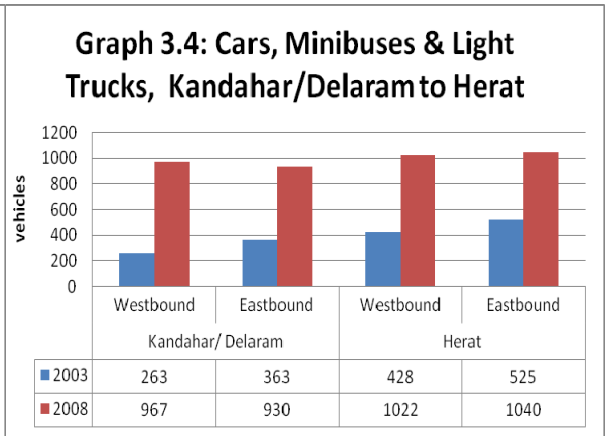
Graph 3.2 compares 2003 and 2008 traffic count daily averages for the Kandahar to Herat segment. The reader is cautioned that this graph compares traffic counts at Delalarm, mid-way between Kandahar and Herat to counts at Kandahar. It is highly likely that the Kandahar counts include some local traffic and that this is likely increasing the difference between the two statistics. It is also the case that both the Delalarm and the 2003 Herat counts were 24 hour counts and this would be expected to increase the daily averages relative the 12 hour 2008 counts.



The increase in Herat's traffic between the two counts is an increase of approximately 42 percent. The difference between Delaram's 2003 traffic and Kandahar's 2008 traffic is over 100 percent. While it is highly likely that Kandahar to Herat segment of the ring road has seen an increase in traffic volumes, the problem of different count sites (Kandahar and Delalarm) prevents us from making too much of the apparent increase at the Kandahar end.

When we break the traffic counts down into finer categories a somewhat different story emerges. However, a similar trend to "All Vehicles" is revealed in the "Passenger Cars +" categories. Because the 2003 Kabul to Kandahar count separated out pick-up trucks but these were placed in the "Cars" category in the 2008 counts, Graph 3.3 shows the counts for Kabul to Kandahar segment as Cars and Light Commercial Vehicles. Similarly, the 2003 Kandahar to Herat traffic counts included both pick-ups and minibuses in its "Cars" category so Graph 3.4 shows results for Cars, Minibuses and Pick-ups.

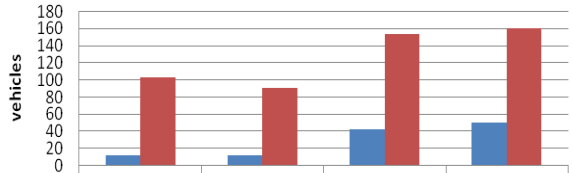




At the two count sites on the Kabul to Kandahar segment, traffic has increased by 97 percent in Kabul and 95 percent in Kandahar. At the Herat count site, traffic in 2008 has increased by 118 percent over traffic in 2003. Counts at Delalarm (2003) and Kandahar (2008) also show a large increase in traffic in the 2008 count.

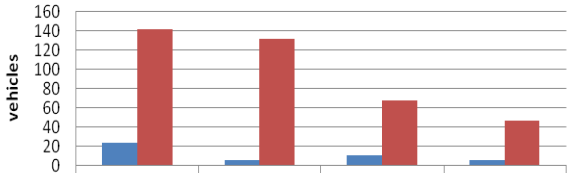
Graphs 3.5 and 3.6 report differences between average daily counts of passenger buses in 2003 and 2008. These graphs show a great increase in bus traffic. On the Kabul to Kandahar segment, bus traffic has increased by a factor of seven in Kabul and by 238 percent in Kandahar. Herat shows a similar result with bus traffic increasing by a factor of 6 between 2003 and 2008. The differences between Kandahar and Delalarm are even greater.

Graph 3.5: Large Buses Kabul to Kandahar Segment



	Kabul		Kandahar	
	Northbound	Southbound	Northbound	Southbound
2003	12	12	43	50
2008	103	91	153	160

Graph 3.6 Large Buses Kandahar/ Delaram to Herat

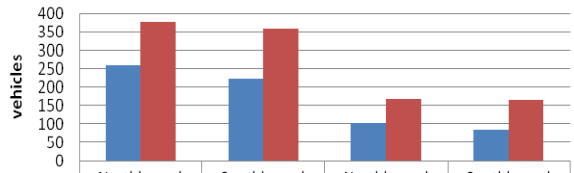


	Kandahar/ Delaram		Herat	
	Westbound	Eastbound	Westbound	Eastbound
2003	24	6	11	6
2008	141	131	68	47

These increases in bus traffic are significant in that they imply that the benefits to the road rehabilitation are being widely shared by large numbers of people with respect to passenger travel. Mini-buses, which cannot be separated on the Kandahar to Herat portion and are not shown here, did see an increase on the Kabul to Kandahar segment of 17 and 47 percent, respectively. Clearly, more people are taking more bus trips on the ring road.

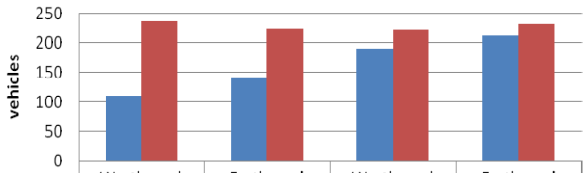
When we break out freight vehicles, as is done in Tables 3.7 and 3.8 for 2-axle freight trucks, it becomes apparent that freight traffic increases have not kept pace with increases in passenger traffic. On the Kabul to Kandahar segment traffic volumes increased a healthy 53 and 78 percent in Kabul and Kandahar, respectively. However, on the Kandahar to Herat segment, the increase in 2-axle freight traffic at Herat has only been about 13 percent. While comparison of the Kandahar/Delalarm sites show a robust increase, those findings are saddled with the previously discussed comparability issue.

Graph 3.7: 2-Axle Freight Vehicles Kabul to Kandahar Segment



	Kabul		Kandahar	
	Northbound	Southbound	Northbound	Southbound
2003	258	220	103	84
2008	374	357	166	165

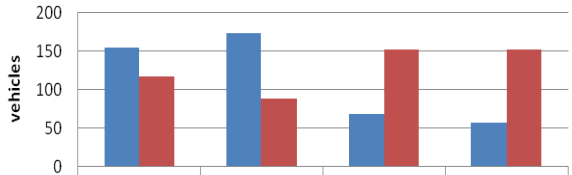
Graph 3.8: 2-Axle Freight Vehicles Kandahar/ Delaram to Herat



	Kandahar/ Delaram		Herat	
	Westbound	Eastbound	Westbound	Eastbound
2003	111	139	189	212
2008	236	223	222	232

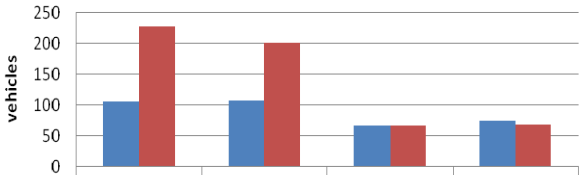
Graphs 3.9 and 3.10 show the change in 3-axle freight traffic on their respective road segments. While there is no readily apparent reason to explain the drop in 3-axle freight traffic at Kabul, the decline in such traffic in Herat would appear to be a function of better enforcement of customs regulations and tariffs there. Robust 3-axle truck traffic at Kandahar (on the Kandahar to Herat segment) indicates that many trucks are coming in from the west, just not from Herat.

Graph 3.9: 3-Axle Freight Vehicles Kabul to Kandahar Segment



	Kabul		Kandahar	
	Northbound	Southbound	Northbound	Southbound
2003	154	173	68	57
2008	117	88	151	151

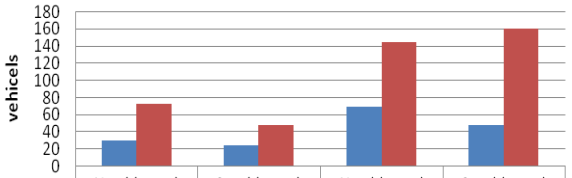
Graph 3.10: 3-Axle Freight Vehicles Kandahar/ Delaram to Herat



	Kandahar/ Delaram		Herat	
	Westbound	Eastbound	Westbound	Eastbound
2003	105	107	66	74
2008	226	200	67	69

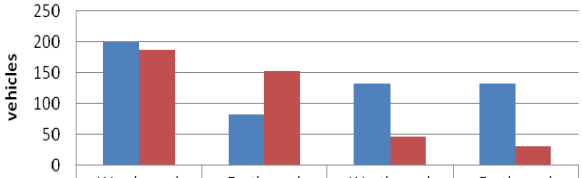
The final pair of graphs reports tractor trailer traffic on both road segments. Again, freight traffic from Herat is much reduced with respect to these larger vehicles, showing a decline of 71 percent. Tractor trailer traffic in Kandahar on the Kandahar to Herat segment increases by 38 percent. On the Kabul to Kandahar segment, tractor trailer traffic increased 118 percent in Kabul and 170 percent in Kandahar.

Graph 3.11: Tractor Trailers Kabul to Kandahar Segment



	Kabul		Kandahar	
	Northbound	Southbound	Northbound	Southbound
2003	30	25	69	48
2008	73	48	144	160

Graph 3.12: Tractor Trailers Kandahar /Delaram to Herat



	Kandahar/ Delaram		Herat	
	Westbound	Eastbound	Westbound	Eastbound
2003	199	83	132	132
2008	186	152	46	31

In summary, the foregoing makes it evident that passenger transport in particular has enjoyed strong growth on both segments of the southern ring road. Freight traffic has also grown over-all, but has also declined in some areas for some categories of vehicles.

3.2 IMPACT INDICATOR FINDINGS

The impact indicators, as described above, include transportation indicators, social indicators, trade indicators, and agricultural production indicators. Beginning with transportation indicators, we report below the data findings from the current period and contrast those with the indicators that were reported in the Baseline Studies.

3.2.1 TRANSPORTATION INDICATORS

The traffic count data indicate that most forms of transport in most areas along the southern ring road have significantly increased traffic volumes since the road rehabilitation. There is universal increase in passenger traffic across the sample sites and, with some notable exceptions; freight traffic has also generally increased. In a standard market view of this outcome, increased supply of transportation services must be rooted in either or both increased demand at the endpoints and along the road and/or lowered costs of providing those services. Increased demand for passenger transport might be influenced by population increase, by an increase in disposable income, or by a shift in preferences.

The rehabilitation of the southern ring road has almost certainly reduced transport costs, allowing greater supply of transport services at a given price. Unfortunately, in nominal ticket prices, this cost reduction is not visible. As can be seen in Table 3.2.1a, the nominal ticket cost of passenger travel has risen considerably. But, if we deflate 2008 prices by the change in consumer prices over the period, the picture changes. Table 3.2.1b deflates 2008 prices by a factor of 1.83, which is the total price inflation from 2003 to 2008 according to IMF reports[4].

Table 3.2.1a: Comparison of Nominal Ticket Prices by Route, 2008 and 2003.

Origin/ Destination	2008 Ticket Costs			2003 Ticket Costs			Nominal % Difference		
	car	minibus	bus	car	minibus	bus	car	minibus	bus
Kabul to Kandahar	1250	400	300	600	330	204	108%	21%	47%
Kandahar to Herat	1500	600	500	833	331	310	80%	81%	61%
Kabul to Herat	2500	1200	700	1000	565	428	150%	112%	64%

Table 3.2.1b: Deflated Passenger Ticket Prices (Afs).

Origin/ Destination	Deflated 2008 Ticket Prices (passenger vehicles)			Passenger Ticket Prices 2003 (passenger vehicles)			Real Change in Ticket Prices (2003 - 2008)		
	Car	Minibus	Bus	Car	Minibus	Bus	Car	Minibus	Bus
Kabul to Kandahar	683	219	164	600	330	204	13.8%	-33.8%	-19.6%
Kandahar to Herat	820	328	273	833	331	310	-1.6%	-0.9%	-11.9%
Kabul to Herat	1366	656	383	1000	565	428	36.6%	16.1%	-10.6%

While nominal ticket prices for passenger travel have risen considerably between to two surveys, in real terms prices for buses and some minibuses have fallen over the period, while car travel and some minibuses have risen in price. In a simple average, passenger transport prices have fallen by a little more than one percent. Real prices are useful for estimating

[4] http://www.imf.org/external/pubs/ft/weo/2008/01/weodata/index.aspx

general price effects, but they are of less interest to those whose incomes are not keeping up with inflation.

Time of travel has fallen universally and considerably. Table 3.2.1c shows the average length of travel time for various routes in 2008 and in 2003.

Table 3.2.1c: Comparison of Travel Times by Route, 2008 and 2003.

Origin/ Destination	2008 Travel times			2003 Travel times			% Difference		
	car	minibus	bus	car	minibus	bus	car	minibus	bus
Kabul to Kandahar	4	4.25	5.25	9	13	16	-56%	-67%	-67%
Kandahar to Herat	5	6.75	7	10	30	30	-50%	-78%	-77%
Kabul to Herat	9	11	12		44	44		-75%	-73%

Although ticket prices have only fallen slightly, to the extent that time has value to passengers the road rehabilitation has generated an additional benefit equal to the value of the travel time required for a trip before the rehabilitation minus the value of the time it takes since the rehabilitation. Proposing a value for this time is beyond the scope of the current study but it is typically estimated as some fraction of the wage rate. In addition to an imputed cost of travel time, longer travel also imposes additional out-of-pocket expenses on travelers, such as costs of overnight stays and sustenance. The reduction of Kabul to Herat bus travel time from 44 to 12 hours suggests a reduction in both types of travel costs for travelers.

The combination of increased passenger travel and lower total travel costs implies a significant welfare gain for travelers since the road rehabilitation. However, without more complete information about demand and supply it is not possible to quantify this gain.

The slight decline in ticket price implies that either costs have not fallen for suppliers of passenger transport services as expected or some constraint is keeping the market from fully adjusting. It was suggested in the Baseline Studies that institutional issues in the transport market might be constraining market signals. Current data from the surveys indicates that this may still be the case.

Long-haul large buses in Afghanistan (and, passenger transport in general), operate almost exclusively through a managed allocation system. While this system is somewhat opaque, it appears that leaders in the bus stations allocate trip opportunities to companies, unions and individuals who operate there. A striking fact that impresses anyone who visits one of these stations is the volume of idle capacity. On a May afternoon in the Herat bus station, field workers counted 171 buses on the lot. Given the average daily bus traffic out of Herat on the ring road (47), this leaves a large proportion of the transport fleet sitting on the lot. Table 3.2.1d shows this from the operators' perspective.

Table 3.2.1d: Average Monthly Trips per Bus Driver.

Origin/Destination	Trips/month	N
Herat to Kabul	3.5	36
Kabul (out)	2.5	12
Kandahar (out)	11.2	20
Overall	**5.5**	**68**

In both Herat and Kabul, bus drivers tend to be waiting for a trip a lot more than they are actually making them. Assuming a three day turn-around from Kabul to Herat and using an average of three trips per month, seven days out of ten the operators are idle.

Kandahar, on the other hand, seems to have overcome this excess-capacity problem. In the absence of interviews with leaders in Kandahar bus terminals, it is not clear how this has been achieved. Security concerns prevented an on-site visit.

In addition to the institutional setup for supplying transport services, the problem of traffic stops along the road may also help to explain why ticket prices have not fallen, even in the face of excess capacity and reduced operating and travel time costs.

In structured interviews, drivers were asked how many "official stops" they encountered on their particular route and how much they had to pay at each. They were then asked how many "unofficial stops" they were required to make and how much they had to pay at those. Tables 3.2.1e and 3.2.1f present averages of their responses in nominal 2008 Afghanis.

Table 3.2.1e: Number and Per Trip Cost of Official Traffic Stops

Origin/Destination	Average Stops	N	Average Trip Cost
Herat – Kabul	4.6	36	7,178
Kabul – Herat	5.3	7	6,928
Kabul – Kandahar	2.1	5	1,035
Kandahar – Herat	1.67	3	2,867
Kandahar – Kabul	1.4	12	573

Table 3.2.1f: Number and Per Trip Cost of Unofficial Traffic Stops

Origin/Destination	Average Stops	N	Average Trip Cost
Herat – Kabul	18	36	1,157
Kabul – Herat	20	7	5,075
Kabul – Kandahar	4.4	5	1,180
Kandahar – Herat	2	2	1,367
Kandahar – Kabul	2.3	12	315

Except for the Herat to Kabul and Kandahar to Kabul samples, populations for these samples are low and their variance is high. However, they provide some indication that there are about five official stops between Kabul and Herat and two or less between Kandahar and Kabul. Under current security conditions, it is probably difficult for drivers to know what is an "official" stop versus what is an "unofficial" stop.

By whatever criteria they are using, drivers consistently report a larger number of "unofficial" traffic stops, especially on the Herat to Kandahar segment of the ring road. However, while more numerous, those stops carry a lower average reported price per stop. For these tables, multiple price responses (i.e. 100 to 1000 Afghanis) were averaged to a single number.

It is possible that the figures in Table 3.5 overstate the actual payments made, to the extent that few will have to pay the first asking price, even though this was used in the averaging of responses. Moreover, as drivers are somewhat incensed about these stops, there may be some hyperbole in their estimates[5]. Still, on the basis of answers given, the cost of traffic stops between Kabul and Herat run between 12,000 and 8,335 Afs and on the Kabul and Kandahar segment, between 2,215 and 888 Afs. On that basis, there appears to be a significant problem with rent-seeking on the Herat to Kandahar portion of the road.

If traffic stops are happening on the scale reported, then a significant portion of the benefits to the road rehabilitation are being captured by corrupt officials who sanction these stops and the individuals who man them. Even if the average cost per unofficial stop is relatively low, 18 to 20 additional stops between Kabul and Kandahar would significantly increase the fuel and the time costs of making the trip. If we consider drivers' reported monthly incomes (Table 3.2.1g) from driving, we see that traffic stop costs amount to a sizable share of those.

Table 3.2.1g: Average Monthly Bus Operator Income by Origin.

Origin/Destination	Income (Afs)	N
Herat to Kabul	9,906	36
Kabul (out)	21,667	11
Kandahar (out)	14,450	19
Overall	13,268	68

Costs imposed on bus operators by illegal roadside rent-seeking effectively increase their costs of providing passenger transport services and, to the extent that they are able to pass these added costs on to passengers, they will. The trip allocation system could support this by continuing to restrict supply and price competition among operators.

Freight transport along the ring road has generally increased since the road rehabilitation, with the notable exception of Herat. This is shown in Table 3.2.1h, which reports inbound and out bound freight traffic (combined 2-axle, 3-axle and tractor trailer freight vehicles) for Kabul, Kandahar and Herat in 2008 and 2003. Kandahar traffic in this table relates to travel on the Kabul to Kandahar segment and does not include freight traffic from Kandahar to Herat.

[5] In an interview with truckers in Herat the number of stops was given as 100 to 120. That seemed an unlikely high number and is not included in these estimates.

Table 3.2.1h: Freight Traffic Volumes at Three Sites - 2008 & 2003.

	2008			2003			% Difference		
	Kabul	Kan-dahar	Herat	Kabul	Kan-dahar	Herat	Kabul	Kan-dahar	Herat
Freight Traffic In	564	476	335	442	189	387	27.6%	151.9%	-13.4%
Freight Traffic Out	493	461	332	418	240	418	17.9%	92.1%	-20.6%

Travel times for freight vehicles have also diminished significantly since the road rehabilitation. Travel times from points along the road in 2008 and 2003 are given in Table 3.2.1i and differences are given in Table 3.2.1j. The reductions in travel times reported by freight haulers track closely to those reported by bus drivers (Table 3.2.1c).

Table 3.2.1i: Freight Transport Travel Times - 2008 & 2003.

	2008 (hours)			2003 (hours)		
	2-Axle	3-Axle	Articulated	2-Axle	3-Axle	Articulated
Kabul to Kandahar	6	7.5	12	21	26	48
Kandahar to Herat	9	16	24	40	38	54
Kabul to Herat	15	24	36	45		75

Table 3.2.1j: Freight Transport Travel Differences – 2008 & 2003.

	Difference 2008 – 2003 (hours)			Percentage Change		
	2-Axle	3-Axle	Articulated	2-Axle	3-Axle	Articulated
Kabul to Kandahar	-15	-18.5	-36	-71.4%	-71.2%	-75.0%
Kandahar to Herat	-31	-22	-30	-77.5%	-57.9%	-55.6%
Kabul to Herat	-30	24	-39	-66.7%		-52.0%

While travel times have decreased, and freight volumes have increased in Kandahar and, to a lesser extent, in Kabul, the freight transport industry appears to be saddled with the same sorts of institutional constraints that may restrain the capture of welfare gains from the road rehabilitation. Among 17 truckers interviewed in Kabul who transport on the southern ring road, trips per month averaged 2. While a count was not undertaken in Kabul, the evaluation team counted 554 trucks sitting in the Herat freight truck station. This plus the low number of trips per month implies that there is abundant capacity, relative to demand for transport services.

Kandahar, on the other hand, seems to have overcome the excess-capacity problem, though a count of trucks in the station there was not possible. Truckers interviewed in Kandahar (3) reported having 10 trips per month, on average. While this is a small number of observations, the possibility that Kandahar has found a way around the problem of excess capacity in the transport industry would justify research to find out how they have done so. Alternatively, higher capacity utilization in Kandahar could simply be a result of higher demand, there.

Cost comparisons between the Baseline Studies and the current study for freight transport are made difficult by the absence of standard freight rates. Different rates obtain depending upon the products to be shipped and the client. In the Kandahar to Herat Baseline Study, information on shipping costs was reported in terms of cost per ton from Kandahar to Herat, and price per ton per kilometer for shipping wheat flour. The cost per ton from Kandahar to Herat was given by transport operators as $30/ton. At 566 kilometers from Kandahar to Herat this works out to US$ 0.053/MT/kilometer. The price to shippers of flour was given as US$ 0.06/MT/km. This worked out to about US$34/MT from Kandahar to Herat.

In the Kabul to Kandahar Baseline Study, freight costs were given in terms of total loads, by truck type. Taking a maximum load for 2-axle vehicles as 22.5 tons, 3-axle vehicles as 30 tons and tractor trailers as 45 tons, the values reported in Table 3.5 of the Kabul to Kandahar Baseline study equate to US10.69/ton, US$10.17ton and US$14.59/ton for 2-axle, 3-axle and tractor trailers, respectively.

In the current field research, we queried large scale operators in the Kabul flour market about shipping costs and were told that the cost to move a ton of flour from Kandahar to Kabul is now $16/ton. At 500 km from Kabul to Kandahar, this is equivalent to US$ 0.03/ton/km. Relative to the Kabul to Kandahar Baseline Study, current prices are US$6/ton higher in 2008. However, relative to the per kilometer price from the Kandahar to Herat study, this represents a decline of US$16 per ton. Clearly, caution is needed in interpreting these price estimates. The Kabul to Kandahar price per truck load is imprecise due to uncertainty about the weight of the load being valued and the product being shipped. However, comparing distance-adjusted prices from Herat to Kandahar with prices from Kabul to Kandahar may be inaccurate, if there are other factors which raise shipping costs between Kandahar and Herat.

3.2.2 SOCIAL IMPACT INDICATORS

The social impact indicators used in the Baseline Studies include: average monthly income both with respect to individuals and households, assets held, school attendance rates, school distances, and the prevalence of clinics across sample sites. We present in this section comparable data from the current study and a comparison with the Baseline Studies' 2003 data.

Table 3.2.2a shows current averages for individual and household incomes across the 546 sampled households in the 2008 fieldwork, by Province. When these are compared with individual and household incomes from the 2003 fieldwork (Table 3.2.2b) we note a significant rise in incomes. However, if we think about these in dollar terms, (50 Afghanis = 1 US Dollar), these incomes are still low.

Table 3.2.2a: Individual & Household Income in the ZOI 2008 (Nominal Afghanis).

Province	Average Ind. Monthly Income (Afs)	Sample N	Average Monthly Household Income (Afs)	Sample N
Farah	14,348	23	17,696	23
Ghazni	7,242	116	9,798	116
Helmand	15,542	36	19,792	36
Herat	4,402	88	5,954	90
Kandahar	14,220	100	30,374	103
Maidan	5,613	28	19,131	30
Nimroz	7,636	11	12,091	11
Wardak	4,864	58	8,495	58
Zabul	8,898	86	24,101	86
Weighted Average	8,842	546	16,624	553

Table 3.2.2b: Individual & Household Income in the ZOI 2003 (Nominal Afghanis)

Province	Average Ind. Monthly Income (Afs)	Sample N	Average Monthly Household Income (Afs)	Sample N
Farah	3,830	35	7,473	35
Ghazni	3,038	71	6,182	92
Helmand	7,371	35	8,981	35
Herat	3,755	100	5,930	100
Kandahar	5,050	98	8,116	97
Nimroz	3,511	30	4,596	30
Wardak	2,704	52	3,383	47
Zabul	4,297	92	6,479	95
Weighted Average	4,131	513	6,473	531

In Table 3.2.2c, we show the change in income over the period with 2008 nominal figures deflated by the IMF inflation index described above. Income improvement is considerably more spotty when 2008 Afghanis are deflated to 2003 values. Overall, however, incomes did rise at a faster rate than consumer price inflation in the ZOI. But Herat, Zabul and Ghazni incomes fell.

Table 3.2.2c: Change in Individual & Household Real Income in the ZOI 2003 to 2008.

Province	% Change in Individual Avg. Monthly Income 2003-2008	Numeric Difference in Individual Avg. Monthly Income (Afs)	% Change in Household Average Monthly Income 2003-2008	Numeric Difference in Household Avg. Monthly Income (Afs)
Farah	104.7%	4,010	29.4%	2,197
Ghazni	30.3%	919	-13.4%	-828
Helmand	15.2%	1,122	20.4%	1,834
Herat	-35.9%	-1,350	-45.1%	-2,676
Kandahar	53.9%	2,720	104.5%	8,482
Nimroz	18.8%	662	43.8%	2,011
Wardak	-1.7%	-46	37.2%	1,259
Zabul	13.2%	565	103.3%	6,691
Weighted Average	19.3%	795	39.1%	2,532

The variable change in real income by Province shows that there have been winners and losers in the past five years with respect to economic growth. Table 3.2.2d gives the mean values for individual and household real (deflated) incomes across quintile groupings for 2008 and 2003. While the higher income categories have fared better than the lower for both individual and household incomes, real income growth at the lower end has also been positive.

Table 3.2.2d: Means of Real Monthly Income by Quintiles, 2003 – 2008.

Quintile	Individual Av. Monthly Income (Afs)			Household Av. Monthly Income (Afs)		
	Kabul to Kandahar 2008	Kabul to Kandahar 2003	Percentage Difference	Kabul to Kandahar 2008	Kabul to Kandahar 2003	Percentage Difference
Highest	11,855	10,144	17%	26,025	16,309	60%
Medium High	5,237	3,810	37%	9,375	6,958	35%
Medium	3,521	2,906	21%	5,398	4,430	22%
Medium Low	2,368	2,261	5%	3,090	3,059	1%
Lowest	1,314	1,231	7%	1,672	1,620	3%

Given the importance of the road for many of the efforts to raise incomes in Afghanistan generally (see agricultural indicators, below), it is very likely that the road rehabilitation has provided a platform for these other efforts and accounts for some of the value derived from them. On the other hand, it cannot be claimed that the road rehabilitation has, by itself, helped to keep incomes in the ZOI growing generally faster than inflation. But we can say that since the road rehabilitation, individuals and households in the ZOI have, on average, enjoyed higher income growth price inflation.

With respect to non-money income measures of material well-being, evidence from the 2008 fieldwork indicates that possession of welfare-enhancing goods has also generally improved over the past five years. Table 3.2.2e reports the frequency with which households possessed

a range of goods in 2008 and, at the far right, in 2003. With the exception of trucks, the frequency with which sample households possess the sampled goods has increased, in some cases quite significantly. The frequency of car ownership increased by 74 percent across the two samples.

Table 3.2.2e: Frequency of Asset Ownership Across Households - 2008 and 2003.

Asset	Household With Asset (2008)	Household Without Asset (2008)	Total Responses (2008)	Frequency (2008)	Frequency (2003)
Radios	516	38	554	93.1%	89.5%
Televisions	212	338	550	38.5%	22.0%
Bi- cycles	413	141	554	74.5%	66.0%
Car	96	456	552	17.4%	10.0%
Truck	12	542	554	2.2%	2.5%
Animal Cart	77	474	551	14.0%	5.0%
Well in Compound	417	135	552	75.5%	42.5%
Electric Pump	49	504	553	8.9%	5.5%
Generator	153	400	553	27.7%	9.0%
Indoor Plumbing	26	520	546	4.8%	0.0%

In addition to material possessions, the social indicators developed in the Baseline Studies used school attendance rates to assess social well-being with respect to education of the young, in sample the villages. Grouping responses to the household survey by age of household members and then by whether those members were in school or not, it is possible to build school attendance rates for the sample of households. 2008 data are broken out by road segment in order to compare Kandahar to Herat across the two (2008, 2003) samples. Such a comparison is not possible for Kabul to Kandahar because those data do not include household members' ages.

Table 3.2.2f shows over all school attendance as a portion of the two Kandahar to Herat household samples to be considerably higher in 2008 (30% versus 22.3%). Moreover, the rate of attendance by female students has almost doubled from 12.6% to 24%. This improved access and uptake is encouraging to those who wish to see a more equitable distribution of education, but note must also be taken that this still only amounts to one quarter of the female population attending schools in the Kandahar to Herat ZOI. The much lower rate of female attendance in the Kabul to Kandahar ZOI also gives pause.

Table 3.2.2f: **5 to 18 Year Olds Attending School in the ZOI, 2008 & 2003**

Gender	Kabul to Kandahar 2008			Kandahar to Herat 2008			Kandahar to Herat 2003		
	Total #	# Attend	% Attend.	Total #	# Attend.	% Attend.	Total #	# Attend.	% Attend.
Females	494	37	7.5%	457	110	24.0%	445	56	12.6%
Males	486	239	49.2%	420	155	37.0%	479	150	31.3%
Total	980	276	28.2%	877	265	30.0%	924	206	22.3%

A second measure of school attendance rates is calculable from information gathered in the settlement demographic survey. Respondents in that survey were asked to report on whether or not their village had a school and, if so, how many students of both sexes attended. Table 3.2.2g reports these results for the combined ZOI in both 2008 and 2003. By the reporting of village leaders who were interviewed for the settlement demographic survey it would appear that attendance by both boys and girls are up significantly in absolute numbers, though the percentage of girls as a share of total secondary school students falls between 2003 and 2008.

Table 3.2.2g School Attendance Statistics from the Demographic Survey

	Primary Schools		Secondary Schools	
	2008 Kabul to Herat	2003 Kabul to Herat	2008 Kabul to Herat	2003 Kabul to Herat
Female Attendance	10,515	4,195	3,855	2,386
Male Attendance	37,411	14,905	18,181	6,299
Total Attendance	47,926	19,100	22,036	8,685
Ratio of Female Students	21.9%	22.0%	17.5%	27.5%

In the 2008 field work, over the entire range of sampled villages from Kabul to Herat, 75 out of 121 villages reported having a primary school. Across the 112 completed observations 41 villages had a secondary school and 71 did not. The average population size for those villages not having a primary school was 1,386 people. For villages not having a secondary school the average population size was 2,084.

A final measure used in the Baseline Studies for access to education in the ZOI was the distance that students had to travel to reach school. Distances from Kandahar to Herat are not comparable across the two samples. As shown in Table 3.2.2h, travel distances, by these data, have not diminished over the period.

Table 3.2.2h: Mean Distances to Reach Schools by Quintiles.

Quintile	Kabul - Kandahar (2008)		Kabul - Kandahar (2003)	
	Distance to Primary School (km)	Distance to Secondary School (km)	Distance to Primary School (km)	Distance to Secondary School (km)
First	0.59	0.83	0.16	0.78
Second	1.72	2.33	1.06	1.78
Third	3.4	5.05	2.1	3
Fourth	6.03	9.21	3.72	4.69
Fifth	19.63	38.68	7.9	8.77

The distances to village primary and secondary schools in the higher quintiles are puzzling and may be a statistical artifact resulting from more complete answers in the 2008 survey. That is, non-responses in the 2003 survey may have been biased toward more distant villages for which respondents did not know the distance. In any event, it is unlikely that with an increase in schools and attendance travel distances have increased relative to the earlier survey.

The road rehabilitation might also be expected to affect access to health care in the ZOI. In Table 3.2.2i we report frequencies at which sampled settlements had either a clinic or a hospital in the 2008 sample and in the combined samples from the 2003 Baseline Studies. The occurrence of clinics has increased from less than a quarter to 30% and more of the sampled settlements now have hospitals.

Table 3.2.2i: Frequencies for Having Clinics and Hospitals within ZOI Sample Settlements, Kabul to Kandahar, 2008 & 2003.

	Clinics			Hospitals		
	Total	**Have**	**% Have**	**Total**	**Have**	**% Have**
Kabul to Herat (2008)	112	34	30.4%	111	18	16.2%
Kabul to Herat (2003)	132	31	23.5%	132	13	9.8%

The distance that respondents have to travel to obtain health care and the convenience with which they can do so should change with road rehabilitation impacts. Expectations are that costs and time of travel might decline with improvements on the road. Tables 3.2.2j and 3.2.2k report current and 2003 costs, travel times and travel distances for households in the sample broken out by quintile. The reported averages were generated by sorting the sample by each factor and averaging the set of observations within five equal (or, nearly so) subsets from lowest to highest. This allows us to see the distribution of travel costs, travel times and distances across the samples. In addition, a total sample average is reported at the bottom of both tables.

Table 3.2.2j: Average Nominal Travel Cost, Time and Distance to Medical Facilities by Quintile, Kandahar to Herat, 2008.

Quintile	**Cost (Afs)**	**Obs.**	**Time (hrs)**	**Obs.**	**Distance (km)**	**Obs.**
Lowest	28	39	0.14	45	0.95	45
Medium Low	55	39	0.23	45	3.63	46
Medium	107	38	0.31	45	5.88	46
Medium High	221	38	0.79	45	12	46
High	478	38	2.58	46	51.31	45
Total	177	192	0.82	226	14.64	228

Table 3.2.2k: Average Travel Cost, Time and Distance to Medical Facilities by Quintile, Kandahar to Herat, 2003.

Quintile	**Cost (Afs)**	**Obs.**	**Time (hrs)**	**Obs.**	**Distance (km)**	**Obs.**
Lowest	13	34	0.2	30	1	43
Medium Low	33	34	0.6	31	2	43
Medium	52	34	1.1	31	5	43
Medium High	145	35	1.8	31	10	43
High	590	35	3.4	31	106	44
Total	169	172	1.4	154	25	216

In nominal terms, it appears that the road rehabilitation has had an effect on the most costly trips and less of one on lower cost trips. Similarly, it has had a greater effect on longer trips, reducing the longest (time-wise) trips by 24 percent. However, this may have as much to do with the shorter distances traveled in the 2008 sample as with improved transport services.

In a final consideration of road impacts on travel services with respect to health care, we consider the cost, travel times and average distances by mode of transport in Table 3.2.2l. Data are reported for the Kandahar to Herat road segment for both the current fieldwork and the 2003 Baseline Study. Travel times have improved considerable for two of the three modes of transport that depend on the quality of the ring road. However, as in the previous table, this apparent decrease in times may have as much to do with distances traveled as the road rehabilitation. Going the additional step and comparing unit costs (per kilometer) by travel method across the two samples would require revisiting the 2003 dataset, which is beyond the scope of the current study.

Table 3.2.2l: Average Cost, Time and Distance to Medical Care by Mode of Travel, Kandahar to Herat, 2008 & 2003.

Mode of Travel	Average Cost (Afs)	Average Time (hours)	Average Distance (km)
Foot 2008	0	0.76	5.71
Foot 2003	0	1.1	5
Bus 2008	74	0.86	18.2
Bus 2003	131	2	83
Minibus 2008	146	0.61	29
Minibus 2003	88	1.3	48
Car 2008	345	0.57	29
Car 2003	101	0.6	19

3.2.3 TRADE INDICATORS

In the 2008 fieldwork, 143 shop owners were surveyed in 81 different settlements along the length of the southern ring road from Kabul to Herat. Out of those 143 shops, 80 or 56 percent had been in business for 5 years or less. Average reported gross daily sales across the sample were 5,135 Afs ($103). This generates what appears to be a significant increase from the average gross daily sales from the two Baseline Studies – 1,028 Afs ($21). However, this measure uses nominal values to evaluate differences between the two periods.

Given the large increase in nominal income that was reported in the previous sub-section, using nominal figures may obscure a decline in the value of the currency. In a normal case, one would use an index tracking the change in consumer prices to deflate values over a period as long as five years. But in Afghanistan, such indexes are not readily available for the period of interest. Moreover, since we are looking at a particular type of community (rural settlements), price change in urban areas may not be the best indicator for rural price change.

Tables 3.2.3a and 3.2.3b compare prices across the two sample periods for several commonly traded food goods in each of the two road segments. The average differences between prices in the two periods are price increases of 140 percent and 103 percent for the K-K and K-H segments respectively.

Table 3.2.3a: Nominal Prices for Key Food Staples, K-K ZOI - 2008 & 2003.

Product	Average Price 2008 (Afs/kg)	Obs.	Average Price 2003 (Afs/kg)	Obs.	% Change
Rice	96.4	26	39	19	147.2%
Sugar	74.6	40	28	43	166.4%
Tea	166.6	32	80	46	108.3%

Table 3.2.3b: Nominal Prices for Key Food Staples, K-H ZOI - 2008 & 2003.

Product	Average Price 2008 (Afs/kg)	Obs.	Average Price 2003 (Afs/kg)	Obs.	% Change
Rice	104	18	29.9	24	247.8%
Sugar	30	58	21.4	50	40.2%
Tea	176	46	145.4	29	21.0%

It is interesting to note that the nominal prices along the Kabul to Kandahar ZOI changed at about the same rate as the overall inflation rate calculated by the IMF (2003 =1, 2008 =1.83). The Kandahar to Herat ZOI tracks more closely with changes in international prices for the goods examined, in some cases outpacing Afghan inflation and in some cases being less than. These nominal price increases are not, in general, as great as the rate of increase in nominal incomes.

With respect to the usefulness of the road to traders and shop operators sampled, 89 percent receive goods via the southern ring road 76 percent use the road to get to their shop. Customer travel distances are still quite short, averaging 4.14 km across the entire sample. Clearly, most of these shops serve their local community.

3.2.4 AGRICULTURAL INDICATORS

Agriculture remains the dominant economic activity in the ZOI. Over the entire sample, 67.7 percent of respondents responded yes to the question, "Do you raise crops?" This is similar to the proportion of respondents answering yes to that question in the 2003 Kabul to Kandahar Baseline Study (64 percent) and somewhat higher than the corresponding figure for the Kandahar to Herat Baseline Study (42 percent).

Within the 123 settlements surveyed, there were said to be 136,826 jeribs (27,365 ha) of irrigated lands. The corresponding figure from the Baseline Studies (combined) was 92,780 jeribs (18,556 ha). From the household surveys, the average irrigated landholding of farmers in the sample was 20.4 jeribs[6] (2.98 ha), which is considerably above the mid-point of the

[6] This includes only those respondents answering "yes" to growing crops and a single outlier of 15,000 jeribs is excluded from this average.

earlier Baseline Studies (14.45 jeribs). These statistics provide some evidence that irrigated acreage may have increased over the period.

Seventy percent of the farmers in the 2008 sample reported that they used the southern ring road to move their crop. In the earlier Baseline Studies, only 40 percent of the K-K ZOI sampled farmers reported using the road to move their crop and in the K-H ZOI 50 percent did so.

With respect to farming technology, the survey data permits a comparison between mechanization in 2003 and the present and this is reported in Table 3.2.4a. The percentages reported in that table indicate a reduction in both animal traction and hand plowing and an increase in the use of tractors.

Table 3.2.4a: Cultivation Methods Among Sample Farmers in the Kabul to Herat ZOI, 2008 & 2003.

Sample Using	Animal Traction	Hand Plow	Machine
Farmers Using (2008)	61	106	286
Percent of Sample	16.4%	28.5%	76.9%
Farmers Using (2003)	96	96	161
Percent of Sample	35.0%	35.0%	59.0%

Along with the use of various cultivation technologies, the survey data permit an assessment of the portion of farmers who are using fertilizer and other purchased inputs for their crop production. Table 3.2.4b reports those statistics.

Table 3.2.4b: Use of Purchased Inputs in the ZOI – 2008.

Input	% Farmers Using 2008	Average Exp. (Afs)
Fertilizer	97.9%	2,132
Pesticide	76.4%	1,081
Seeds	92.5%	2,343
Transport	85.2%	3,006

It is somewhat difficult to compare these statistics for the entire sample to the reported findings from the two prior Baseline Studies. The Kabul to Kandahar study, for instance, reports approximately 80 percent of responding farmers used fertilizer while the Kandahar to Herat Baseline Study gives fertilizer use in absolute value. If we make the assumption that the entire sample of 117 farmers was used as a base for that study's purchased input table then approximately 55 percent of those farmers used fertilizers. The average of those two estimates is 67 percent. Clearly the more recent survey figures show an increased frequency of fertilizer use.

Estimating pesticide and seed use as above, the Baseline Studies show about 37.5 percent uptake for pesticides and 49 percent of the Kandahar to Herat farmers using purchased seeds. This frequency cannot be calculated for the Kabul to Kandahar Baseline Study. Regardless, it seems apparent that the use of purchased inputs has increased among farmers in the ZOI. And, while the average annual costs imply that not all farmers are using very much of these

inputs, the combined statistics suggest that demand for purchased inputs has grown over the past five years.

With respect to transport services utilized by farmers in the southern ring road ZOI, the 2008 sample shows much higher use of purchased transport services than the Kandahar to Herat sample of 2003. This is true both with respect to the number of respondents reporting a non-zero value for transport costs and in terms of the average cost. This suggests that more agricultural product is being shipped by more farmers within the southern ring road ZOI.

Table 3.2.4c reports trends in the keeping of animals within the whole ZOI in 2008 and provides as a comparator corresponding statistics from the K – H Baseline Study. Corresponding statistics are not reported in the K – K Baseline Study. From this comparison it appears that more people in the rural areas are keeping animals but that, except for poultry, herd sizes are down.

Table 3.2.4c: Poultry & Livestock Enterprise in the whole ZOI, 2008 and K-H ZOI 2003.

		Poultry	Sheep	Goats	Cows	Horses	Donkeys
2008 Whole ZOI	Average # Flock/Herd	11	6	7	2	1	1
	Number of Farmers Keeping	440	334	267	373	31	230
	Percent of Total	79%	60%	48%	67%	6%	41%
2003 Kandahar - Herat	Average # Flock/Herd	9	14	10	2	2	2
	Number of Farmers Keeping	212	133	74	148	5	82
	Percent of Total	77%	48%	27%	54%	2%	30%

3.3 SUMMARY OF DATA FINDINGS

It is clear from the comparison of the 2008 and 2003 impact indicators that there has been a significant expansion in passenger transport throughout the Kabul to Herat ZOI. Freight transport along the southern ring road has increased significantly in Kandahar, less so in Kabul and has declined in Herat. Travel times have been much reduced and, while ticket prices for passenger travel have increased in nominal terms, they have not increased in inflation-adjusted terms.

With respect to social impact indicators in the Kabul to Kandahar ZOI, real (deflated) individual incomes have risen 19.3 percent and real household incomes 39.1 percent between the Baseline Studies and the current study. Household assets have also been enhanced over the period. Notably, 75 percent of 2008 respondent households had a well in their compound, compared to 42.5 percent in 2003. Over 27 percent had a generator, compared to 9 percent in 2003. The percentage of all school-aged children attending school (Kandahar to Herat segment) improved from 22.3 to 30 percent, according to the household surveys. And, by the settlement demographic surveys, school populations more than doubled over the period. The frequency of having a clinic located in villages improved and average travel times (and distances) to medical facilities declined.

With respect to trade in the ZOI, there appeared to be many new shops operating there. Average gross daily sales increased by a factor of four. Product prices seem to have risen considerably in nominal terms, but not as much as nominal incomes.

A comparison of the agricultural indicators suggests that there is more irrigated land under cultivation in the sample settlements since the road rehabilitation. Uptake for improved production technologies has also improved with almost 77 percent of respondents using tractors to cultivate their land against 59 percent in 2003. The use of purchased inputs (fertilizers, pesticides and improved seeds) appears to be more widespread in 2008 than in the Baseline Studies. And, a higher proportion of farmers are using the southern ring road to get their goods to market.

The improvements in transportation – more traffic and shorter travel times – are doubtless a result of the rehabilitation of the southern ring road. And, while the improvements in the social, trade and agricultural indicators in the ZOI cannot be accounted as resulting solely from the road rehabilitation, it is difficult to conceive of an argument for their being independent of it. Some of the gains reported might have occurred even without the road rehabilitation. But it is highly likely that having an improved road boosted whatever gains that might have occurred without it. However, without control samples, it is not possible to quantify those increased gains.

IV. ASSESSING THE IMPACTS OF THE ROAD REHABILITATION

The Baseline Studies noted that, because of the emergency conditions under which the southern ring road rehabilitation was initiated, there was not scope for a true "before" baseline assessment. Given this limitation, it was thought unnecessary to employ a structured survey sample that was composed of both villages within the ring road's ZOI and villages outside that ZOI. Without such a set of "impacted" and "control" villages, robust quantification of the economic impacts of the rehabilitation was taken off the table. Instead, a range of indicators were selected by which it would be possible to assess change over time that was coincident with the rehabilitation. While second-best with respect to quantitative estimates of economic impact, it is not clear that having better economic estimates would have justified a delay in the road rehabilitation.

In this section, we take up the benefits that were explicitly anticipated in the Baseline Studies to accrue to the ring road rehabilitation. The data obtained in the 2008 survey of villages, transport operators, passengers and shop keepers allows us to assess the extent to which benefits did occur and factors that might have facilitated or constrained them.

4.1 TRANSPORT SECTOR

The Kabul to Kandahar Baseline Study states:

"*The transport sector derives the most obvious and direct benefit from the road rehabilitation. Rehabilitating the road should act as an efficiency improvement that:*

1. *Increases the availability of transport and travel service (at a given price)*
2. *Reduces costs of transport (for any given level of supply)*
3. *Expands markets that depend on transportation, and*
4. *Creates opportunities for additional public income from road tariffs.*"

With respect to those expectations, it is clear that transport services have expanded since the rehabilitation. In addition to the traffic count data, observers on the ground report that traffic has decreased from even higher rates immediately following the rehabilitation. Those higher levels of traffic are supposed to have fallen off with the decline in security along the road. This decline in traffic is reported as carrying on to the present. Since our field research only provides a snap-shot, we cannot confirm or reject such a short term trend.

On the basis of our research data, between late summer of 2003 and early summer of 2008 traffic along the southern ring road appears to have increased by an average of 58 percent across all vehicles and sample sites. When we disaggregate that average increase into its constituent parts we can report more impressive increases in passenger traffic and in freight traffic on particular road segments. There appears to be abundant, if not excessive, supply of capital equipment for transport.

With respect to reducing costs (for any given level of supply), this expectation has been met, but just barely. While travel times and vehicle maintenance costs have been reduced by the road rehabilitation, the imposition of both formal and informal levies at checkpoints along the road has to some extent replaced those costs. In addition, diminished security along the road implies increased risk of both material and personal loss. Operators doubtless factor this into their costing. In these ways, security issues and rent-seeking traffic stops can be seen as supplanting other costs and constraining the achievement of the "lower cost" expectation.

The rural markets that exist along the southern ring road do appear to have expanded over the five years since the rehabilitation. More land appears to be under irrigated cultivation, and production appears to have increased. Producers' use of the ring road to get their output to market has increased. Gross sales in rural shops are much increased and incomes have more than doubled in nominal terms. This benefit does seem to have been achieved.

With respect to improving government opportunities to increase public income from road tariffs, the road rehabilitation has provided the opportunity and the government appears to have taken advantage of the opportunity. In several interviews with Ministry of Transport officials, the evaluation team was unable to ascertain precisely what charges were imposed by that Ministry on transporters. In addition, the government has not protected transporters from unofficial rent-seekers who operate checkpoints along the road. Consequently, there is a lack of transparency in what constitutes "official" and "unofficial" tariffs along the road.

The Baseline Studies discussed potential constraints to adjustments in the market for transport services due to the structure of supply. In particular, the system by which suppliers of passenger transport gain access to costumers limits the potential for price and quality competition. A rotation list for passenger buses determines when a particular bus or bus company will get another load of passengers; not demand. While this system ensures full buses, it also diminishes incentives of suppliers to provide either better services or lower prices to attract customers. Offering a lower price will not affect a bus operator's effective demand, so lower prices are not offered.

This system appears to still be in place in 2008. In addition to the constraints it imposes on price and quality competition, the system may provide rent-seeking opportunities for those who control the rotation lists. It is possible that favored companies may get better access to customers than less favored companies and such favors may be available for purchase. The

extent to which these market imperfections are affecting passenger ticket prices is unknown. However, the prospect is good that they form a barrier for the communication of price and quality information in the market. As a result, prices might be expected to remain higher, all other things being equal, even though costs of transport have fallen.

4.2 RURAL COMMUNITIES

The previous Baseline Studies suggested the following potential benefits from the ring road rehabilitation.

- *Expanded labor markets and greater employment opportunities*
- *Easier access to inputs for rural production*
- *Higher farm gate prices*
- *Improved opportunities for technical improvements.*

With respect to the benefit of expanded labor markets and greater employment opportunities, there are no measures in our collected field data that allow a direct comparison of labor markets between the Baseline Studies and the present. However, considering the frequency with which buses stop at the surveyed settlements, it is clear that access to transport services (which would allow workers to travel more broadly) has improved. In the 2003 settlement demographic data 59 villages out of 127 (46 percent) said that buses or minibuses stopped at the settlement with some frequency. In the 2008 settlement demographic data 94 out of 123 (76 percent) sample sites reported that a bus or minibus stopped at or near the settlement.

Given the greater access to transport services implied by the change in frequency of bus stops, the underlying requirement for expanded employment opportunities is met. It is quite likely that the improved supply is motivated by increased demand for transport, and that part of this increased demand is workers getting from home to work.

With respect to increased access to productive inputs, it seems apparent from the increased use of purchased inputs that availability has improved. From the passenger surveys, 14 out of 20 shopkeepers in the passenger sample were carrying goods for resale. Independent of whether or not a passenger was a shopkeeper, another 16 passengers in the survey were carrying goods for sale (about 10 percent). If these ratios are representative of passenger practice more widely, it seems apparent that advantage is being taken of improved transport services for supplying rural markets.

Farm-gate prices for wheat in the 2008 survey are calculated as the average price per kilogram for those farmers reporting sales at 44 Afs per kilogram. The 2003 Kabul to Kandahar data are recorded as Afs/seir (1 seir = 7 kg) and at 49 Afs/seir, the equivalent 2003 price is 7 Afs/kg. Similarly, the average reported price of almonds in 2008 (entire sample) was 65.7 Afs/kg. The equivalent price of almonds in 2003 was 30.86 Afs/kg. If we deflate the 2008 prices by the IMF deflator used above (1.83), the 2008 price of wheat is 24 Afs/kg and 2008 almonds is 35.9 Afs/kg.

While there is wide scope for measurement error in these farm-gate price estimates, the increase in wheat prices appears substantial and the increase in almond prices is not insubstantial. With respect to improved opportunities for technical improvements, this benefit is borne out by the increase in uptake for purchased inputs and the expended use of

mechanical cultivation (Table 3.20). The evaluation team was not able to ascertain the extent to which new production technologies are being extended by foreign or domestic technical assistance, but certainly the road would have facilitated the latter. Security concerns have likely restricted travel on the road for extension efforts by foreigners. Regardless, the use of purchased inputs and mechanized cultivation is up in the settlements surveyed.

4.3 REGIONAL AND NATIONAL ECONOMIC GROWTH

The southern ring road provides a route across Afghanistan from Iran in the east (Herat and Farah) to Pakistan in the west (Kandahar through Spin Boldak and Kabul by way of Jalalabad). Independent of any other factors, the road rehabilitation tremendously enhances the attractiveness of this route as a means of moving goods across Afghanistan. When considering other factors, however, the rehabilitation can be seen as merely moving one constraint, allowing other constraints to be binding.

The Baseline Studies, while addressing some potential trade benefits from the rehabilitation, rightly focused on the other constraints that limit the use of the road as a trade corridor. The Kabul to Kandahar Baseline Study asserted that:

Maximizing the potential trade benefits of the Kabul to Kandahar road rehabilitation will require several changes. Primary among these are:

- *Improved security along the road*
- *Changes in regulations governing cross-border shipment of goods*
- *Changes in customs duties and means of collection*
- *Improved safety regulations.*

With respect to security along the road, this has not improved from 2003 to the present. Anecdotal evidence suggests that, in terms of military hazardous, traveling the ring road has gotten more dangerous in the intervening years. While this deterioration in security cannot be blamed on the road, it has very likely limited the use of the road as a trade corridor.

In addition to the military hazard of fighting between government/international forces and insurgents, travel on the southern ring road is negatively impacted by frequent checkpoints at which bribes are extracted from drivers. The failure of the government to limit these illegal checkpoints undermines potential gains to the rehabilitation from increased international trade.

With respect to changes in regulations governing cross-border shipment of goods, this does not appear to have happened. At the border crossing at Islam Qala, near Herat, there remains a rotation of drivers who get to go pick up loads which must then be off-loaded from the carrier in Iran and loaded onto Afghan vehicles. While this is a good business for truckers in Herat, it is a costly addition to the cost of moving goods across Afghanistan. These national driver limitations are apparently reciprocated by neighboring countries. While the evaluation team was told by truckers in Herat that some Iranian drivers can drive into Afghanistan and some Afghan drivers can drive into Iran, it was noted that this is not generally the case.

The evaluation team was not able to visit Spin Boldak, to learn how border crossings are handled there and it is possible, though unlikely, that Afghanistan and Pakistan have reformed their cross-border shipping agreements. Unfortunately, reform of regional driver-nationality rules and agreements will probably have to wait for more trust and goodwill to develop between the countries.

Customs duties and their collection have improved tremendously from 2003 to the present. The ASYCUDA system of registering goods and enabling more consistent tariff collection has been implemented in Herat and Kabul. While great advances have been made with respect to normalizing customs operations at specific sites across the country, a wedge is created between up-graded customs points and un-up-graded customs points with the former (Herat) seeing a decline in traffic and the latter (Farah) an increase. By not rolling out the ASYCUDA system consistently across all border points, the Customs Department is reassigning shipping traffic in a way that may not enhance transport efficiency.

With respect to improved safety regulations, see the discussion of security along the road, above.

4.4 THE IMPACT OF TRANSPORTATION ON POVERTY AND GENDER INEQUALITY

In the standard view, gains in transport efficiency, as expected from a road improvement on the order of the southern ring road, should raise all levels of society, depending on the degree to which they are integrated into the money economy. By making travel a smaller share of the costs of working, transport efficiency gains can improve income prospects for those who live in areas where jobs are scarce. By making goods that come from elsewhere easier to transport, transport efficiency gains can lower the cost of goods in the village. Goods sold out of the village will fetch a higher price, to the extent that transport costs are diminished.

The distribution of gains from the road rehabilitation, while biased toward the higher income categories, appears to continue into the lowest income categories, as shown in Table 3.11, above. However, our household sample is limited to those with a compound which enumerators were able to visit. Widows and households without an able-bodied male wage earner are less likely to gain as much from the road rehabilitation. On the other hand, to the extent that the road provides easier access to not only jobs and cheaper goods but also to health care and schools, it provides a basis for improved well-being of all classes. But, in and of itself, the road will not change deeply held social conventions.

With respect to gender inequality, only four of the sample of 166 passengers surveyed with the passenger questionnaire were women. This is as much a function of having male survey enumerators as any dearth of female passengers. From the field work in the Herat bus stop it was clear that women travel by bus and minibus. They may still need to be accompanied by a male family member, which raises their cost of travel, but they are in evidence on buses. From the household survey, the average annual number of visits to a medical center is higher for women than men (9.3 versus 7.7 visits per year). If women are as able as men to use private transport, they may benefit that much more from the road rehabilitation.

Afghanistan, as a landlocked country with low capital and labor productivity, needs improved physical infrastructure with which to improve its economic prospects. The rehabilitation of the southern ring road puts one large piece of better infrastructure in place. Many constraints

remain to realizing the full economic potential of the ring road both generally and with special reference to the poor and women. But the road itself is no longer a constraint.

V. SUMMARY AND RECOMMENDATIONS

5.1 SUMMARY OF THE FINDINGS

Considerable benefits have been generated by the rehabilitation of the southern ring road. Travel along the road has increased 58 percent over all between the 2003 Baseline Studies and the present. Travel times are much reduced. Economic activity has increased as indicated by higher incomes, greater use of modern agricultural technologies, and larger gross daily sales in village shops. Social welfare has been enhanced as indicated by easier access to schools and health clinics.

These gains cannot be fully attributed to the rehabilitation of the southern ring road, but are merely coincident. Certainly reduced travel times are a function of the rehabilitation and it is reasonable to assume that these work through to economic gains for activities that depend on the road being there. Reduced travel costs are implied by reduced travel times but we do not see a significant decline in passenger transport (ticket) prices.

Constraints to more complete realization of the economic potential of the southern ring road include: security issues, rent-seeking along the road, and market structure. Security along the road has declined since 2003 by anecdotal report. Diminished security undermines realization of the full potential of the rehabilitation by increasing (risk-adjusted) costs for both travelers and transporters. This dampens economic gains to the rehabilitation.

Rent-seeking by operators of traffic checkpoints who extort bribes from transporters is a significant constraint on realizing the potential gains to the rehabilitation. Because of a lack of transparency about official costs for using the road, there is uncertainty about what are official versus unofficial transport tariffs. While the direct money costs of illegal traffic stops are not so high, they increase time and fuel costs depending on their frequency. As one trucker from Herat put it, “We do not even get into high gear before there is another traffic stop.”

Illegal tariffs capture a considerable share of the benefit of the road rehabilitation. They undermine the shift to alternative agricultural crops by raising the costs of transporting them, and they undermine confidence in the government.

The structure of supply in Afghan transport markets is burdened by practices that undermine the benefits to competition. In particular, the business that a transporter gets is determined by his place in an administratively determined rotation. A transporter who offers better or lower cost services has no advantage if he must wait the same time as any other transporter to get to the top of the list. Thus there is little incentive for quality or price enhancements.

Moreover, these administrative restraints on the market engender excess capacity in the shipping industry. The rents that accrue to such a managed market are thereby dissipated over a too large number of firms.

5.2 RECOMMENDATIONS

The security issue is beyond the scope of the evaluation team to address – except to say that until it is improved, benefits to the rehabilitation will be limited. It is puzzling that more Afghans do not take sides against those who undermine security, but apparently this has not happened.

With respect to road-side rent-seeking, this can and should be addressed by better policing. The practical problem in this is that many of these stops are manned by police. An effort should be undertaken to find out who is providing sanction for these traffic stops. Those higher level officials should be prosecuted. Moreover, the government should provide better information regarding official tariffs for road use so that unofficial traffic stops become more apparent.

With respect to the structure of the transport market, more intensive study should be undertaken to learn how the current structure is maintained and, in particular, who are the winners and who the losers are in the current system. By better understanding the current system, practical means for reforming it can be determined. There are opaque relationships between local governments and transporter stations that need to be better understood before this system can be reformed.

A final recommendation addresses the research undertaken for the current report. Between the 2003 and 2008 survey data, there is a significant body of information about conditions in the ZOI and passengers and transporters operating along the ring road. The current study has been limited to a comparison of road impact indicators established in the 2003 study. Many additional questions and issues could be addressed through a more thorough analysis of these datasets.

It is recommended that USAID allocate resources to combine the two survey datasets in a relational database so that they can be more conveniently and precisely analyzed. This would open the door to many other possible statistical analyses which were not done under the present study because: a) it was outside the scope, and b) it was difficult to do with data in a spreadsheet format.

REFERENCES

GAO, 2008 (Draft). "Afghanistan Reconstruction: Progress Made in Constructing Roads, But Assessments for Determining Impact and a Sustainable Maintenance Program are Needed.

IMF, 2008. http://www.imf.org/external/pubs/ft/weo/2008/01/weodata/index.aspx

Louis Berger Group, 2004. "Socio-Economic Baseline Study: Kabul to Kandahar Highway". REFS Project for USAID/Kabul.

Louis Berger Group, 2004. "Socio-Economic Baseline Study: Kandahar to Herat Highway". REFS Project for USAID/Kabul.

ROADS SOCIO-ECONOMIC IMPACT ASSESSMENT

PART 2

NANGAHAR-KUNAR AND PANJSHIR VALLEY PROVINCIAL ROADS
BALKH DISTRICT AND KUNDUZ DISTRICT ROADS

DISCLAIMER:

The author's views expressed in this report do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Part II - Table of Contents

EXECUTIVE SUMMARY…….1

1. INTRODUCTION 7

1.1 Background of Provincial and District Roads Rehabilitation…..7
1.2 Study Purpose and Goals…..12
1.3 Report Organizational Plan…..12

2. METHODOLOG 13

2.1 Road Improvement and Socio-Economic Development: A Conceptual Framework…..13
2.2 Survey Design, Approaches and Methodology…..14
2.3 Double-Difference Method and Regression Model…..18
2.4 Scoping Survey and Selection of Sample Villages and Households…..19
2.5 Impact Indicators, Survey Questionnaire and Enumeration…..20
2.6 Other Methods…..22

3. PROJECT LEVEL IMPACT OF ROAD FINDINGS.....22

3.1 Employment Rates, Occupation and Wage…..22
3.2 Occupation and Wages…..23
3.3 Women's Employment…..25
3.4 Access to School…..25
3.5 Access to Health Care…..27
3.6 Incidence of Poverty…..28
3.7 Trade Impact Indicator…..30
3.8 Agriculture Impact Indicators…..32
3.9 Impact Analysis by Using Regression Model…..34

4. OVERALL IMPACT AT PROVINCE AND DISTRICT LEVEL 36

4.1 Changing Pattern of Demographic Characteristics…..36
4.2 Recovery of the Economy…..39
4.3 Impact on Education and Health…..42
4.4 Impact on Poverty and Gender Equality…..44

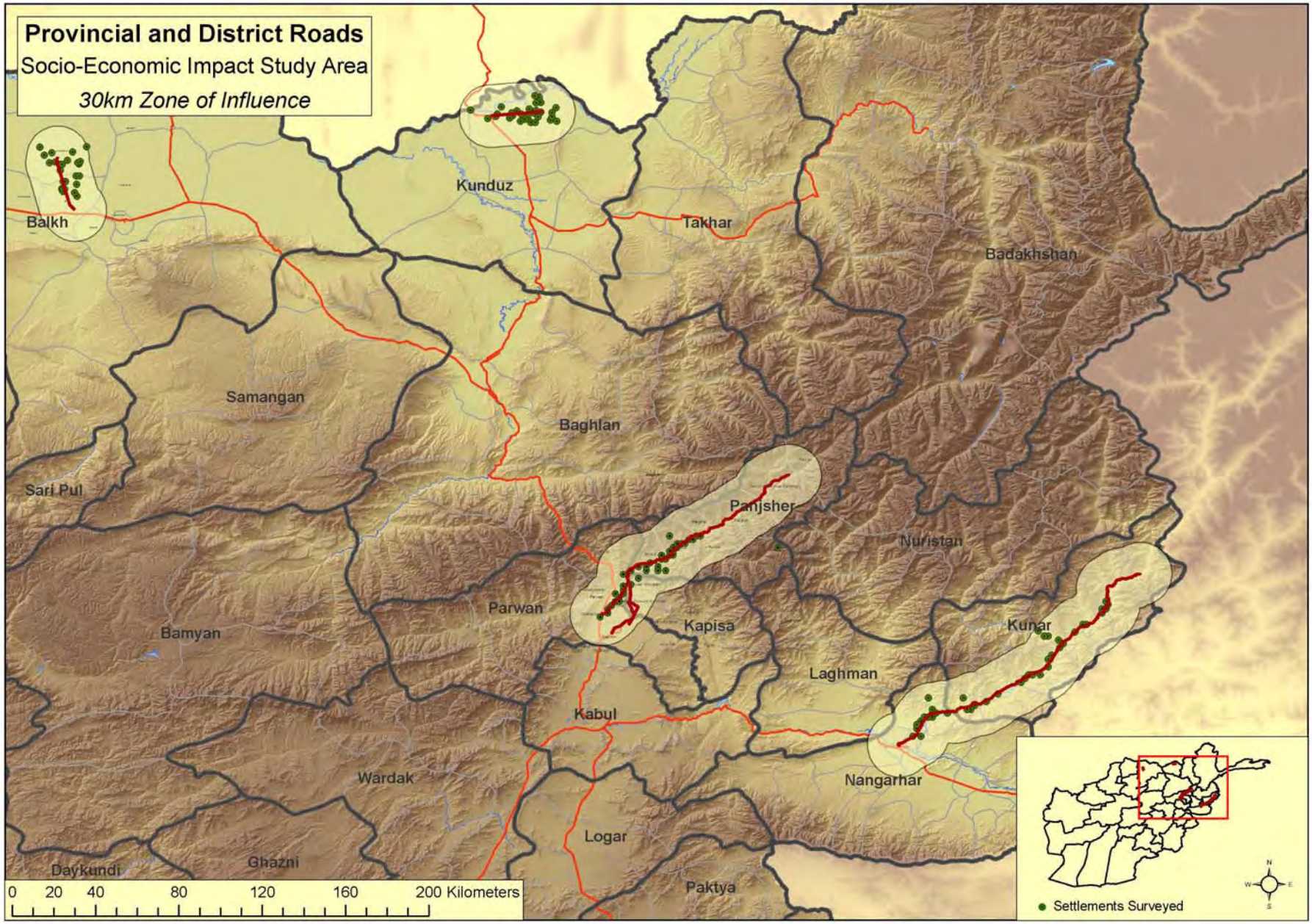
5. PROJECT LEVEL IMPACT OF ROAD REHABILITATION 45

5.1 Project Design…..45
5.2 Development of an Effective M & E System…..46
5.3 M & E Indicators and Sustainability Parameters…..47
5.4 Follow-Up…..49

6. SUMMARY OF FINDINGS.....49

6.1 Summary of Findings…..49
6.2 Recommendations…..51

ANNEX A: Scope of Work 1
ANNEX B: List of Survey Villages 10
ANNEX C: Survey Questionnaires 12


Provincial and District Roads
Socio-Economic Impact Study Area
30km Zone of Influence
Balkh
Kunduz
Takhar
Badakhshan
Samangan
Baghlan
Sari Pul
Panjsher
Nuristan
Parwan
Kapisa
Kunar
Bamyan
Laghman
Kabul
Nangarhar
Wardak
Logar
Daykundi
Ghazni
Paktya
0 20 40 80 120 160 200 Kilometers
Settlements Surveyed

EXECUTIVE SUMMARY

Checchi and Company Consulting, Inc. was contracted by USAID/Afghanistan through the SUPPORT Program to carry out an assessment of socio-economic impact of the Kabul to Kandahar and Kandahar to Herat Roads and four Provincial and District Roads, namely:

1. Jalalabad to Asmar road (the Nangarhar/Kunar Provincial road)
2. Panjshir Valley road (the Panjshir Provincial road)
3. Balkh-Dawlatabad road (the Balkh District road), and the
4. Imam Sahib Connector road (the Kunduz District road)

This Executive Summary pertains to the impact study of the above mentioned four provincial and district roads.

Construction and rehabilitation of these four project roads was executed between August 2005 and November 2007. The main objectives of the impact study were to assess the socio-economic impact of these four project roads using eleven indicators listed in the SOW[7].

Since baseline surveys were not carried out before implementing the above road projects, the study team developed an alternative approach to ascertain socio-economic impact. Under this alternative approach, two categories of villages were selected as follows:

1. Villages located within the zone of influence (ZOI), and
2. Villages located outside the ZOI of the project road.

The second category is designated as the '*control*' villages. Villages within the ZOI were further categorized into (i) '*progressive*' and (ii) '*traditional*' villages. The existence of road infrastructure is common in both *progressive* and *traditional* villages. The only difference between them is the *market infrastructure*.

Between the *traditional* and *control villages*, the existence of a road in the traditional villages is the only difference. Thus, a comparison between a traditional and control village shows the impact of the road intervention; and a comparison between the progressive and traditional village and/or between the progressive and control village shows how other interventions (including road infrastructure) affects economic growth.

Fifty-two progressive villages, thirty-two traditional villages, and twelve control villages were selected for the socio-economic survey. The Social Development and Legal Rights (SDLR), a local firm was contracted through SUPPORT to carry out the socio-economic surveys and conduct traffic counts on the project roads. In some cases, the Study Team adopted other approaches such as reflexive, generic and shadow comparisons to validate the survey findings.

[7] See Annex-

RESULTS OF TRAFFIC COUNTS AND SOCIO-ECONOMIC IMPACTS

On the four project roads together, frequency of operation is highest for car (8,058/day) followed by minibus (2,001/day), freight vehicles (1,673/day). In terms of per-km road use per day, Nangarhar/Kunar provincial road shows the lowest volume in terms of per-km of road use (43 vehicles/km/day). The corresponding figures for Panjshir Valley provincial road, and Balkh and Kunduz district roads are 45 vehicle/km/day, 97 vehicles/km/day and 89 vehicles/km/day respectively. District roads are more effectively used by the transport operators as P***er-km volume of traffic is double on district roads compared to provincial roads***. This seems to indicate prioritization of district roads rehabilitation as a future road network development strategy.

Bus operation is the lowest among all types of vehicles on the project roads. Frequency of Car operation is 1988% higher than bus, minibus operation is 418% higher than bus, and freight vehicle operation is 333% higher than the bus operation Generally cars and mini-buses are used by the middle and higher middle class families, and freight by the business people. On this count it can be remarked that the middle-class and higher middle-class families and the business people are receiving more immediate benefits of the road investments.

Overall, the road(s) has decreased the travel time by 50% and above. Road has reduced travel time from Bazarak to Kabul by about a half, from five hours to just less than two and a half hours. On the Nangarhar/Kunar provincial road, mini bus passengers save time by 30% compared to pre-project period. On the Panjshir Valley Provincial road the corresponding figure is about 75%. The project roads thus created significant impact on time saving by the passengers.

The individual monthly income of an earning member in all ZOI villages is about 1.59 times higher than that of the “control villages”. A comparison between the “traditional villages” within the ZOI and the “control villages” seem to indicate that the road rehabilitation has increased individual income by about 51.11%. Within the ZOI, the individual income of the sample people in the “progressive villages” is 8.20% higher than that of the “traditional villages”.

As both progressive and traditional villages are within ZOI only the difference is market, it seem to indicate that the market infrastructure alone brings no significant increase in **real income** as inflation rate is around 10 per annum over the last three years. But household income is 23.58% higher in “progressive” villages compared to “traditional” villages. On the other hand, an average household income in “traditional villages” within the ZOI is about 1.50 times (50% higher) higher than in “control villages”, which seem to indicate that road improvement has quite a significant impact on increase in household income.

Road improvement has also impacted on the employment of the household members, though the rate is very low. Average participation rate in ZOI villages is about 19.4%. This is about one-half of the national average of 40%, where as the “traditional villages” show slightly higher employment rate (21.8%) compared to “progressive villages” (18.12%). Progressive and traditional villages together constitute about 26 diversified occupations, whereas this is only three in control villages. This seem to indicate that road and market infrastructure together

impacted on diversified occupation though the employment rate of the family members is still not satisfactory.

The monthly wage of a “general labour” is around 4,500 Afs whereas a “skilled labour” such as carpenter, or a mason, earns about 8,000 to 10, 0000 Afs or more per month. In control villages skilled labour is very rare, but in traditional and progressive villages in the ZOI have significant numbers of skilled labour, which seem to indicate that the road and market infrastructure together have brought about quite a significant impact on development of skill laborers in the ZOI villages.

Road investment brings about no significant impact on the employment of rural women. The present survey covered 3,905 family members, and after a careful analysis of all data, the study team finds only two women members employed: one is self-employed (in tailoring), and the other is a nurse. The tailoring female is twenty-two years old, and maintains five members of her immediate family – old father, mother, unemployed 24 year old brother and a younger sister. This alarming situation and gender imbalance in the rural employment market needs to be addressed as a top priority issue.

The percentage of children enrolled in primary schools is highest in “progressive villages” (57.38%) and lowest in “control villages” (32.01%). The overall access of the children to primary schools in ZOI villages is 47.23%, and that of control villages is 32.01%. A comparison between the “control” and “traditional villages” seem to indicate that road improvement program has quite a significant impact on children enrolment in primary education, though the overall picture of the children’s access to primary school is not satisfactory.

Roughly 75% of the children living in the “control” villages and about 52% of the children living in ZOI villages are not enrolled in primary schools, and thus they remain out of the blessing of education. Of the children who are attending schools, female students are always less, which varies from 22% in control villages to 32% in the progressive villages. On stepping to higher education, drop-out rates are higher for female students than male students due to financial and cultural barriers including early marriage, etc. This seems to indicate that gender gap in education sector is also high. All these issues need to be properly addressed both at the policy level as well as the project level.

Road improvements have brought about a significant impact on access to health care centre. The highest frequency of visits to the healthcare centers is observed by the women living in progressive villages (22.3/year) in ZOI. Men and women who visited the nearest healthcare centre, 74.3% of them expressed that they have used the project road while visiting the centre. Overall 93.4% of the visitors living in the progressive village have used the project road while visiting the healthcare centers.

No extensive investigation could be done by the study on incidence of poverty. Though road and market infrastructure and agricultural technology have impacted upon both individual and household income in ZOI villages, a gloomy picture is observed for those people and households who are grouped in the lowest quintile. The 5th quintile depicts that those who are individual

level income earners, their average income is only 1,236 Afs($25) per month, and the household income of this quintiles is only 1,996 Afs ($40) per month. That is per capita income per month is only $6 for those who are living at the bottom stratum. On the other hand, per capita income per month varies from $6 to $28 among the 2nd to 4th quintiles, indicating that 80% of the households in ZOI still lie below poverty lines. Pro-poor and integrated approach in future project design is suggested to address the poverty issue.

The road improvement project has resulted in substantial increase in the number of shops within markets in ZOI villages. Overall number of shops have almost doubled from 96 shops to 190 (+97%) after" the road construction. More than 90% of interviewed shop-owners have expressed that they have been using the project road for getting their merchandize. Average sale volume per-day in all the survey market is 314,410 Afs ($6,288), and average daily sales volume of an individual shop is about 1,655 Afs (S33). In comparison with 2003 Baseline Surveys of K-K and K-H roads it seem to indicate that there is quite a significant increase in volume of sales in the markets in ZOI along the four provincial district project roads.

The Afghan farmers are adopting six modern agricultural technologies, though not all farmers have equal access to them. Adoption of modern agricultural technology in ZOI villages and control villages are almost similar which seem to indicate that the agricultural development intervention has expanded to the remote potential areas as well. Most of the farmers are still producing output for household consumption.

The results of the regression models lend strongly support to the hypothesized effect of road improvement. "Distance of household from the road" is found to be negatively related to household income, meaning that longer is the distance of a household from the road, lower is the household income. In the "progressive villages", an increase of 1km distance for a household from the road, causes a fall in income by 0.112 Afs whereas in the "traditional villages" the corresponding figure is much larger, 4.12 Afs. The overall affect of using seeds, fertilizers and pesticides as well as the existence of market and road have significant impact on household income. The R^2 =0.69 for this equation indicates that 69% of the increase in household income is explained by these factors in "progressive villages".

POTENTIAL PROBLEMS FACING THE ROAD PROJECT DESIGNS

The four road projects under study are facing, potentially, several problems in their project design to achieve the project goals. The project design was not "pro-poor" in nature, and lacked in "Benefit Monitoring and Evaluation (BME) systems" and "sustainability parameters". If future, long-term maintenance of project roads depends on foreign assistance (which is not part of the project design), the project lacks long-term sustainability. There is a danger that maintaining social and economic benefits along the project ZOI and beyond will not hold in the long-run, unless a plan for long-term repair and maintenance, based on local resources, is integrated into the project design for each road.

RECOMMENDATIONS

To achieve socio-economic goals, the study team provides the following recommendations:

Project Design: To achieve the project goals, particularly of poverty alleviation and gender equality, "pro-poor" project design and integration of women in all stages of planning, design, and implementation of the project would be most effective. The "gender-neutral" and "people-neutral" project design will not provide any substantial impact on poverty reduction women development. Project designer and planners prepare projects on the perception that the poor and women will receive benefits equally like others. The reality however is that their accessibility to project facilities is constrained by some other factors for which they can not receive maximum benefits out of it. The study team recommends that the software part of a road project may be implanted with NGO partnership.

"Benefit Monitoring and Evaluation (BME) system and "sustainability parameters" are important elements in the project design, without which project may not achieve its long-term goals. If for example, maintenance of the project depends on foreign assistance and if the assistance is withdrawn, then benefits will diminish in the long-run due to non-maintenance of the project facilities. There is a danger that maintaining social and economic benefits along the project ZOI and beyond will not hold in the long-run, unless a plan for long-term repair and maintenance, based on local resources, is integrated into the project.

An ideal project design also includes evaluation of the projects at different stages by the external bodies. To apply "Double-difference Method", an ideal method of road project evaluation, it requires baseline surveys for both ZOI and control villages. The follow-up studies also carry out surveys in the same villages to estimate the net benefit of the project.

LINKING RURAL ROADS WITH THE PROJECT ROADS AND MARKETS

The *Market* is the centre of all rural economic activities, and it influences the economic diversification and productivity. Linking rural roads with markets and markets to project roads will create external demand for the local product(s). Inputs can be easily available with the producer in the remote areas. Rural roads of Afghanistan constitute about 50% of the total road network of the country[8]. To maximize benefit of the rural people, linking rural roads with markets and markets with project roads deserves top consideration and priority.

MARKET IMPROVEMENT

Potential rural markets may be identified and improved on a priority basis to facilitate more economic activities in the market, which will ultimately create demand for rural produce and thus contributes to the growth of the economy.

[8] Road Master Plan, 2006.

RURAL SERVICE CENTRE

Establishment of a rural service centre at the market corner may be suggested as a part of market infrastructure development. Rural people have limited information on market demand, and international markets. They do not actually know how to get credit, what modern varieties of inputs are available, how to produce new commodities, where to buy input, where to sell output, etc. This centre will also provide advice on extension services and on opening new business. This Rural Service Centre sub-project may be implemented on a pilot basis, and if successful it can be replicated widely.

SENSE OF OWNERSHIP DEVELOPMENT

Public discussion in project formulation, scheme selection by local participation, partial contribution in project implementation by the project beneficiaries will create sense of ownership of the project facilities. In long-term routine maintenance program, NGO-formed target group poor people (including women) may be involved. They will serve two purposes: routine maintenance and road-side tree plantation. Ownership of trees may be shared between the road authority concerned and the routine maintenance workers, and NGOs. The NGOs will be responsible for supervising routine maintenance, and tree plantation activities, imparting training, and providing advice on extension services, and income generating activities of these target group poor people. This partnership program (road authority, NGO, Routine maintenance workers, and community- as community people have selected the scheme and provided partial contribution) will create sense of ownership among all the beneficiaries.

I. INTRODUCTION

1.1 BACKGROUND OF PROVINCIAL AND DISTRICT ROADS REHABILITATION

The United States Agency for International Development (USAID) provides support to the Islamic Republic of Afghanistan (IRoA) in the development of its transport sector and provides much needed resources for the infrastructure development of Afghan communities. Part of the USAID 'Secondary Roads Reconstruction Program' included the rehabilitation of four provincial and district roads, namely:

1) Jalalabad to Asmar road (Nangahar/Kunar Provincial road)
2) Panjshir Valley road (Panjshir Provincial road)
3) Balk-Dawlatabad road (Balkh District road), and
4) Imam Sahib Connector road (Kunduz District road)

Table 1.1 provides basic background information concerning rehabilitation of these roads. On several counts these four roads deserved priority interventions.

Table 1.1: Road Length and Construction Period of Provincial and District Roads.

Type of the Road	Name of the Road	Road Length (km)	Starting Date of Construction	Completion Date
Provincial Road	Nangahar/Kunar	122	Oct 22, 2005	March 2007
	Panjshir Valley	67	June 23, 2005	Dec, 2006
District Road	Balkh	27	Aug 26, 2006	Nov 1st, 2007
	Kunduz	19	Sept 13, 2006	Aug 30, 2007

Source: USAID/OIEE

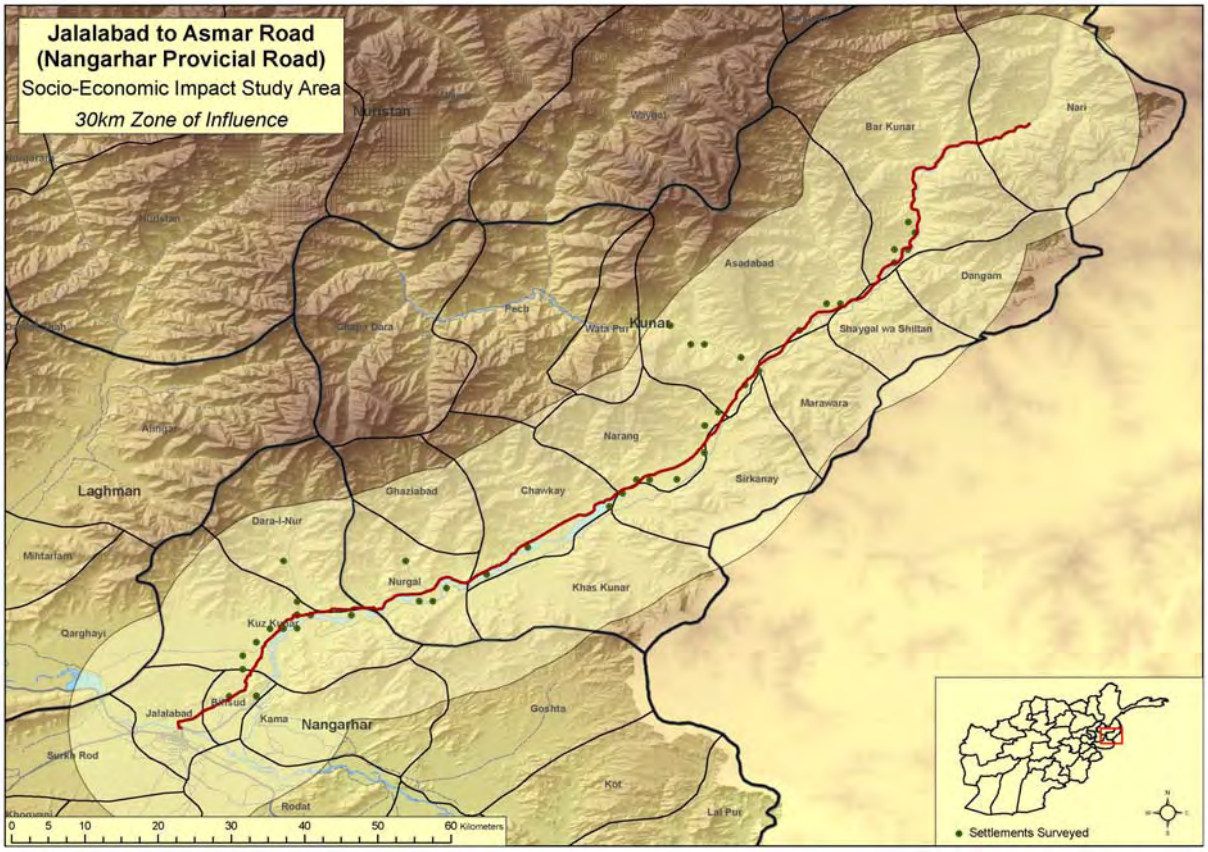
Nangahar Province is located in the eastern part of Afghanistan and shares a border with Pakistan. In terms of population Nangahar ranks 3rd, next to Kabul and Herat[9]. The Jalalabad to Asmar road links the north-eastern provinces of Nangahar, Kunar, and Nuristan. As the road connects the three provinces, it was expected that it would improve economic opportunities and trade among them, most dramatically in Nuristan, which has been isolated for centuries.

Jalalabad, the capital city of Nangahar, lies on an ancient trade route leading from Kabul via the Khyber Pass to Peshawar and the Indian subcontinent. The province is also endowed with significant natural resources. The rehabilitation of 122 kilometers of the Jalalabad to Asmar road

[9] Islamic Republic of Afghanistan, Estimated Population of Afghanistan 2008-2009', Central Statistical Organization.

(Nangahar Provincial Road) started on October 22, 2005 and was completed in March 2007.

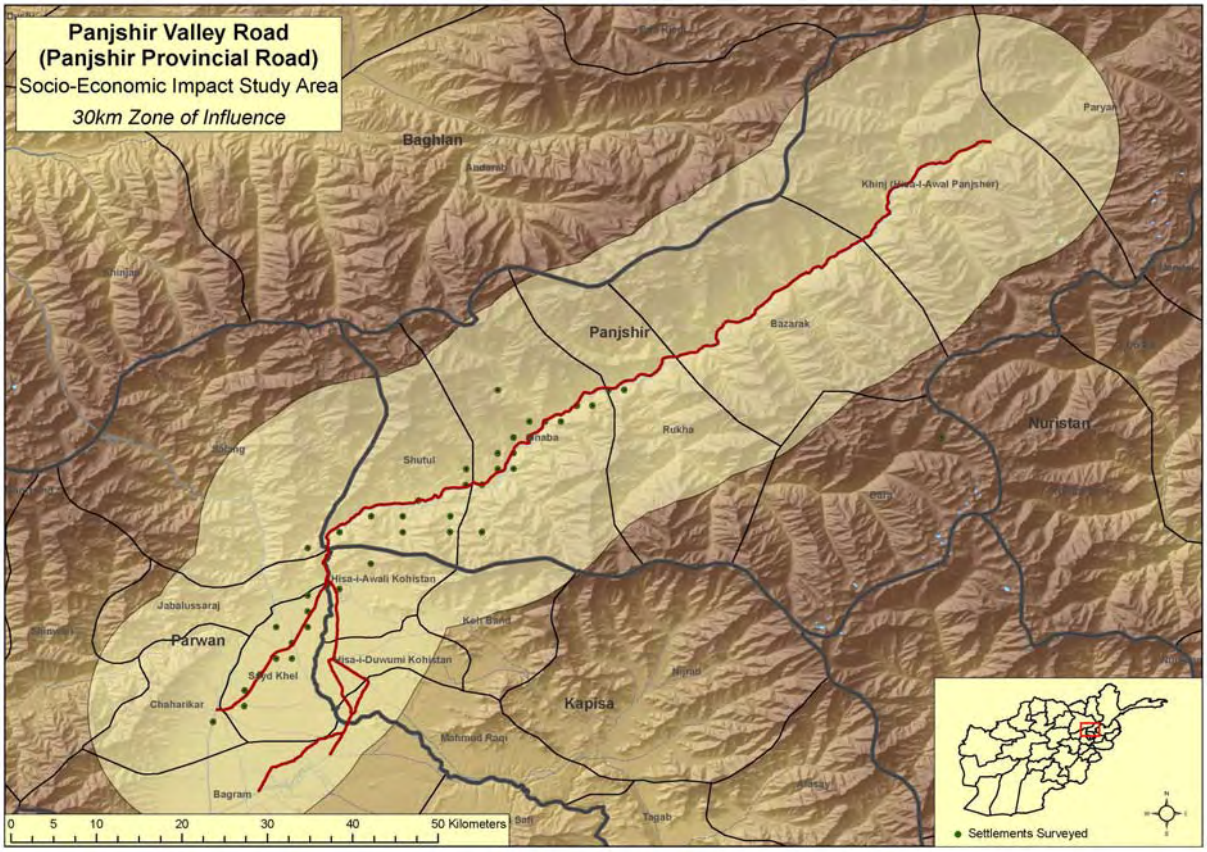
Map of the Jalalabad to Asmar (Nangahar Provincial Road)



Panjshir Province was established in April 2004. Prior to that it was a part of Parwan province. It contains the Panjshir valley, and its area is divided by the Panjshir River. The mountainous Panjshir Valley has long been isolated[10]. The road alignment passes through most major villages in the southern half of the valley, and it cuts through some of the most remote and difficult mountain terrain in the area. The province is classified as a 'rural province' as it has no urban areas. As a new but economically backward province, it deserves priority in road investment to establish a regional balance. The project road is about 67 kilometers long. Its rehabilitation started in June 2005 and was completed in December 2006.

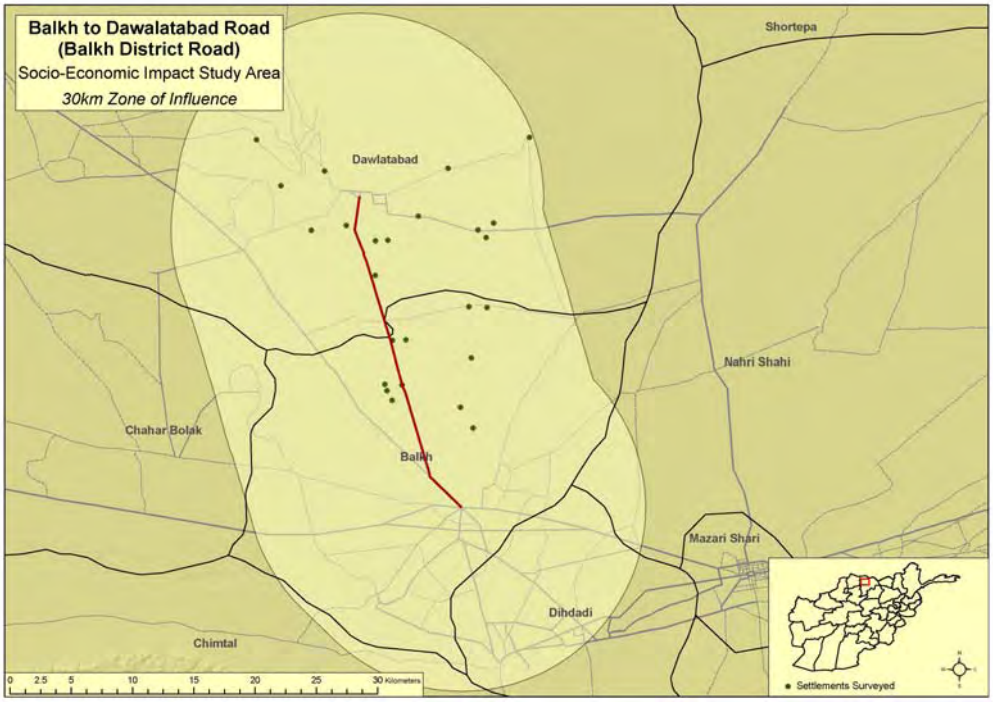
[10] Panjshir Valley was the only place in Afghanistan that was never conquered by the Taliban or by the Russians, despite nine attempts.

Map of the Panjshir Valley Road (Panjshir Provincial Road)

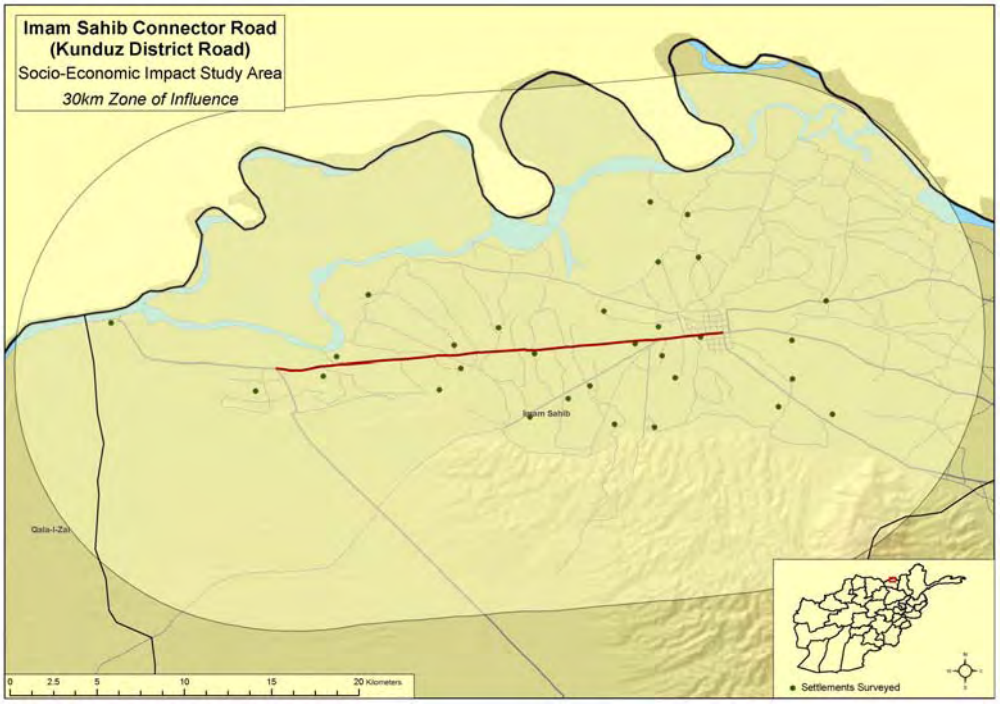


Balkh Province is located in the north of Afghanistan. It has a border with Uzbekistan in the north, and in the north-west with Tajikistan. ***Kunduz Province*** is also located in the north of Afghanistan and has a border with Tajikistan. Both the Balkh-Dawlatabad road (Balkh District Road) and the Imam Sahib Connector road (Kunduz District Road) have received priority considerations for improvement. Rehabilitation work for both the district roads, Balkh and Kunduz, started in August-September 2006 and was completed in August-November 2007.

Map of the Balkh to Dawlatabad Road (Balkh District Road)



Map of the Imam Sahib Connector Road (Kunduz District Road)



UNOPS and REFS were awarded a contract by USAID for the rehabilitation of the two provincial roads: Nangahar/Kunar and Panjshir Valley. The contract awarded to UNOPS was for construction of the Balkh and Kunduz district roads. Local construction companies were involved in the construction/rehabilitation of these roads. BSC, an international Indian construction company and ENTES, a Turkish construction company, were engaged in construction/rehabilitation work of the Nangahar/Kunar provincial road and the Panjshir Valley provincial road, respectively.

The Balkh District road was divided into three sections. Sections 1 & 3 were rehabilitated by Balkhi Construction Company (BAL), and the mid-section (section 2) was rehabilitated by the Blue Star Construction Company (BSCC).

Khalid Belal Construction Company, a joint venture of KDC-SRC, was responsible for the rehabilitation of the Kunduz district road.

During the period of construction the **Nangahar/Kunar and Panjshir Valley** roads consumed direct employment of 31,117 person days per month and 16,749 person days per month, respectively. This indicates that slightly higher person days per kilometre of road construction were required for the Jalalabad to Asmar road (255.50 person days/km) than for the Panjshir Valley road (249.98 person days/km). No statistics on total person days of employment were available for the two district roads. However, USAID's OIEE have estimated that 856 laborers/month (22,256 person days/month) and 1,206 laborers/month (31,356 person days/month) were employed during the construction of the Balkh – Dawlatabad road and Imam Sahib Connector road, respectively. Shown below is a portion of the Nangahar – Kunar Provincial road.

During the project design stage, no feasibility study was carried out and during the implementation of the project no benefit monitoring and evaluation system was in place. After completion of the project no project completion report (PCR) was prepared by an external body. IRD was responsible for quality control during the period of project implementation.

1.2 STUDY PURPOSE AND GOALS

CHECCHI AND COMPANY CONSULTING, INC was contracted by USAID to carry out an assessment of the socio-economic impact of the Southern Ring Road (SRR) and the four Provincial and District Roads (PDR). The SRR has been presented in Part I of this report. This part (Part-II) concentrates on the socio-economic assessment of the four provincial and district roads mentioned above.

The purpose of this study is to estimate the current year values and quantify and describe the socio-economic impact of the improved roads. The results of this evaluation are intended to effectively communicate project effects to policy makers in the U.S Government and the Government of Afghanistan[11]. This will also provide a retrospective study for future courses of action to compare the values of the indicators to be used in the current year to the values estimated in future years.

1.3 REPORT ORGANIZATIONAL PLAN

This part of the report is divided into five sections, organized as follows:

Section 1: Provides background information of the project roads rehabilitation, study purpose and goals. This section also describes the report organization plan of the study.

Section 2: Provides methodology of the study, which describes a conceptual framework of road improvement and socio-economic development, survey design, approaches and methodology, analytical issues of the double-difference method and regression model, survey questionnaire, traffic count and survey enumeration. In the absence of a baseline survey, the section describes how the Study Team developed an alternative approach to conduct this study.

Section 3: Provides a detailed project level impact analysis based on survey data for 11 indicators as prescribed in the scope of work (SOW)[12]. This section shows how the evaluation was conducted and the different statistical techniques were used to quantify the results. Among others, the results were validated through cross-checking with the Study Team's field visits and opinion surveys.

Section 4: This section attempts to describe the overall development impact on the provincial and district level economies. It provides an overview of impacts on demography, economic recovery, access to health and education, and on poverty and on gender equality. The section also reviews activities, achievements, failures and successes of other development agencies operating in the four provinces to learn lessons for future project design.

Section 5: This section addresses issues relating to the lack of Monitoring and Evaluation (M&E) systems and sustainability parameters in the project design. Finally, it provides a suggestive framework for M&E systems in future project design.

Section 6: This final section provides a summary of findings as well as recommendations.

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[11] Scope of Work, *opcit.,p.6*

[12] See Scope of Work provided in the annex- (Part-1)

II. METHODOLOGY

2.1 ROAD IMPROVEMENT AND SOCIO-ECONOMIC DEVELOPMENT: A CONCEPTUAL FRAMEWORK

This sub-section conceptualizes how road improvement supposedly impacts economic and social development. The present socio-economic impact study is designed to quantify the different causal relationships as modeled in this framework (see Flow Chart-1).

Road improvement directly affects (i) the Transport sector, and directly or indirectly on (ii) the Trade sector, (iii) the Household sector, (iv) the Agricultural sector and (v) the Institutional sector.

Transportation Service is the proximate sector on which the immediate impact of road improvement is likely to be felt. Improvement of roads are expected to lead to (i) an increase in the volume of traffic, freight and passenger, (ii) a decrease in travel time, (iii) a decrease in transport charges resulting in user cost savings, and (iv) changes in the patterns of ownership in the transport sector.

Improvement in transport infrastructure will have immediate impacts on the **Trade sector.** These effects would include: (i) location spread of markets, (ii) an increase in the size of the markets in terms of number of buyers and traders and turnover, leading to rise to toll revenue, (iii) changes in the composition of goods and services traded, and (iv) changes in the level of prices of goods exported from and imported into the area.

By providing easier access to input and to market for output, improvements of trade and transport infrastructure as a result of road improvement are likely to have positive impacts on various **production and service sectors**. The possible impacts on **agricultural production** include: (i) intensification of input use, (ii) improved input use, and transition to improved technology, (iii) increased volume of output, (iv) changes in output mix, and (v) rise in the level of productivity. It is likely that better infrastructure will also have an impact on **non-farm activities** such as: (i) lower consumption prices, (ii) increased diversity in products and services available locally, (iii) new employment opportunities, and (iv) higher non-agricultural wages.

Road improvement and the consequent changes in the transport sector are likely to facilitate improvements in the **institutional service sector**. Major components of this sector are: (i) health care institutions, (ii) educational institutions, (iii) financial institutions, and (iv) extension services. Apart from the likely impact of increases in the number of these institutions, both the volume and quality of services are likely to go up as a result of improvement in the roads and transportation. In the case of educational institutions, favorable effects are expected with respect to the level of enrolment, attendance, and drop-outs by gender.

The direct effect of improvement in transportation and trade infrastructure and their indirect effects through production and services sectors and institutional service lead to change in the

Household sector. The possible impacts at the household level are changes in both economic and non-economic attributes of the household, including: (i) the level and characteristics of the employment of the household members due to changes in both demand and supply of labor, (ii) the level and sources of wage and non-wage income and, by implication of the poverty situation, (iii) consumption and marketed surplus, (iv) use of transport, (v) demand for institutional services such as healthcare and education, (vi) savings and investment, (vii) ownership of assets, and (viii) demographic features.

This study concentrates on analysis of the following 11 indicators listed in the SOW[13]:

1. Household Incomes
2. Employment
3. Wages
4. Incidence of Poverty
5. Travel Times
6. Travel Costs
7. Cost of Public Transportation
8. Cost of Freight Transport
9. Prices of Key Foodstuffs
10. Shopkeeper Monthly Sales
11. Improved Access to Healthcare and Education

2.2 SURVEY DESIGN, APPROACHES AND METHODOLOGY

Rehabilitation works of the selected four Provincial and District roads were completed in 2006 and 2007. No baseline surveys were carried out during the pre-implementation period. Interim and on-going monitoring and evaluation (M&E) systems were absent in the project design. Since the roads under study were improved some time ago and no baseline estimates are available, we employed an alternative approach to ascertain socio-economic impact. Under this alternative approach two categories of villages were selected – (i) villages from within the zone of influence (ZOI)[14] and (ii) villages without the ZOI of the project road. The second category is designated as the 'control' villages.

Villages within the ZOI were further categorized into (i) '**progressive**' and (ii) '**traditional**' villages. This was done to make the control villages more comparable with the traditional villages in terms of socio-economic characteristics, as the control villages must possess the same relevant characteristics as the villages of the ZOI receiving the intervention.

[13] Please see SOW in the Annex

[14] The zone of influence of a rural road can be defined in different ways, depending upon the local situation of how project roads are connected to the existing network. It is not part of this activity to develop a standard methodology for defining a zone of influence appropriate for every situation. The view is that this cannot in fact be done because the appropriate definition needs to consider a combination of many factors relating to the characteristics of the road itself and the characteristics of the population around it (e.g. population density, spatial dispersion of the population, [World Bank, 'Socio-Economic Assessment of Rural Roads: Methodology and Questionnaire', World Bank, 2002}. During village scoping survey for the present study, the zone of influence (ZOI) is a 20 km swath (10 km on either side of the road) paralleling the course of the road. It may be mentioned here that the Baseline survey of K-K and K-H Roads considered 15 km on either side of the road as the ZOI.

SELECTION CRITERIA OF PROGRESSIVE, TRADITIONAL AND CONTROL VILLAGES

The 2008 Study categorized three distinct criteria: (i) adoption of modern agricultural technology, as the Afghan economy is agriculture-based, (ii) existence of a market, which is the center of rural economic activities, (ii) existence of a road, which is the project intervention mechanism.

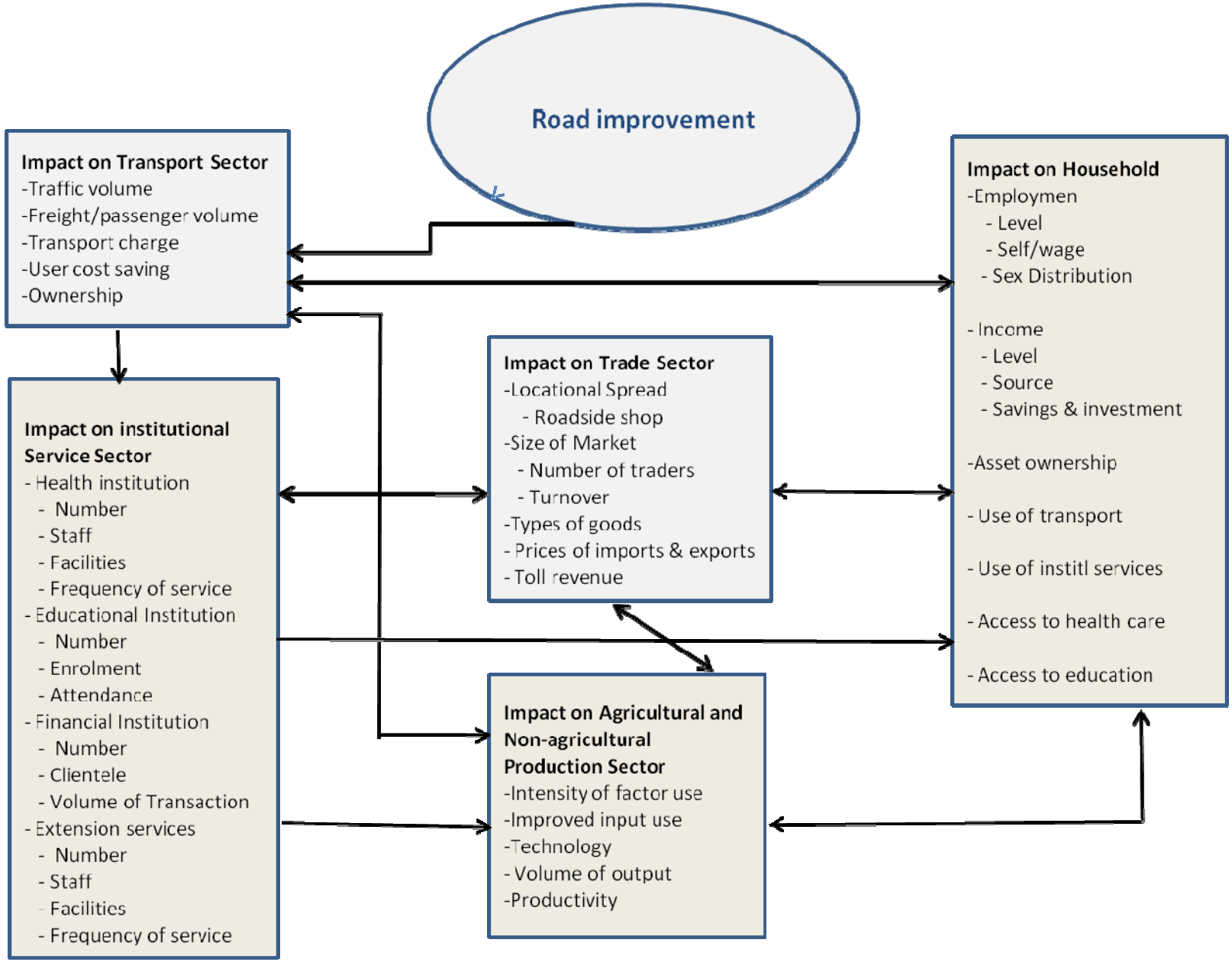
The growth of an economy depends on the availability of resources and the advancement of technology, among other things. The availability of resources in an economy during a period of time is a necessary, but not a sufficient, condition to achieve a certain level of output. In order to achieve an economic end, one should consider: (i) the infrastructural background under which the resources are used, and (ii) the way in which the resources are used, or what one may call available technology.

Due to primitive infrastructure and obsolete technological knowledge a country with abundant resources may have a very low level of output. On the other hand, an advanced technology under an appropriate infrastructure may lead to a higher level of output, even in a country with relatively poor resource endowment. Ferguson and Kreps define technological change as the introduction of 'new ways of doing things and improvement in old ways'[15]. Heady and Dillon also consider that technological change results from both the use of new inputs and improvements in input quality[16].

This technological change may cause the isoquant to shift in such a manner that a given output can be produced with a lower amount of inputs (say labour (L) and capital (K) for the sake of simplicity), or a higher amount of output can be produced with a given amount of inputs (e.g. L^0, K^0). The Technological change becomes much more effective when appropriate infrastructure exists in an economy.

[15] G.E. Ferguson and J.M. Kreps, **Principles of Economics,** Oxford and Ibh Publishing company, Calcutta, 1972
[16] E.O. Heady and J.L. Dillon, **Agricultural Production Function,** Iowa State University Press, Iowa, 1972

Flow Chart-1: Envisaged Impact of Road Improvement



Modern agricultural technology has been adopted by Afghan farmers though the level of using the technology varies. The agricultural technologies used by the farmers in the study area include: (i): Power tiller/tractor, (ii) HYV seeds, (iii) chemical fertilizer, (iv) pesticides, (v) thresher machines and (vi) irrigation technology. The study classified the technological use by farmers into six categories as shown in Table 2.1 below:

Table 2.1: Classification of Level of Agricultural Technologies.

Level of Agricultural Technology	Criteria
A	When a farmer uses all the six technologies stated earlier (i.e. Power tiller/tractor, HYV seeds, chemical fertilizer, pesticides, thresher machine and irrigation) he will be referred to as an A level technology user.
B	When farmers use any five out of six technologies
C	When farmers use any four out of six technologies
D	When farmers use any three out of six technologies
E	When farmers use any two out of six technologies
F	When farmers use any one out of six technologies

The study also used this classification in further analysis of the agricultural indicators. The following criteria were used to select the progressive, traditional and control villages:

Table-2.2: Selection Criteria of Progressive, Traditional and Control Villages.

ZOI-Village		Control Village
Progressive Village	**Traditional Village**	**Control Village**
• Road • Market • Agricultural Technology level either A or B	• Road • No Market • Any level of Agricultural Technology	• No Road • No Market • Any level of Agricultural Technology

The existence of road infrastructure is common in both **progressive** and **traditional** villages. The only difference between them is the **market infrastructure** in the progressive villages. Between the **traditional** and **control villages**, the existence of a road in the traditional villages is the only difference. Thus, a comparison between a traditional and control village shows the impact of the road intervention; and a comparison between the progressive and traditional village and/ or between the progressive and control village shows how other interventions (including road infrastructure) affects economic growth.

2.3 DOUBLE-DIFFERENCE METHOD AND REGRESSION MODEL

Double-Difference is a popular method to estimate impact of a road project. Ravallion (2001) in his work on 'The Mystery of the Vanishing Benefits'[17], and Baker (2000) in his 'Handbook on Evaluating Impact of Development Projects'[18] have provided a theoretical framework for application of "regression model" in "double differencing" to estimate net project impact, and they raise several issues relevant in bringing this task to a good end. The most basic version of the double differencing method to estimate impacts of the road projects is as follows:

First, the mean values of all relevant outcome indicators (Y) are calculated both for ZOI-Village [19] and the Control village and both in the baseline year and the follow-up year. These are captured in the following matrix:

Table-2.3: Double-Difference Matrix.

Reference Year	ZOI-Village	Control Village
Baseline	Mean Y_{zb}	Mean Y_{cb}
Follow-up	Mean Y_{zf}	Mean Y_{cf}

Second, the change in the value of the outcome indicator **Y in the ZOI** is calculated by differencing the value in the 2nd column of the matrix. That is, (Mean Y_{zf} - Mean Y_{zb})

Third, the change in the value of the outcome indicator **Y in the control village** is calculated by differencing the value in the 3rd column of the matrix. That is, (Mean Y_{cf} - Mean Y_{cb})
The difference between the two differences is called 'double-difference', and this double-difference is the estimate of the project impact.
That is, Project Impact = (Mean change in outcome indicator in ZOI village - Mean change in outcome indicator in control village).

That is, Project Impact = [(Mean Yzf - Mean Yzb) - (Mean Ycf - Mean Ycb)].

The "Double-difference" method can be applied where baseline information of both the ZOI and "control villages" are available. In absence of baseline statistics, the analysis is limited only to the follow-up year, and the difference between the ZOI and "control" in the follow-up year is the only option to estimate the project impact. These analyses do not seriously affect the results if one assumes that the natural growth environment in both the ZOI and the "control villages" is similar, and that the only the difference is the road intervention.

The "general regression model" is used to build the relationship between the outcome variable and the explanatory variables, which takes the general form:

[17] M. Ravallion, 'The Mystery of the Vanishing Benefits: An Introduction to Impact Evaluation', World Bank Review, 15(I), 2001
[18] J. Baker, 'Evaluating Impact of Development Projects on Poverty – A Handbook for Practitioners, Directions and Development Series, Washington DC, World Bank, 2000
[19] Ravallion and Baker used the term 'treatment village', or village in the ZOI. In this report we use the terms 'treatment village', village in the ZOI and .ZOI-village' interchangeably.

$$Y = a + bX + u \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(i)}$$

where Y is outcome variable, and X is the series of explanatory variables capturing households and community characteristics, a and b are constant terms and u is an error term. In the follow-up period, taking income (Y) as the outcome variable and X as the series of explanatory variables, one can write three regression models for the "progressive"," traditional" and "control villages" in the follow-up year as follows:

Progressive village: $Y_p = a_p + b_p R + b_p M + b_p X_p + u_p \ldots\ldots\ldots$ (ii)
Traditional village : $Y_t = a_t + b_t R + b_t X_t + u_t \ldots\ldots\ldots\ldots$ (iii)
Control village : $Y_c = a_c + b_c X_c + u_c \ldots\ldots\ldots\ldots$ (iv)

where R and M are dummy variables indicating the presence of a road and a market, respectively. M is always zero in the traditional village and both R and M are zero in control village in our study area.

Taking the difference between regression equations (iii) and (iv), we get,

$$Y_t - Y_c = (a_t - a_c) + b_t R + (b_t - b_c)(X_t - X_c) + (u_t - u_c) \quad \ldots\ldots\ldots \text{(v)}$$

This equation (v) regresses the change in income on the presence of a road and the change in other explanatory variables.

Again, taking the difference between regression equations (ii) and (iii), we get,

$$Y_p - Y_c = (a_p - a_c) + (b_p - b_t) R + b_p M + (b_p - b_c)(X_p - X_c) + (u_p - u_c) \quad \ldots\ldots\ldots \text{(vi)}$$

This equation (vi) regresses the change in income on the presence of a road and a market and the change in other explanatory variables.

Estimating of equations (v) and (vi) by Ordinary Least Squares (OLS) yields an unbiased estimate b of the impact of the roads project on income (where income is an outcome indicator).

2.4 SCOPING SURVEY AND SELECTION OF SAMPLE VILLAGES AND HOUSEHOLDS

Social Development and Legal Rights (SDLR), a local and well-experienced survey contractor, was engaged to conduct (i) scoping surveys, (ii) household surveys, (iii) settlement demographic surveys, (iv) shop-keeper/business surveys, (v) freight transport companies' surveys, (vi) drivers' surveys, (vii) passenger surveys, and (viii) traffic counts. SDLR was selected for their proven survey track record and ability to work in insecure environments.

First, SDLR carried out village scoping surveys within the zone of influence (ZOI)[20] and the "control areas". The scoping survey categorized the villages as commercial villages, semi-rural and rural villages. On analyzing the preliminary data, we observed that the first two categories of villages satisfied the criteria of "progressive village" and the last satisfied the "traditional village" criteria (some minor adjustments were made on completion of field surveys).

[20] ZOI is defined as an area of 15 km corridor on either side of the road.

In consultation with SDLR the Study Team selected the sample number villages and households with the following criteria:

(i) All the progressive villages listed in the scoping survey would be included for the survey.

(ii) A random sampling technique would be applied to "traditional villages" and "control villages". As both "traditional villages" (within ZOI) and "control villages" would be randomly selected, this randomness of the assignment assures that treatment and control groups are statistically equivalent and comparable, and differ only in their receipt of the road intervention. According to the World Bank[21], this method assures that the comparison is free from selection bias which typically affects impact evaluations.

(iii) Due to remoteness of the "control villages" the Study Team has decided to keep the number of "control villages" at a minimum.

(iv) Finally, the Study Team selected 52 progressive, 32 traditional and 12 control villages.

(v) It was also decided that an average of 5-6 randomly selected households from each sample village within the ZOI would be interviewed[22]. As the number of sample "control villages" is less in comparison with the number of sample villages within the ZOI, it was also decided that a higher number of households would be interviewed from each "control village" to make the sample of HH more representative. Thus the team agreed that an average of 11-12 HHs would be interviewed from each "control village". Sample HHs of "control villages" accounted for about 25% of the total HH sample of "progressive" and "traditional villages" together.

2.5 IMPACT INDICATORS, SURVEY QUESTIONNAIRE AND ENUMERATION

Eleven indicators were used to assess the impact of road rehabilitation. The Study Team developed six different sets of questionnaires in English. All the sets were translated into Dari. Two-day trainings for the field surveyors were conducted by SDLR to clarify the questions and provide a proper understanding of the information to be collected.

Household Survey: The structured household questionnaires were used to gather information on family sizes, employment characteristics, wealth and assets, education, health care practices, agricultural production, and gender issues, among other things. In general the household heads were interviewed to provide the information. Shown below are local residents being interviewed for the household surveys.

[21] D. Van de Walle and D. Cratty, "Impact Evaluation of a Rural Road Rehabilitation Project". Mimeo, Development Research Group, World Bank, Washington, D.C, 2002; J. Baker, Evaluating the Impact of Development Projects on Poverty — A Handbook for Practitioners. Directions in Development Series, World Bank, 2000; K. Ezemenari, A. Rudqvist and K. Subbarao, "Impact Evaluation: A Note on Concepts and Methods, Paper presented at World Bank Conference on " Evaluation and Poverty Reduction, June 14-15, Washington, D.C., 1999.

[22] Baseline survey (2003) of K-K road and K-H road covered 4.17 HHs per village on an average.

Settlement Demographic Survey: A separate set of questionnaires was used at the village level, to collect information about the distance of the village from the road, its population, schools and clinics, agricultural land base and available amenities in the village. These questionnaires were completed through interviews with village leaders. The data generated through the Settlement Demographic Survey addressed the economic conditions of the surveyed settlements, particularly regarding available resources and service facilities in those communities.

Shopkeeper/Businesses Survey: This survey sought to obtain information about shop ownership, goods sold, and product prices. In addition to this questionnaire targeting individual shopkeepers, the survey team counted the numbers of shops categorized by the goods they were selling in larger bazaars within the area of influence of the roads. The number of shops by categories of goods sold was also counted during the market survey.

Freight Transport Companies: The survey of freight transport companies focused on urban areas, where shipping companies tended to set up shop. Structured interviews were held with those firms, and information collected on transportation routes, vehicle types used for transport, travel time, costs, and prices.

Driver Survey: Driver interviews were often undertaken in tandem with the freight transport company surveys. However, passenger and driver surveys were also undertaken along the road and, in the case of these surveys, at bus and taxi depots. The questionnaires sought information regarding topics such as vehicle operators' frequency of travel, travel patterns, ownership, costs, income, and security along the road.

Passenger Survey: This survey provided basic data on origin/destination, travel times, fares, and income levels to determine the incidence of poverty among passengers. Passenger surveys were undertaken primarily at bus depots and along the road.

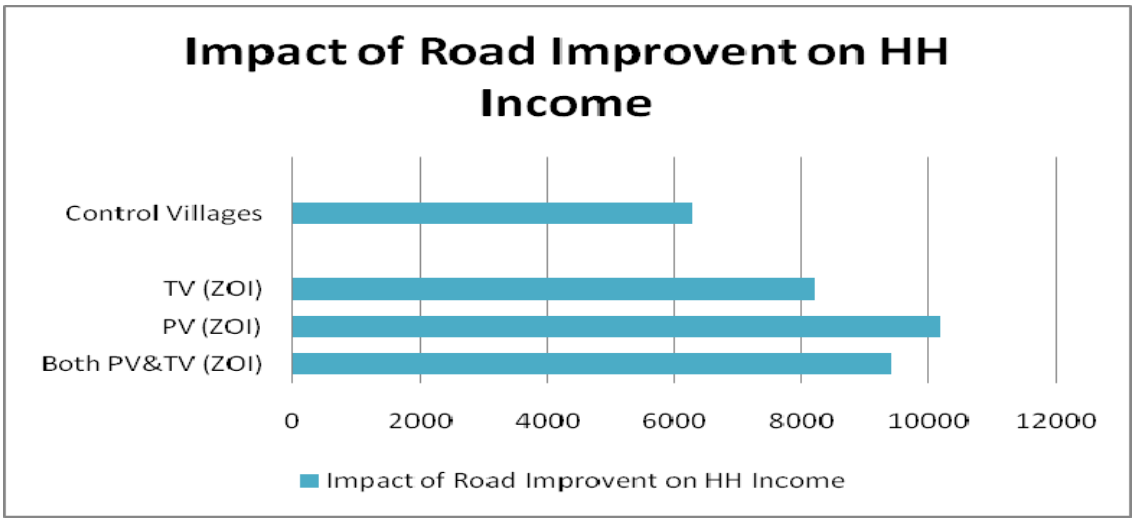
Traffic Counts: The survey team conducted traffic counts along project roads. These traffic counts provided volume and composition of traffic passing on the roads. The traffic counts entail directional counts of passenger vehicles (cars, buses and minibuses) and freight vehicles (two axle, three axle and articulated trucks). This was a seven-day count, conducted every day from 6 am to 6 pm, at two locations preferably at the head and tail of the project roads.

2.6 OTHER METHODS

In some cases, the Study Team adopted other approaches such as reflexive, generic and shadow comparisons to validate the survey findings. These approaches could only justify or validate the indicative impacts of the roads. In reflexive comparisons, the participants themselves provided the control information by comparing themselves before and after the intervention. With generic comparisons, the impact of the intervention on beneficiaries was compared with established norms about typical changes occurring in the target population. Shadow comparisons consisted of the judgment of experts, and/or selected participants on what is ordinarily expected in the target population compared to actual outcomes.

Due to security problems and time constraints to complete the study, the Study Team could not adopt all such methods to the fullest expectations.

III. PROJECT LEVEL IMPACT OF ROAD REHABILITATION



3.1 EMPLOYMENT RATES, OCCUPATION AND WAGE

The Study attempted to quantify rates of employment by household members in the sampled villages by using field data. Average participation rate in ZOI villages is about 19.4%. This is about one-half of the national average of $40%. Only the Kunduz "control villages" exhibits a high rate similar to the national average (41.7%).

Table 3.5: Employment Participation Rates of Household Members in the ZOI and Control Villages.

Road Name	ZOI-Village						Control Village	
	Progressive Village		Traditional Village		Both			
	HHM	Empl	HHM	Empl	HHM	Empl	HHM	Empl
Nangahar/Kunar PR	771	82 (10.63%)	257	56 (21.79%)	1028	138 (13,42%)	331	60 (18.12%)
Panjshir Valley PR	737	140 (19.15%)	220	39 (17.73%)	957	179 (18.70)	267	28 10.61%
Balkh DR	251	49 (19,52%)	323	67 ((20.74%)	574	116 (20.21)	137	17 12.15%
Kunduz DR	188	79 (42.02%)	277	74 (26.71)	465	153 (32.90%)	96	40 (41.67%)
All-Average	**1947**	**350 (17.97%)**	**1081**	**236 (21.83%)**	**3024**	**586 (19.38%)**	**831**	**145 (17.44%)**

The average employment rate of the household members in ZOI is 19.8%, where as the "traditional villages" show slightly higher employment rate (21.8%) compared to "progressive villages" (18.12%).

3.2 OCCUPATION AND WAGES

In general, the "progressive villages" show more diversified occupation than the "traditional" and "control villages". The overall picture of the ZOI villages shows a higher number of diversified occupations than the "control villages", indicating that road investment seems to have impacted on diversification of occupation of the villagers living in ZOI. Table 3.6 below illustrates this observation.

Table 3.6: Occupations of the Sample Household Members in ZOI and Control Villages.

Occupation	ZOI-Village						Control Village	
	Progressive Village		Traditional Village		Both			
	No.	Income/month (Afs)*	No.	Income/month (Afs)*	No.	Income/month (Afs)*	No.	Income/ month
Shop-keeper	54	5,000 ((2,000-18,000)	26	2,200 (2,000-10,000	80	3,750 (2,000-18,000)	-	-
Business/ Commerce	4	9,700 (1500-10,000)	4	5,000 (3,000-10,000)	8	7,350 (1,500-10,000)	-	-
Farming	85	4,500 (500 -17,000)	86	2,500 (500-10,000)	171	3,500 (500-10,000)	81	2,400 -
Driver	41	5,500 (3,000-20,000)	17	5,000 (3,000-6,000)	58	5,300 (3,000-6,000)	-	
Teacher	26	3,500 (3,000 – 5,000)	17	3,500 (3,000-6,000)	43	3,500 (3,000-6,000)	-	
Soldier	22	5,000	5	6,000	27	5,200	-	

		(3,500 – 12,000)		(4,500-5,000)		(3,500-12,000)		
Police	5	5,500 (4,000-7,000)	5	6,500 (5,000-7,000)	10	6,000 (4,000-7,000)	-	
Tailor	8	3,000 (2,000-5,000)	-	-	8	3,000 (2,000-5,000)	-	
Watchman	15	7,000 (3,000-10,000)	4	5,500 (2,000-10,000)	19	6,700(2,000-10,000)	-	
NGO worker	14	8,000 (5,000 -16,000)	3	12,000 (10,000-15,000)	17	8,700 (5,000-16,000)	-	
Mason	18	10,000 (4,000-15,000)	8	5,500 (2,000-10,000)	26	6,850(2,000-15,000)	-	
Carpenter	11	8,000 (1,000-10,000)	3	3,500	14	6,900 (1,000-10,000)	3	3,300
Mechanics	15	4,500 (2,000-12,000)	1	2,000	15	4,300 (2,000-12,000)	-	
Doctor	3	16,000 (5,000-18,000)	-	-	3	16,000 (5,000-18,000)	-	
Nurse	2	7,000	-	-	2	7,000	-	
Baker	1	10,000	-	-	1	10,000	-	
Cook	2	10,000	-	-	2	10,000	-	
Caterer	1	1,500	1	2,000	2	1,700	-	
Cashier	1	3,200	-	-	1	3,200	-	
Waiter	2	2,000	-	-	2	2,000	-	
Attendant	2	2,900	-	-	2	2,900	-	
Officer	2	12,000	1	10,000	3	1,150	-	
Secretary	1	3,000	2	2,300	3	2,550	-	
Butcher	2	12,500	-	-	2	12,500	-	
Employer	14	8,500 (2,500-10,000)	2	3,000	16	7,800 (,2500-10,000)	-	
Labour	73	4,500 (1,000-7,000)	38	4,000 (1,000-5,000)	111	4,300 (1,000-5,000)	61	4,500

Note: Modal value is taken to measure the average figure. Though the traditional villages have no markets, some villagers have shops either at their homesteads or they have shops in the nearest progressive villages.

As expected, skilled laborers earn higher wages than the unskilled laborers as is indicated in the above table. Monthly wage a "general labor" is around 4,500 Afs whereas a "skilled labor" such as carpenter, or a mason, earn about 8,000 to 10, 0000 Afs or more per month.

In discussion with the local people, it appears that the poorer people have great demands for skill training. However, affordability and opportunities pose major constraints to implementation. Afghanistan has a shortage of skilled labors, and Afghan skilled labor is in demand in the neighboring countries as well. This shortage of skilled manpower should be addressed as a social policy for a long term strategy.

The road investment program can also shift its strategy from the hardware development to integrated approaches for rural development. In a developing country like Bangladesh, the soft part of rural development projects is being implemented with NGO partnership. Roads improvement along with other interventions in ZOI villages in the Afghan economy should set the priority to increase job opportunities and open up new sources of revenue, leading to a more diversified income structure, which can reduce household vulnerability to economic shocks.

3.3 WOMEN'S EMPLOYMENT

Women's employment is of great concern to the Afghan economy. In this household survey, out of 3,905 family members, only two women are employed: one is self-employed (in tailoring), and the other is a nurse.

Another alarming picture was provided by a household headed by a twenty-two year old girl who maintains five members of the family: elderly father, mother, unemployed 24 year old brother and a younger sister.

This alarming situation and gender imbalance in the rural employment market needs to be addressed as a top priority issue.

3.4 ACCESS TO SCHOOL

Interesting is the fact that in almost every family surveyed about half of the members is literate, meaning they can at least read and write at a basic level. In the area of the ZOI, the average household size is 7.1, of which 3.2 are literate.

The percentage of children enrolled in primary schools is highest in "progressive villages" (57.38%) and lowest in "control villages" (32.01%). The overall access of the children to primary schools in ZOI villages is 47.23%, and that of control villages is 32.01%.

A comparison between the "control" and "traditional villages" seems to indicate that the road improvement program has quite a significant impact on children's enrolment in primary education.

Table 3.7: Literacy Rate of Household Members and Access of Children to Schools in ZOI villages and Control Villages.

Items	ZOI-Village			Control Village
	Progressive Villages	Traditional Villages	Both	
Household size	7.0	7.2	7.1	8.1
Literate Members	3.3	3.2	3.2	3.29
Literacy Rate	41.18%	44.20%	42.15%	38.51%
% of Children Enrolled	57.38%	41.45%	47.23%	32.01%
Female-Male Student	32 : 68	27 : 73	30 : 70	22 : 78

Note: Literate means at least one can read and write, Literate Household means at least one member of the family can read and write. (See Annex Tables for individual project level estimates).

Interesting is the fact that in spite of having highest number of literate members in the family in the progressive villages, the children have less access to the primary schools in comparison with the traditional villages though the distance of travelling to schools is only a moderate

problem in both the villages, which is only an average of 1.77 km from sampled households in the progressive and 2.01 kms in traditional villages.

However, the overall picture of child access to primary school is not satisfactory. About 75% of the children living in the "control" villages and about 52% of the children living in ZOI villages are not enrolled in primary schools, and thus they remain without the blessing of education.

Table 3.8: Average Distance to Primary Schools and Percentage of Children Enrolled into Primary Schools in the ZOI and the Control Villages.

Road Name	ZOI-Village						Control Village	
	Progressive Village		Traditional Village		Total			
	Dist. (km)	Enrolled (%)	Dist. (km)	Enrolled (%)	Dist. (km)	Enrolled (%)	Dist. (km)	Enrolled (%)
Nangahar/Kunar PR	1.87	50.57	2.17	36.49	1.94	38.40	1.79	34.69
Panjshir Valley PR	2.06	64.86	1.43	55.19	1.24	61.20	2.35	31.21
Balkh DR	1.04	45.36	2.68	26.45	1.97	34.70	2.19	23.65
Kunduz DR	2.13	68.75	1.77	47.69	1.98	54.65	3.0	6.66
All-Average	**1.77**	**57.38**	**2.01**	**41.45**	**1.78**	**47.23**	**2.34**	**24.05**

It is obvious that the enrolment rate of the children is very poor in the control village. This may be partly because of distance to primary schools from the households (average 2.95 km), and partly because of the economic factor of the family (average monthly income of a household in the control village is 6,261 Afs, which is 31.19% lower than the traditional village and 62.13% lower than the progressive village. Of the children who are attending schools, girl students are always fewer, which vary from 22% in control villages to 32% in the progressive villages.

If this is the case at the primary school level, one might think that the disproportion of girl and boy students would be much wider at the higher education level, partly because of the social culture and early marriage, and partly because of the economic conditions of the rural families. Most donor-aided project design is 'gender-neutral'; that is, projects are built on the assumption that both men and women will be equitably impacted by interventions.

The reality however is that women and men do not have equal access to receive the project benefits, because of socio-cultural and economic constraints. The issue of gender-inequality should be dealt with not only as a part of "social policy" but also as a reflection of this issue in all the project design to accelerate minimization of gaps between men and women. It is also notable that around 67.99% of the children in the control villages and 52.77% of the children in the traditional and progressive villages still remain outside the stream of education system. All these issues need to be properly addressed both at the policy level as well as the project level.

3.5 ACCESS TO HEALTH CARE

It is quite evident from the table below the women visits to the healthcare centers are more frequent than men. Frequency of women's visits to the nearest healthcare centers is almost the same for the traditional (16.4/year) and control villages (15.08/year). The highest frequency of visits to the healthcare centers is observed by the women living in progressive villages (22.3/year) in ZOI.

Table 3.9: Frequency of Access to Health Care Centers by Men and Women Living in the ZOI and the Control Village.

Road Name	ZOI-Village						Control Village (Times/Year)	
	Progressive Village (Times/Year)		Traditional Village (Times/Year)		Both (Times/Year)			
	Men	Women	Men	Women	Men	Women	Men	Women
Nangahar/Kunar PR	28.6	34.9	17.5	22.8	21.6	31.5	20.3	22.5
Panjshir Valley PR	14.1	17.6	11.9	15.0	13.2	16.6	10.4	11.10
Balkh DR	11.2	17.8	9.7	11.7	10.3	12.2	9.12	12.32
Kunduz DR	9.9	18.9	9.1	16.2	9.5	17.4	9.1	14.4
All-Average	**15.9**	**22.3**	**12.1**	**16.4**	**13.6**	**19.4**	**12.98**	**15.08**

Of men and women who visited the nearest healthcare centre, 74.3% of them expressed that they have used the project road while visiting the centre. It is also obvious that 93.6% of the health care centre visitors who live in ZOI villages have used the project road.

Table 3.10: Whether project roads were used while visiting Health Care Centers.

Road Name	ZOI-Village						Control Village (%))	
	Progressive Village (%)		Traditional Village (%)		Both (%)			
	Yes	No	Yes	No	Yes	No	Yes	No
Nangahar/Kunar PR	58.3	41.7	70.6	29.4	61.3	38.7	19.1	80.9
Panjshir Valley PR	93.4	6.6	94.0	6.0	93.6	6.4	38.56	61.64
Balkh DR	76.7	23.3	82.5	17.5	80.0	20.0	45.11	54.89
Kunduz DR	80.0	20.0	45.2	54.8	62.5	37.5	36.9	63.1
All-Average	**77.1**	**22.9**	**73.1**	**26.9**	**74.3**	**25.7**	**27.42**	**72.58**

3.6 INCIDENCE OF POVERTY

Though road and market infrastructure and agricultural technology have impacted upon both individual and household income in the areas of ZOI, a gloomy picture is observed for those people and households who are grouped in the lowest quintile. The 5th quintile depicts that for those who are individual level income earners, their average income is only 1,236 Afs ($25) per month, and the household income per month of this quintile is only 1,996 Afs ($40).

Table 3.11: Quintiles of Individual Monthly Income of Villagers Living in the ZOI and Control Villages.

Quintile	ZOI-Village					
	Progressive Village		Traditional Village		Both	
	Obs	Afs	Obs	Afs	Obs	Afs
First Quintile	42	14,074 ($281)	24	11,941 ($239)	66	13,680 ($274)
Second Quintile	42	5,114 ($102)	25	4,427 ($89)	67	4,971 ($99)
Third Quintile	42	3,888 ($78)	25	3,594 ($72)	67	3,779 ($75)
Fourth Quintile	42	2,696 ($54)	25	2,491 ($50)	67	2,620 ($42)
Fifth Quintile	42	1,268 ($25)	25	1,175 ($24)	67	1,236 ($25)
All-Average	210	5,422 ($108)	124	5,011 ($100)	334	5,270 ($105)

Note: Figures in the parentheses indicate money value in US$. The exchange rate used for conversion was 50 Afs/$. The fraction value of any figure is ignored.

There are no reliable statistics about the poverty line in the Afghan economy. On international standards of measurement of poverty in developing countries, people are treated to be "extremely poor" when per capita income per day is $1 or below.

The average family size of the sample in the study area is 7.1. On this count, 2nd to 4th (except 5th), quintiles fall below poverty line. The Afghan Government's 1386 (2007) National Risk Vulnerability Assessment (NRVA)[23] study measures poverty rate with per capita income of about US$14 per month. With this measure, about 60% of study households fall below the poverty line (table below).

[23] Ministry of Rural Rehabilitation and development and the Central Statistical Office, 'The National Risk Vulnerability Assessment, June 2007

Table 3.12: Quintiles of Household Monthly Income of Villagers Living in the ZOI and the Control Villages.

Quintile	ZOI-Village						Per capita income per month
	Progressive Village		Traditional Village		Both		
	Obs	Afs	Obs	Afs	Obs	Afs	
First Quintile	49	28,190 ($564)	31	22,811 ($456)	80	26,113 ($522)	3,678 ($74)
Second Quintile	48	10,538 ($211)	30	8,527 ($170)	78	9,762 ($195)	1,375 ($28)
Third Quintile	49	5,892 {$118)	31	4,702 ($94)	80	5,458 ($109)	769 ($15)
Fourth Quintile	48	4,099 ($82)	30	3,317 ($66)	78	3,797 ($76)	535 ($11)
Fifth Quintile	49	2,154 ($43)	31	1,743 ($35)	80	1,996 ($40)	281 ($6)
All-Average	**243**	**10,151 ($203)**	**153**	**8,214 ($164)**	**396**	**9,403 ($188)**	**1,324 ($26)**

Note: Figures in the parentheses indicate money value in US$. The exchange rate used for conversion was 50 Afs/$. Fraction value of any figure is ignored. Average household size is taken as 7.1 (HH survey result) to measure per capita income.

With respect to non-financial income measures of material well-being, evidence from household surveys indicates that the possession of welfare-enhancing goods lies more with households in ZOI villages than the control villages.

None of the control village households have TV, car, generator, electric pump generator, and indoor plumbing. Households in Progressive villages are enjoying modern facilities like TV.

Table 3.13: Non-Financial Assets of Village Households in the ZOI and the Control Villages.

Non-Financial Assets	ZOI-Village						Control Village (No. of HHs)	
	Progressive Village (No. of HHs)		Traditional Village (No. of HHs)		Both (No. of HHs)			
	With	Without	With	Without	With	Without	With	Without
Radio	246 (88.5%)	32 (11.5%)	132 (89.2%)	16 (10.8%)	378 (97.9%)	48 (2.1%)	79 (75.9%)	25 (24.1%)
TV	112 (40.3%)	166 (59.7%)	58 (39.2%)	90 (60.8%)	140 (35.3%)	256 (64.7%)	-	-
Well in Compound	72 (25.9%)	206 (74.1%)	52 (35.1%)	96 (64.9%)	124 (29.1%)	302 (70.9%)	45 (43.2&)	59 (56.7%)
Car	20 (7.2%)	258 (92.8%)	10 (6.7%)	138 (93.3%)	30 (7.0%)	396 (93.0%)	-	-

Truck	3 (0.8%)	275 (99.2%)	- -	148 (100%)	3 (().8%)	423 (99.2%)	-	-
Bi-cycle	140 (50.3%)	138 (49.7%)	81 (54.7%)	67 (45.3%)	221 (51.9%)	205 (48.1%)	42 (40.4%)	62 (59.6%)
AnimCart	30 (10.8%)	248 (89.2%)	36 (24.3%)	112 (95.7%)	66 (15.5%)	360 (84.5%)	34 (32.7%)	70 (67.3%)
Elec pump	13 (I4.7%)	265 (95.3%)	6 (4.0%)	142 (96.9%)	19 (4.5%)	407 (95.5%)	-	-
Generator	48 (17.3%)	230 (82.7%)	41 (27.7%)	107 (72.3%)	89 (20.9%)	337 (79.1%)	-	-
Indoor plumbing	12 (4.3%)	266 (95.7%)	3 (2.0%)	145 (98.0%)	15 (3.5%)	411 (96.5%)	-	-

3.7 TRADE IMPACT INDICATOR

3.7.1 INCREASED NUMBER OF SHOPS AND CURRENT SALES VOLUMES

The road improvement project has resulted in a substantial increase in the number of shops within markets in ZOI villages. The overall number of shops has almost doubled from 96 shops to 190 (+97%) after road construction.

The largest rate of growth occurred along the Kunduz district road. Here the total number of shops increased from 14 to 46 (+229%). In the Nangahar/Kunar and Panjshir Valley provincial roads and Balkh district road the rates were 200%, 48.78% and 51.85% respectively.

More than 90% of interviewed shop-owners have express that they have been using the project road for getting their merchandize.

Average sale volume per-day in all the survey market is 314,410 Afs ($6,288), and average daily sales volume of an individual shop is about 1,655 Afs ($33.10). There are no available statistics on sales volume in previous years before the road improvements.

However, the 2003 Baseline Surveys of K-K and K-H roads indicate that that average daily sales volume per shop was 552 Afs ($11.50) in 2003 for shops within the ZOI. In this respect, there is quite a significant increase in volume of sales in the markets in ZOI along the four provincial district project roads. Shown below is a typical main street shop in Imam Sahib.

Table 3.14: Growth of Shops and Volume of Sales in the Market in ZOI.

Road Name	Shops Before & after construction of road			Present Sales Volume (Avg./shop)	Use Project Road for Merchandize		Mode of Transport for Merchandize	
	Before (No.)	After (No.)	Increase/ Decrease	(Afs)/day	Yes (%)	No (%)	Car (%(	Others (%)
Nangahar/Kunar PR	14	42	+200%	1,716 (72,100)	90.48	9.52	95	5
Panjshir Valley PR	41	61	+48.78%	1,961 (119,650)	98.36	1.64	84	16
Balkh DR	27	41	+51.85%	1,938 (79,470)	100	-	88	12
Kunduz DR	14	46	+229%	939 (43,190)	90.96	9.04	87	13
All-Average	96	190	+97.92%	1,655 (314,410)	94.95	5.05	88	12

Note: Figures in the parentheses indicate total volume of sales per day by all shops measured in Afs.

3.7.2 PRICES OF KEY FOODSTUFF

It is difficult to estimate fair prices of food stuffs. First, the products are not homogenous. Afghanistan imports many food staples, such as rice, and there are perhaps as many as 40,000 or more varieties of rice grown around the world[24]. The second reason is significant seasonal variation in prices, particularly of perishable agricultural commodities. During the peak seasons prices go down even to the level below the production cost. During the off season, prices go up.

The study assessed prices of three key food stuffs – rice, sugar and tea. Rice is selected because it is a main food item, and sugar and tea, because they are least heterogeneous, and because their seasonal price variation is considerably lower.

The study took another precaution. It used “mode” instead of “mean” as a measure of average value. The “mode” shows price of the most frequently used variety of an item. Furthermore, prices are also shown in ranges to indicate existing variation. Results are depicted in Table 3.15 below.

[24] “Rice: History and Types of Rice’, The NIBBLE, October 2007.

Table 3.15: Average Prices of Key Food Staples in the Markets of the Zone of Influence.

Road Name	Food Staples (Afs/kg)					
	Rice		Sugar		Tea	
	Price range	Modal value	Price Range	Modal value	Price range	Modal value
Nangahar/Kunar PR	35 - 60	50	30 - 35	32	160 - 180	180
Panjshir Valley PR	50 - 85	85	30 - 34	30	150 - 160	160
Balkh DR	60 - 90	80	30 - 35	30	150 - 185	160
Kunduz DR	45 - 95	49	25 - 34	30	60 - 130	80
All-Average	**35 - 95**	**-**	**25 - 62**	**-**	**60 - 185**	**-**

3.8 AGRICULTURE IMPACT INDICATORS

3.8.1 ADOPTING MODERN AGRICULTURAL TECHNOLOGY

The Afghan economy is agriculture-based and the economic recovery of the country's economy depends primarily on the development of the agricultural sector. The adoption of modern agricultural technology not only increases yields per acre, but also increases the cropping intensity producing more crops.

Afghan farmers are using the following modern agricultural technologies, though not all farmers have equal access to them:

(i) Power tiller/ tractor
(ii) HYV seeds
(iii) Chemical fertilizers
(iv) Pesticide
(v) Irrigation
(vi) Thrasher machines

To analyze farmers' level of technology use, the study divided the farmers into four technology groups as follows:

Level A: This level of farmers uses all the above six agricultural technologies.

Level B: This level of farmers uses any five out of six above-mentioned technologies.

Level C: This level of farmers uses any four out of six above-mentioned technologies.

Level D: This level of farmers uses ant three out of six above-mentioned technologies.

Table 3.16: Level of Adoption of Modern Agricultural Technology by the Farmers Living in the ZOI and the Control Villages.

Road Name	ZOI-Village				Control Village			
	Level of Adoption of Agricultural Technology				Level of Adoption of Agricultural Technology			
	A	B	C	D	A	B	C	D
Nangahar/Kunar PR	8.51	43.62	43.42	4.25	17.5	42.5	37.5	2.5
Panjshir Valley PR	-	95.68	3.60	0.72	12.7	45.9	37.2	4.2
Balkh DR	35.18	54.38	8.77	1.67	14.2	44.7	32.9	8.2
Kunduz DR	13.88	69.44	13.88	2.8	-	-	-	-
All-Average	**14.40**	**65.79**	**17.44**	**2.37**	**14.8**	**44.3**	**35.8**	**5.1**

Note: **A**= % of farmers using all the six modern agricultural technologies (Power tiller/tractor, HYV seeds, Chemical fertilizer, Pesticides, irrigation, and Thresher machine), **B=** % of farmers using 5 out of six, **C=** % of farmers using 4 out of six, **D= %** of farmers using 3 out of six.

In ZOI villages, 14.40% of households are using A level of modern agricultural technology, though along the Panjshir Valley provincial road, none of the sample households in ZOI falls in this category. But the majority of the sample households in the ZOI in Panjshir Valley are using five modern agricultural technologies. Interesting is the fact that 17.5% of the sample households in the control villages of Nangahar are adopting all the six agricultural technologies, which is 8.99% point higher than the corresponding figure of households in the ZOI. This may partly be explained by the fact that the agricultural development interventions expanded in the remote potential areas as well.

3.8.2 CONSUMPTION, SALE AND FARM-GATE PRICE

Most of the farmers in the study area are subsistence or below subsistence farmers, as most of them produce output only for their household consumption. Only few farmers also sell part of their output for cash money. Table 3.17 shows selected crops grown by farmers in ZOI villages. Shown below are farmers thrashing wheat with horses.

Table 3.17: Dispensation of Selected Crops Grown, Consumed and Sale by the Farmers Living in ZOI Villages

Road Name	Household Consumption (%)	Household Sale (%)	Average Price/Kg (Afs)
Nangahar/Kunar PR • Corn • Onion	75% 50%	25% 50%	• 20.00 • 5.00
Panjshir Valley PR • Wheat • Vetch • Barley • Corn • Grapes • Potato • Apricot	98% 70% 85% 95% 30% 100% 80%	2% 30% 15% 5% 80% 0% 20%	• 150.00 • 150.00 • 150.00 • 80.00 • 50.00 • 100.00 • 35.00
Kunduz DR • Barley • Vetch • Wheat • Corn • Water melon • Rice • Apricot • Onion	80% 50% 100% 87% 78% 100% 35% 50%	20% 50% 0% 13% 22% 0% 65% 50%	• 50.00 • 130.00 • 200.00 • 80.00 • 27.00 • 300.00 • 30.00 • 5.00

3.9 IMPACT ANALYSIS BY USING REGRESSION MODEL

The theoretical aspects of regression model have been discussed in section 2.2.2. Looking carefully at the survey data, the study team decided to use the following variables for the regression models:

Y = household income as outcome variable (Afs)

D = distance of the household from the road (km)

M = Existence of a market in the village (Dummy, Yes=1, No =0)

X_1 = Cost of HYV seeds (Afs)

X_2 = Cost of chemical fertilizer

X_3 = Cost of pesticides

Thus the study establishes three regression models as indicated in Section 2.2.2 for the purpose of impact analysis:

Progressive Village:

Model I: $Y_p = a_p + b_p D + b_p M + b_p X_{p1} + b_p X_{p2} + b_p X_{p3} + u_p$

Traditional Village:

Model II: $Y_t = a_t + b_t D + b_t X_{t1} + b_t X_{t2} + b_t X_{t3} + u_t$

Control Village:

Model III: $Y_c = a_c + b_c X_{c1} + b_c X_{c2} + b_c X_{c3} + u_c$

By regressing the above equations and using our field survey data, we have the following results:

Model	Outcome Variable	Constant	Coefficient with the Explanatory Variables					R^2
			Distance	Market	Seeds	Fertilizer	Pesticides	
I Progressive	Income	5.01 (71.69)	- 0.112 (4.87)	0.09 (2.27)	0.10 (3.75)	0.205 (6.72)	0.521 (2.58)	0.69
II Traditional	Income	6.41 (0.67)	-4.12 (1.21)	-	0.13 (14.98)	- 7.23 (1.79)*	0.593 ((3.33)	0.52
III Control	Income	6.32 (0.43)	-	-	0.09 (3.83)	0.187 (6.49)	0.612 (15.10)	0.46

Note: Figures in the parenthesis indicate t-ratios. * indicate not significant at p<5

The results of the regression models lend strong support to the hypothesized effect of road improvement. All the coefficients have the expected sign except the use of fertilizers by the farmers in the "traditional villages", which is negative. This value is, however, not statistically significant.

"Distance of household from the road" is found to be negatively related to household income, meaning that longer is the distance of a household from the road, lower is the household income. In the "progressive villages", an increase of 1 km distance for a household from the road, causes a fall in income by 0.112 Afs whereas in the "traditional villages" the corresponding figure is much larger, 4.12 Afs.

The evidence suggests that the "use of pesticides" has higher effect on the household income in the "control villages" than in the "progressive villages". However, the relation is inverse concerning "use of fertilizer".

When considering the "use of seeds" and "fertilizers together", both "traditional" and "control" villages show almost the same effect on increase in household income. This indicates that road improvement alone could not bring about a significant impact on household income of the "traditional villages" in the ZOI. However, the overall affect of

using seeds, fertilizers and pesticides as well as the existence of market and road have significant impact on household income. The R^2 =0.69 for this equation indicates that 69% of the increase in household income is explained by these factors in "progressive villages".

IV. OVERALL IMPACT AT PROVINCE AND DISTRICT LEVEL

This section assesses overall socio-economic changes that have occurred at the Provincial and District level under study, due to the combined impact of road investment as well as other development programs. The purpose is to conduct an overall inventory of changes, learn lessons, and propose changes for similar USAID road projects. Please note the assessment is general in nature, as the Study Team had to depend on secondary sources. Impact assessment of a specific program is made much more difficult when there are different programs that take place in the same area at the same time.

Donor collaboration on road improvement or any other development program does not allow them to take credit for an increased output on their own[25]. Regarding methodological aspects on road impact assessment John Hine (World Bank) argues that the assessment methods may show an association or disprove a connection between roads and development, but it is usually impossible to prove a causal link between road investment and development[26]. Nevertheless, road development is an investment of such importance that without other development activities it becomes difficult to implement.

4.1 CHANGING PATTERN OF DEMOGRAPHIC CHARACTERISTICS

The demographic dynamics has tremendous impact on public expenditure, economic growth, poverty and inequality. Family structure, age, in-migration, out-migration, male-female ratio, dependency ratio, population growth – all factors have tremendous impact on the economy[27]. Afghanistan has no reliable population statistics. Only the available source is the recent report on Estimated Population of Afghanistan 2008-2009', published by Central Statistics Organization (CSO). This is the only available source on population data in Afghanistan.

Table-4.1 shows rural and urban population in the four provinces, and national average, in the years 2002 and 2008. Each cell shows, first, the absolute population, and then (in parenthesis) its percent out of the total province population. The following table, Table-4.2 shows the percent of male and female in each province (and the nation) in those years.

[25] USAID Afghanistan, 'Draft Final-2: Impact Evaluation – Rebuilding Agricultural Markets Program (RAMP)', October 23 – November 30, 2007, p.19

[26] Hine, J. 'Rural Road Impact Studies Some Reflections', World Bank.

[27] Taiwan is a glaring example on how a country can ensure economic growth and equitable distribution of income by giving priority of this sector. In 1950s. Taiwan emphasizes on effective demographic and manpower policies, which resulted in an impressive record of economic growth from 7% in 1953 to 1960 to an accelerated growth of 11% in 1969 to 1973 in real terms. The gains in real income were more equitably distributed than in most other developing countries so that almost all segments of the society experienced a very marked advancement in living standard. Yet Taiwan is one of the populated countries in the world.

POPULATION

The total population of Afghanistan in 2008 was around 32.7 million, compared to about 20.5 million in 2003 (CSO)[28]. In 2008, About 77.3% of the populations live in the rural areas and 22.7% in rural. This ratio has not changed significantly since 2003.

The population in the four provinces in 2008 (and in parentheses in 2002) was approximately: Kunduz- 855,000 (820,000 in 2002); Balkh- 1,144,000 (870,000 in 2002); Nangahar - 1,333,000 (1,089,000 in 2002); and Panjshir – 136,500 (not available in 2002).

The majority of their population is rural, varying from 100% in Panjshir to 65% in Balkh. The ratio of rural population has slightly decreased between 2002 and 2008; nevertheless, the change is slight, and as a whole the provinces have remained rural.

Balkh, which has the highest percent of urban population (35% in 2008 and 24% in 2002) has grown the most in terms of population, from about 870,000 in 2002 to 1.1 million in 2008 (+31.5%). This indicates the ability of urban areas to attract population, as they provide more employment opportunities. It is suspected that the higher percentage growth is attributed more to rural-to-urban migration in Balkh than to natural local growth (births-deaths).

In Panjshir Province, almost all people live in Panjshir Valley, and there is no urban area in this province. Rural population among the four provinces, Kunduz, Balkh, Nangahar and Panjshir varies from 100% to 64%. This variation is generally on geographical reasons and opportunity of employment. However, Balkh shows a higher increase of urban population over the last six years.

Table-4.1: Changing Pattern of Rural and Urban Population in the Four Provinces, and National Average, 2002 and 2008.

Provinces	Rural		Urban	
	2002 Population (% Rural)	2008 Population (% Rural)	2002 Population (% Urban)	2008 Population (% Urban)
Kunduz	643,000 (78.41%)	670,800 (75.98%)	176,000 (21.59%)	212,100 (24.00%)
Balkh	657,000 (75.60%)	743,900 (65.98%)	213,000 (24.40%)	400,900 (35.02%)
Nangahar	990,000 (90.9%)	1,146,400 (85.06%)	99,000 (9.09%)	187,100 (14.04%)
Panjshir	-	136,700 (100.0%)	-	-
National	15,834,000 (78.03%)	18,181,200 (77.33-%)	4,457,000 (22.09%)	23,511,400 (22.76%)

Sources: Calculated from Central Statistical Office of Afghanistan, Afghanistan Statistical Yearbook 2003, and Estimated Population of Afghanistan 2008-2009. Note: Panjshir as a province was established from the Parwan Province in April 13, 2004. No separate data for Panjshir province is available for 2002. The Province has no urban area.

[28] Central Intelligence Agency, The World Fact Sheet. Shows a different figure which is 32,738,376 (July 2008).

MALE AND FEMALE

No significant change is observed in female-male ratios both in rural and urban areas over the years 2002 to 2008. The proportion of male is higher than female in all the four provinces and also in urban and rural areas. National statistics shows that proportion of male population decreases over the last six years, and the same is found in Nangahar and Kunduz provinces. Reverse situation is observed in Balkh province where proportion of male population increased during the period 2002 and 2008. The major ethnic groups living in Balkh province are Tajik and Pashtun[29].

Table 4.2: Changing Pattern of Female-Male Population in Four Provinces and National Average, 2002 and 2008.

Provinces	Rural (%)			Urban (%)			Total Rural Urban (%)		
	Female	Male	Both	Female	Male	Both	Female	Male	Both
Kunduz									
2002	48.83	51.17	100	47.16	52. 84	100	48.41	51.59	100
2008	49.47	50.73	100	48.61	51.39	100	49.11	50.89	100
Balkh									
2002	48.71	51.29	100	47.42	52.58	100	48.45	51.55	100
2008	48.69	51.31	100	48.66	51.34	100	48.85	51.14	100
Nangahar									
2002	48.67	51.33	100	47.47	52.53	100	48.67	51.33	100
2008	48.86	51.14	100	48.53	51.47	100	48.81	51.17	100
Panjshir									
2002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2008	48.87	51.13	100	-	-	-	48.87	51.13	100
National									
2002	48.71	51.29	100	47.74	52.26	100	48.50	51.50	100
2008	48.95	51.05	100	48.51	51.49	100	48.85	51.15	100

Sources: Calculated from Central Statistical Office of Afghanistan, Afghanistan Statistical Yearbook 2003, and Estimated Population of Afghanistan 2008-2009. Note: Panjshir as a province was established from the Parwan Province in April 13, 2004. No separate data for Panjshir province is not available for 2002. The Province has no urban area.

The province of Nangahar is located in the eastern part of Afghanistan and shares border with Pakistan. According to an estimate more than 60% of the population migrated to Pakistan during the war and roughly 45% of them have permanently returned. Back and forth movement of people from Nangahar to NWFP is very common due to free access along the border. The majority of population in both Nangahar and NWFP are Pashtun and, on both sides of the international border, most inhabitants share a similar tribal structure, language and religion, along with many cultural traditions. Kuchis form a 10-15 % of the population in the province. These are nomads which come to Jalalabad during the winter and mainly settled in Surkhrod, Kama and Besud districts of the province. Some of the Kuchis have settled down in the province and abandoned the nomadic life and have started small businesses.

4.2 RECOVERY OF THE ECONOMY

[29] The Afghan people are in fact ethnically and linguistically diverse because of its location in central Asia. They are related to many of the ethnic groups in Iran, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan.

Afghanistan's economy is recovering from decades of conflict. The economy has improved significantly since the fall of the Taliban regime in 2001, largely because of the infusion of international assistance. According to the World Bank, in 2007[30] real GDP growth was 5.3%. Unfortunately, no reliable statistics are available on contributions by sector to the GDP after 2005. Thus, the study reverts to showing contribution to the GDP, by sector, during the period 2002 – 2005 (Table 4.3). The study assumes that similar relations also hold today.

Table 4.3: Structural change of output as a percentage GDP - 2002-2005.

Sector	Year			
	2002	**2003**	**2004**	**2005**
Agriculture	45.2	45.0	41.6	39.5
Industry	19.7	18.7	23.3	25.3
Services	35.1	35.4	35.1	35.3
Total	100.0	100.0	100.0	100.0

Source: ADB, Key Indicators of Developing Asian and Pacific Countries.

THE FOUR PROVINCES

The Four provinces of Kunduz, Balkh, Nangahar and Panjshir have geographical and locational advantages with respect to agricultural production, as well as to trade across the border. As such, they have received donor assistance for local development. Given these facts, it is expected that the contribution of these provinces to GDP be considerably higher than that of other provinces.

Kunduz Province is located in the north of Afghanistan, and has a border with Tajikistan. The land area of this province is 7,827 square km, about three quarters of which are flat suitable for agricultural production. Transport infrastructure in Kunduz is reasonable. About 68% of the roads in the province are suitable for car traffic in all seasons; 26% only during the dry season.

Balkh Province is located in the north part of Afghanistan and has a border with Uzbekistan in the north, and with Tajikistan in the northeast. Balkh province has a land area of 18,840 square km. This is a mountainous region, only about 5% of the land is flat.. Transport infrastructure in Balkh province is limited. About38% of the roads are suitable for car traffic in all seasons, and 34% only during some season. More importantly, about 27.5% of the province area lacks roads.

[30] World Bank, Afghanistan at a Glance, September 2007. The IMF shows a 14% real growth in the Afghan year 2005/2006 (*IMF selected Issues and Statistics, March 2006, p.75).* According to CIA , real GDP growth exceeded 8% in 2006 (*Quoted in ÜSAID Afghanistan, "Draft Final-2:Impact Evaluation – Rebuilding Agricultural Markets Program (RAMP)", October 23 – November 30, 2007, p.2*

Agriculture is the major source of income. About 42% of households in Balkh province derive income from farming. Cotton, sesame, tobacco, olives, and sharsham are the major industrial cash-crops in the province. Statistics for the Province indicate that out of the total of 1,140 villages, 434 (38%) produce sesame, 422 (37%) cotton, 148 (13%) tobacco, and 123 (11%) sugar. Small industries are dominated by one commodity --Karakul Skin--, though the public opinion is that this industry is diminishing. This industry is dominated in the Dawlat Abad, Balkh, Chimtal, and Sholgara Districts. Furthermore, more than 408 (36%) of the villages are engaged in handicrafts, particularly in manufacturing of rug.

Balkh is highly developed. For example, 49% of households in Balkh have access to electricity, compared to national average of only 6%. Access to electricity, in urban areas is 95%, and in rural areas is 26%.

Agriculture is the major source of income for about 42% of households in Balkh province. Cotton, sesame, tobacco, olives, and sharsham are industrial crops in the province. Of the total 1140 villages, 434 or 38% produce sesame, 422 villages produce cotton, 148 villages produce tobacco, and 123 produce sugar. Small industries is dominated by one commodity (Karakul skin, though the public opinion is that this is now diminishing) and this is dominated in Dawlat Abad, Balkh, Chimtal, and Sholgara districts. More than 408 villages of the 1140 are engaged in handicrafts, particularly in manufacturing rug.

Nangahar Province is located in the eastern part of Afghanistan, and shares a border with Pakistan NWFP Province. Its Capital City, Jalalabad, lies on an ancient trade route, leading from Kabul via the Khyber Pass, to Peshawar and the Indian subcontinent. The province is endowed with many natural resources. In the Kogiany District are large mines of high-quality marbles, which are used locally and also exported to other countries. Natural forests are found in eleven districts adjacent to Spin Ghar.

Nangahar has abundant water resources. The major sources of irrigation are the Kabul and Kunar rivers (shown below). Twelve main perennial are washed from Spin Ghar. The only dam in the province is Duranta Dam, built in 1957, with a capacity of producing 11 Mega Watts of electricity.

The majority of the people depend on agriculture and livestock. The department of agriculture in Jalalabad estimates that there are 97,000 Ha of arable irrigated agricultural lands in the province. Nangahar province is known as the "**food basket for the whole of Afghanistan,"** as most of the crops produced in this province, are consumed by the people in Kabul and other parts of Afghanistan.

Agricultural crops in the summer are: rice, maize, cotton, sunflower, beans, potato; and the winter: wheat, barley, sugarcane, potato and mustard. The summer vegetables are: okra, tomato, egg plant, pepper, pumpkins, cucumbers, spinach, lettuce and the winter vegetables are onion, cauliflower, turnip, spinach, radish, carrot, and cabbage. Fruits such as grapes, apricot, oranges, walnut, persimmon, guava, plum and watermelons are grown in Jalalabad. Finally, there are government olive farms along the Jalalabad- Torkham highway, which were planted during the Russian occupation period.

Panjshir Province was established in April 2004. Before 2004 it was a part of the Parwan province. It has a land area of 3,610 sq km. It contains the Panjshir valley which is divided by the Panjshir River.

DONOR ASSISTANCE

Donor assistance has been contributing significantly to recover of the provincial economy. The USAID has been involved in rehabilitating four Provincial and District roads in Kunduz, Balkh, Nangahar and Panjshir provinces. The rehabilitated roads have enabled year-round travel, and improved linkages with other cities and provinces in Afghanistan and abroad; and have contributed to overall growth of the provincial economy.

However, roads rehabilitation is not the only player in economic development and growth. For instance, over the last five years, there was major shift in crop pattern at the Nangahar Province, due to the knowledge brought by refugees from Pakistan, and by extension and input support from development organizations such as DAI, RI, GAA, and ICARDA.

The USAID funded the RAMP project, constructed water intakes, repaired farm-to-market roads, and renovated and constructed grain , storage and mills in Nangahar and Kunduz. These programs together, resulted in an increase in wheat, cotton and rice production, in Nangahar and Kunduz. RAMP's initiative on "village women's poultry production and market development" in Nangahar and Kunduz enabled women to participate in poultry income generating activities.

The USAID funded ICARDA's greenhouse (GH) has shown successful results in Kunduz. and Nangahar. Many of the cucumber farmers have indicated that in comparison to the previous "open field" crops, their income has increased by 2-3 times; and this, with lower labor costs.

The World Bank financed program, National Emergency Rural Access Program (NERAP), has provided year-round access to basic services and facilities in the rural areas of Afghanistan. The World Bank financed, National Solidarity Program (NSP), has supported activities in more than 20,000 villages, through elected community development councils, in Afghanistan's 34 provinces, including Kunduz, Balkh, Nangahar and Panjshir.

More than 35,000 community projects have been financed by the World Bank, of which more than 18,000 projects have been completed. About 88 percent of the community projects are related to improve infrastructure such as irrigation, rural roads, electrification, and drinking water supply, all critical for the recovery of the rural economy, stability, and governance.

Jalalabad is the hub of most economic development activities, due to its central location and proximity to Pakistan. Among others, the city has couple of marble factories near the Nangahar University, and has recently establishes a soap factory. The Duranta area of Jalalabad is famous for manufacturing pressure cookers. The City of Jalalabad has olive and sunflower oil production factories. The German Agro Action (GAA) has established a factory in Achin district for rose water production.

Fish farming is also a growing business in the Province. Different NGOs such as DAI, Relief International and GTZ are providing technical and financial assistance to the interested farmers for establishing private commercial fish farms.

The timber business in the province is also quite substantial. The major business in Jalalabad is in food items, construction material and agricultural inputs, which are largely imported from Pakistan. The trade, in both vegetables and fruits at Jalalabad and the regional markets, is a growing industry which provides significant additional employment.

Afghanistan has several regional market advantages. Its products are rated top in the nearby Indian market. Among others, India has a prosperous middle-class population of more than 300 million, which is doubling its incomes every eight years. These opportunities together with donor interventions, contribute to recovering and growth of the regional and provincial economy.

4.3 IMPACT ON EDUCATION AND HEALTH

Table-4.4 shows literacy rates of people of all ages in the four provinces; Table Y shows the literacy rates of young adults, age 15-22; and Table Z percentages of boys and girls enrolled in primary schools at the four provinces under study. The overall literacy rate across the country for all ages is 24%, means a quarter of Afghan can “read and write”. Around 50% of the urban and around 20% of the rural population is literate.

Literacy rate among the male (32%) is almost double than the female.(15.8%). The ratio between female and male literacy is 0.40 in Rural and 0.73 in urban population of Afghanistan. The literacy rate in four provinces - Kunduz, Balkh, Nangahar and Panjsher shows a different picture. Literacy rates in rural areas of Panjsher (32.2%) and Balkh (31.9%) are higher than Kabul (31%), and the positions of these two provinces in rural literacy rate are fourth and 5th among the 34 provinces. The position of Kunduz is 8th (26.8%). The reasons for higher literacy rate of these provinces might explained by the facts of better accessibility by roads, less rigid cultural norms, and the influence of the main cities. The Panjshir province has been newly included in the list of top literacy rated province, and this is partly because of the different donor and NGO interventions in the education sector of this province. This higher literacy rates in all these four provinces bring about a lot of change in the attitude of people of these provinces.

LITERACY RATES

Table 4.4: Literacy Rates, All Ages, Kunduz, Balkh, Nangahar and Panjsher Provinces.

Province	Rural			Overall		
	Female	Male	Both	Female	Male	Both
Kunduz	17.3	34.4	26.8	19.5	34.4	27.8
Balkh	19.7	41.9	31.9	28.4	47.1	38.6
Nangahar	7.9	32.2	20.8	12.8	33.6	23.8
Panjsher	19.2	43.3	32.2	16.7	35.7	27.1

United Nations Millennium Goal emphasizes on improving literacy rate among 15-24 years old youth population. The overall average literacy rate among the youths in Afghanistan is 31.3% with urban 63.6% and rural 25.6%. The youths' literacy rates of the Panjsher, Balkh and Kunduz provinces are 46.2%, 37.5% and 33.6% respectively and the positions of these three provinces are among the top 10 youth literate provinces in Afghanistan.

Table 4-5: Literacy Rates, 15-24 Years Old, in Kunduz, Balkh, Nangahar and Panjshir Provinces.

Province	Rural			Overall		
	Female	Male	Both	Female	Male	Both
Kunduz	17.5	45.0	33.6	20.7	44.6	34.6
Balkh	19.3	50.2	37.5	35.4	58.3	48.7
Nangahar	6.9	48.0	31.3	15.5	47.7	34.3
Panjsher	24.6	63.2	46.2	21.6	50.1	38.4

The Kunduz, Balkh, Nangahar and Panjshir provinces are enlisted in the top provinces in terms of boys and girls enrolled in the primary schools. 58% of the boys and girls in the Kunduz province are enrolled in primary schools and its position is second among 34 provinces. Access to primary schools of the girls is highest in the Kunduz among all provinces in Afghanistan.

SCHOOL ENROLLMENTS

Table 4.6: Percentage of Boys and Girls Enrolled in Primary Schools.

Province	Rural			Overall		
	Girls	Boys	Both	Girls	Boys	Both
Kunduz	47	69	59	62	69	62
Balkh	42	67	55	48	66	58
Nangahar	27	54	41	28	51	39
Panjsher	41	60	52	32	49	42

According to NRVA 2005 estimates, the position of the Kunduz province is the highest in terms of boys and girls of age-group 6-13 enrolled in the primary schools, and the ratio of the

boys and girls are almost the same, i.e. 76% of the boys and 74% of the girls are attending to the primary schools. The national average is much lower than these. The overall national averages of Afghan boys and girls attending primary schools are 42% and 29% respectively.

Donor assistance in spreading primary education is appreciable. Since 2002, more than 6 million students and teachers in Afghanistan have returned to school as a result of a donor-assisted Back-to-School Campaign. The numbers have exceeded the expectations, and the World Bank is helping rehabilitate primary schools and train teachers, while giving technical assistance designed to strengthen the Ministries of Education and Higher Education. In Balkh province IOM, SC/UK, GAA, CHA and BRAC contributed in construction and rehabilitation of school buildings, Quality Primary Education, Vocational Training, and non-formal education. In terms of educational environment, the position of the Nangahar is better than many others. There are more than 300 schools in the Nangahar province, the Nangahar University, one of the largest universities, located in the provincial capital provides higher education to the residents of the province and adjacent provinces. A network of school for boys and girls exists in the provincial centre and district level. There is also an increased trend of vocational training, which has created job opportunities for the people living in these provinces.

HEALTH SECTOR

This sector shows significant improvement in service provisions. In 2002 only about one quarter of the urban population had access to medical supply and clean drinking water, while in rural areas this figure was as low as 19 percent31. Polluted drinking water is one of the main causes of child mortality. One out of four children dies before reaching the age of five years. Average life expectancy lies between 43 and 46 years32. John Hopkins University (JHU) carried out a study and its findings show that the quality of health care has improved by 32% from 2004 to 2007, and the number of patients served has more than tripled. In another survey JHU indicates that the under-5 mortality rate in Afghanistan declined from an estimated 257 per 1,000 live births in 2001 to about 191 per 1,000 in 2006. This means that about 80,000 fewer children are dying each year now, compared to during the Taliban rule. Yet the majority of Afghans still live in dire poverty without access to safe drinking water or electricity, or opportunities to improve their lives.

4.4 IMPACT ON POVERTY AND GENDER EQUALITY

Afghanistan was very poor before the war. During the past quarter-century fell further behind the rest of the world. Economic growth is the cornerstone of the Government's strategy to reduce poverty, as laid out in the country's National Development Strategy paper. Since 2001, economic growth has been strong and has generated better livelihoods[33]. The World Bank indicated that a major challenge to designing an effective poverty reduction strategy in Afghanistan is collecting data to accurately measure the extent of poverty. No comprehensive picture of poverty and other social indicators is available. The 1384 (2005/06) National Risk and Vulnerability Assessment (NRVA) survey was recently completed with detailed consumption data in both urban and rural areas. Keeping data limitations in mind, current available data suggest that around 36% of rural households face chronic or transit shortage of

[31] WHO/UNICEF Report
[32] CIA World Fact Book
[33] World Bank, Poverty Reduction in South Asia (Website)

food. Social indicators are no better than this. Despite the success of the back-to-school campaign, half of all school-age children remain out of school. More than 20% of all Afghan children die before the age of five, of which a third dies soon after birth. Another study estimated that approximately 28 million Afghan live below the poverty line[34]. The rural sector is home to the bulk of the poor of Afghanistan – on the order of half the rural population is below the $1 per day poverty line. The World Bank has been supporting the Government's reform on public finance and governance. The Bank also plans to provide the Government with technical assistance to improve poverty measurement and evaluate policy instruments.

To ensure economic empowerment of the women and poverty reduction, micro-credit program has been taken as a model in different developing countries of the world. In Afghanistan in just over four years of operations, the Expanding Microfinance Outreach and Sustainability Project has provided more than US$124 million in funds, including US$83.91 million in loans. There are now 15 microfinance institutions (MFIs), with a network of over 261 branches in 23 provinces including Kunduz, Balkh, and Nangahar, with more than 422,000 savings and loan clients. Sixty-five percent of the clients are women, and the loan repayment rate is 85%. Different other micro-finance and women rights, and income generations projects are successfully operating in different provinces. In order to promote local economies and provide farmers with necessary equipment, the USAID funded RAMP implemented—in partnership with the World Bank—a grant of $5 million to the Ministry of Reconstruction and Rural Development. The ministry uses the grant to implement microfinance programs and loans. These loans range between $50 and $5,000, and support small agricultural and women-owned businesses. The RAMP project also initiated village women's poultry production and market development in the Nangahar and the Kunduz, provinces which enabled women to participate in poultry income generating activities. The WOCCU worked in Balkh for women professional businessman development. Action Aid is working for Women right, AGEF vulnerable women right and kinder gardens in Balkh. In the Nangahar Province DWHH/GAA small scale credit fund under Food Security Project was implemented in five districts of Nangahar province. The microfinance program of the MRRD is mainly implemented in the province by BRAC, FINCA and MADERA, which has shown successful results. The Vocational Training Centre at Jalalabad is upgraded very recently with assistance from UNDP/UDG. The Balkh and Kunduz Vocational Training Centers are in the process of upgrading. This project will have greater impact on increase in income, employment and livelihood opportunities for ex-combatants, disabled, widows and most vulnerable people in the Nangahar, Balkh and Kunduz provinces.

V. PROJECT LEVEL IMPACT OF ROAD REHABILITATION

5.1 PROJECT DESIGN

Project monitoring and evaluation is conducted in accordance with established procedures and tools, and is undertaken by the M&E team. Well-designed M&E Handbook explains the general procedures and tools of monitoring and evaluation, and M&E plan of a project is designed accordingly. The Project Logical Framework (PLF) matrix (a part of the project design) provides performance and impact indicators for project implementation along with

[34] R, Thomas, AGEG, Evaluation of Community Development in Eastern Afghanistan, Final Report, German Agro Action, 2007

their corresponding means of verification. These, along with the objectives, procedures and tools described in the M&E Plan presented in the project document will form the basis on which the project's M&E system will be built. A monitoring and evaluation system should be built into the project in order to permit periodic appraisal of the project's performance, physical outputs, benefits, expenditures and impacts.

Sustainability is another important aspect of a successful project design. 'Sustainable developments are those that meet present need without compromising the ability of future generations to meet their need[35]. Due to the lack of development of sustainability parameters in project design, many projects fail. During the project formulation stage, it is very much important to investigate whether or not the project will be able to continue into the future without future assistance from the original donors. Recent examples can be cited from Draft Final Report-2 of the Impact Evaluation of Rebuilding Agricultural Market Program (RAMP). **Poultry for women** and **protected agriculture projects** were very successful during the project implementation period. As the project period is over, they have started showing diminishing impacts**.** Poultry for women project was implemented by FAO to increase income from the sale of eggs for over 28,000 women. New markets have opened in urban centers bringing additional revenues to the participants. Fourteen months after RAMP ended, only 45% of 28,000 women are found active, but they are facing a serious problem due to lack in continued supply of quality new chicks and feed. A project beneficiary women in Herat expressed that they have 'lost hope' due to this failure[36]. Same is the case of protected agriculture project, which showed successful results during the life of RAMP. Due to lack of sustainability parameters in original project design, the project beneficiaries bear all troubles and loose their hopes when the donor assistances are withdrawn.

Provincial and District Roads project under study possesses the similar problem in its project designs. The project design lacks in Benefit Monitoring and Evaluation (BME) system. A project-based M&E system has the advantage that it can easily respond to the changing environment and incorporate changes into the project cycle to achieve the project objectives. Sustainability parameters are also lacking in project design. Maintenance of the project road if depends on foreign assistance, sustainability of long-term maintenance program including the sustainably of social and economic benefits might fall in serious constraints, and thus the project will fail to achieve long-term results.

An indicative suggestive framework is provided below about an effective M&E System for future project design on roads.

5.2 DEVELOPMENT OF AN EFFECTIVE M&E SYSTEM

An effective M&E system contributes to the effective project implementation if it can develop a model for monitoring the following:

- Impact Monitoring
- Process Monitoring
- Output Monitoring
- Impact Monitoring

[35] WECD, 1987 as Mahaffy, 1999

[36] Draft Final-2: Impact Evaluation: Rebuilding Agricultural Markets Program (RAMP)', USAID/Afghanistan, October 23 – November 2007, p-9

- Sustainability Assessment, and
- Replicability assessment

The project design ensures that M& E system is adequately incorporated the answers of the following questions?

Input Monitoring: to assess whether project resources (money, technical support, equipments, credit, etc) are being utilized on time and for the required purposes?

Process Monitoring: is the project being implemented in an efficient and participatory way, and is the project accessible to all sectors of the target population, including women?

Output Monitoring: is the project producing the required outputs? (road, training program, development and testing of providing credit for NMT, reduced travel time, and load burdens, etc.)
Impact Evaluation: is the program, or any individual project producing the intended impacts on the target population (increased income, improved health, increased access to education, gender equality, women's participation in community management, etc)?

Sustainability Assessment: are the facilities and services introduced by the program sustainable (maintenance of roads, credit repayment, maintenance and continued use of IMTs)?

Replicability Assessment: Can the pilot activities and projects developed under the Ministry be replicable on a larger scale? (Resources and capacity)?

5.3 M&E INDICATORS AND SUSTAINABILITY PARAMETERS

Although not all effects will occur everywhere, the foregoing discussion makes it clear that a socioeconomic impact assessment of rural roads needs to cover an exceptionally large array of issues, and that a commensurately large set of variables needs to be collected. Baker[37] recommends the use of a logical (log) framework as a commonly used tool for identifying project goals. The log frame is a matrix that matches information on project objectives with various performance and output benchmarks. However, other techniques are possible to identify the objectives of the evaluation. This exercise is particularly important for rural roads because the range of impact indicators can be very wide, going from transport-specific indicators to general social impact indicators (health, education) and general welfare indicators of earnings and consumption. To help organize this information, the relevant indicators can be put in three categories:

1) Transport project outputs, such as vehicle operating costs, duration and fares of transport, frequency of trips, and accessibility of roads.
2) Transport project outcomes, such as access to jobs, markets, Health and Education facilities.
3) Welfare or living standards outcomes, such as incomes, literacy, health status.

[37] J. Baker, Evaluating the Impact of Development Projects on Poverty — A Handbook for Practitioners. Directions in Development Series, World Bank, 2000

The first two categories measure the direct effects of the road, and the third category measures the indirect effect.

1. Direct Effect

1.1 Transport Project Output Indicators

- Traffic density (vehicles per day, frequency of bus service)
- Road passability (number of days of road closure)
- Fares and costs (passenger and freight transport fares)
- Transport patterns (number of trips, duration, mode of transport to selected destinations, by age and gender)
- Vehicle ownership (motorized and non-motorized vehicles owned)
- Accidents (injuries and fatalities, by age and gender)

1.2 Transport Project Outcome Indicators

- Access to education (school enrollment and drop-out, by gender)
- Quality of education (absenteeism of teachers, availability of school supplies)
- Access to health facilities (number of visits, by age and gender)
- Quality of health facilities (qualifications of staff, availability of medical supplies)
- Access to markets (frequency of visits by age and gender, products sold and bought)
- Prices (prices of key commodities, agricultural inputs, land)
- Time use of household members (time spent on fuel wood collection and other transport tasks, by age and gender)
- Other (access to credit, migration patterns)

2. Indirect Effects

Welfare Outcome Indicators

- Impact on agricultural activities (crop mix, use of inputs, visits of extension agents)
- Impact on non-agricultural activities (activity mix, off-farm employment)
- Income structure (type of income sources)
- Composition of expenditure (share of food, transportation)
- Health status (incidence of illness, number of work days lost due to illness, by age and gender)
- Education status (literacy, average years of education, by age and gender)
- Social interaction (number of visits to other villages and cities, participation at social events, by age and gender)
- Political participation (number of visits by government officials, participation in community or political events, by age and gender)

5.4 FOLLOW-UP

Road and transport development process cannot be considered complete. Whoever is responsible, should follow it up, to see that the process is properly financed, either by the government or by international agencies, and approved for action.

To observe sustainability of the socio-economic benefits and planning for further action:

- Repeat the baseline socio-economic surveys every 5 to 10 years to compare the results.
- Make special surveys, if needed.

Finally, government and donor agencies, and policy makers should realize that where a M&E system is funded by a donor, this may mean that at the end of the project, the M&E unit, if any, will close thus reducing the impact of this system on any future work. It is therefore important that these issues be addressed before the system is put in place.

VI. SUMMARY OF FINDINGS AND RECOMMENDATIONS

6.1 SUMMARY OF FINDINGS

On the four project roads together, frequency of operation is highest for car (8,058/day) followed by minibus (2,001/day), freight vehicles (1,673/day). In terms of per-km road use per day, Nangahar/Kunar provincial road shows the lowest volume of vehicles in terms of per-km of road use (43 vehicles/km/day). The corresponding figures for Panjshir Valley provincial road, and Balkh and Kunduz district roads are 45 vehicle/km/day, 97 vehicles/km/day and 89 vehicles/km/day respectively. District roads are more effectively used by the transport operators.

Bus operation is the lowest among all types of vehicles on the project roads. Frequency of car operation is 1988% higher than bus, minibus operation is 418% higher than bus, and freight vehicle operation is 333% higher than the bus operation.

The road has reduced travel time from Bazarak to Kabul by about a half, from five hours to just less than two and a half hours. On the Nangahar/Kunar provincial road, mini bus passengers save time by 30% compared to pre-project period. On the Panjshir Valley Provincial road the corresponding figure is about 75%. The project roads thus created a significant impact on time savings by the passengers.

The individual monthly income of an earning member in all ZOI villages is about 1.59 times higher than that of the “control villages”. A comparison between the “traditional villages” within the ZOI and the “control villages” seem to indicate that the road rehabilitation has increased individual income by about 51.11%. Within the ZOI, the individual income of the sample people in the “progressive villages” is 8.20% higher than that of the “traditional villages”. As both progressive and traditional villages are within the ZOI and the only difference is market, it seems to indicate that the market infrastructure alone brings no significant increase in **real income.** But household income is 23.58% higher in “progressive” villages compared to “traditional” villages. On the other hand, an average household income

in “traditional villages” within the ZOI is about 1.50 times (50% higher) higher than in “control villages”.

Road improvement has also impacted the employment of the household members, though the rate is very low. Average participation rate in ZOI villages is about 19.4%. This is about one-half of the national average of 40%, whereas the “traditional villages” show a slightly higher employment rate (21.8%) compared to “progressive villages” (18.12%). Progressive and traditional villages together constitute about 26 diversified occupations, whereas this is only three in control villages.

The monthly wage of a “general laborer” is around 4,500 Afs whereas a “skilled laborer” such as carpenter, or a mason, earns about 8,000 to 10, 0000 Afs or more per month. In control villages skilled labor is very rare, but in traditional and progressive villages in the ZOI there is a significant amount of skilled labor.

Road investment brings about no significant impact on the employment of rural women. The present survey covered 3,905 family members, and after a careful analysis of all data, the study team finds only two women members employed: one is self-employed (in tailoring), and the other is a nurse.

Percentage of children enrolled in primary schools is highest in “progressive villages” (57.38%) and lowest in “control villages” (32.01%). The overall access of the children to primary schools in ZOI villages is 47.23%, and that of control villages is 32.01%. A comparison between the “control” and “traditional villages” seems to indicate that the road improvement program has quite a significant impact on child enrolment in primary education, though the overall picture of the children’s access to primary school is not satisfactory. About 75% of the children living in the “control” villages and about 52%of the children living in ZOI villages are not enrolled in primary schools, and thus they do not receive the blessing of education. Of the children who are attending schools, girl students are always fewer, and this varies from 22% in control villages to 32% in the progressive villages.

Road improvement has brought about a significant impact on access to health care centers. The highest frequency of visits to the healthcare centers is observed by the women living in progressive villages (22.3/year) in ZOI. Of men and women who visited the nearest healthcare centre, 74.3% of them expressed that they have used the project road while visiting the centre. 93.4% of the visitors living in the progressive village have used the project road while visiting the healthcare centers.

The 5th quintile depicts that of those who are individual level income earners, their average income is only 1,236 Afs($25) per month, and the household income of this quintile is only 1,996 Afs ($40) per month. That is, per capita income per month is only $6 for those who are living at the bottom stratum. On the other hand, per capita income per month varies from $6 to $28 among the 2nd to 4th quintiles, indicating that 80% of the households in ZOI still lie below poverty lines.

Overall the number of shops have almost doubled from 96 shops to 190 (+97%) after” the road construction. More than 90% of interviewed shop-owners have expressed that they have been using the project road for getting their merchandize. Average sale volume per-day in all

the survey market is 314,410 Afs ($6,288), and average daily sales volume of an individual shop is about 1,655 Afs ($33.10).

The results of the regression models lend strong support to the hypothesized effect of road improvement. "Distance of household from the road" is found to be negatively related to household income, meaning that the longer the distance of a household from the road the lower is the household income. The overall effect of using seeds, fertilizers and pesticides as well as the existence of market and road have a significant impact on household income. The R^2 =0.69 for this equation indicates that 69% of the increase in household income is explained by these factors in "progressive villages".

POTENTIAL PROBLEMS FACING THE ROAD PROJECT DESIGNS

The four road projects under study are facing, potentially, several problems in their project design to achieve the project goals. The project design was not "pro-poor" in nature, and suffers from a lack of Benefit Monitoring and Evaluation (BME) systems and "sustainability parameters". If future, long-term maintenance of project roads depends on foreign assistance (which is not part of the project design), the project lacks long-term sustainability. There is a danger that maintaining social and economic benefits along the project ZOI and beyond will not hold in the long-run, unless a plan for long-term repair and maintenance, based on local resources, is integrated into the project.

6.2 RECOMMENDATIONS

To achieve socio-economic goals, the study team provides the following recommendations:

1. To achieve the project goals, particularly poverty alleviation and gender equality, "pro-poor" project design and integration of women in all stages of planning, design, and implementation of the project will be most effective. The "gender-neutral" and "people-neutral" project design will not provide any substantial impact on development of the poor and women. Project designers and planners prepare projects with the perception that the poor and women will receive benefits like others. The reality however is that their access to project facilities is constrained by some other factors for which they cannot receive maximum benefits. The study team recommends that the soft part of a road project may be implemented with NGO partnership.

2. "Benefit Monitoring and Evaluation" (BME) system and "sustainability parameters" are important elements in the project design, without which the project may not achieve its long-term goals. If, for example, maintenance of the project depends on foreign assistance and if the assistance is withdrawn, then benefits will diminish in the long-run due to non-maintenance of the project facilities. There is a danger that maintaining social and economic benefits along the project ZOI and beyond will not hold in the long-run, unless a plan for long-term repair and maintenance, based on local resources, is integrated into the project.

3. An ideal project design also includes evaluation of the projects at different stages by the external bodies. Applying the "Double-difference Method", an ideal method of road project evaluation, requires baseline surveys for both ZOI and control villages.

The follow-up studies also carry out surveys in the same villages to estimate the net benefit of the project.

4. Public discussion in project formulation, scheme selection by local participation, and partial contribution in project implementation by the project beneficiaries will create a sense of ownership of the project facilities. In long-term routine maintenance programs, NGOs may target poor people (including women). They will serve two purposes: routine maintenance and road-side tree plantation. Ownership of trees may be shared between the road authority concerned and the routine maintenance workers, and NGOs. The NGOs will be responsible for supervising routine maintenance, tree plantation activities, imparting training, providing advice on extension services, and income generating activities targeting poor people. This partnership program (road authority, NGO, routine maintenance workers, and the community (as community people have selected the scheme and provided a partial contribution) will create a sense of ownership among all the beneficiaries.

5. The market is the centre of all rural economic activities, and it influences economic diversification and productivity. Linking rural roads with markets and markets to project roads will create external demand for the local products. Inputs can be easily available with the producer at the remote areas. In Afghanistan, rural roads constitute about 50% of the total road network[38]. To maximize benefits to the rural people, linking rural roads with markets and markets with project roads deserves top priority.

6. Potential rural markets may be identified and improved on priority basis to facilitate more economic activities in the market, which will ultimately create demand for rural produce and thus contribute to the growth of the economy.

7. Establishment of a rural service centre at the market corner may be suggested as a part of market infrastructure development. Rural people have limited information on market demand and international markets. They do not actually know how to get credit, what modern varieties of inputs are available, how to produce new commodities, where to buy inputs, where to sell output, etc. This centre will also provide advice on extension services and on opening new business. This Rural Service Centre sub-project may be implemented on a pilot basis, and if successful it can be replicated widely.

[38] Road Master Plan, 2006.

REFERENCES

D. Van de Walle and D. Cratty (2002): “Impact Evaluation of a Rural Road Rehabilitation Project”. Mimeo, Development Research Group, World Bank, Washington, D.C

D. van de Walle, (1999): ‘Assessing the Poverty Impact of Rural Road Projects’, Mimeo, Development Research Group, World Bank, Washington DC., 1999

E.O. Heady and J.L. Dillon (1972): Agricultural Production Function, Iowa State University Press, Iowa

G.E. Ferguson and J.M. Kreps (1972): Principles of Economics, Oxford and Ibh Publishing company, Calcutta

Hine, J.: Rural Road Impact Studies Some Reflections’, World Bank

Islamic Republic of Afghanistan: Estimated Population of Afghanistan 2008-2009’, Central Statistical Organization

J. Baker (2000): Evaluating Impact of Development Projects on Poverty – A Handbook for Practitioners, Directions and Development Series, Washington DC, World Bank

K. Ezemenari, A. Rudqvist and K. Subbarao (1999) :”Impact Evaluation: A Note on Concepts and Methods, Paper presented at World Bank Conference on “ Evaluation and Poverty Reduction, June 14-15, Washington, D.C

M. Ravallion (2001) : The Mystery of the Vanishing Benefits: An Introduction to Impact Evaluation’, World Bank Review, 15(I)

Ministry of Rural Rehabilitation and development and the Central Statistical Office, ‘The National Risk Vulnerability Assessment, June 2007

R, Thomas, AGEG (2007): “ Evaluation of Community Development in Eastern Afghanistan, Final Report, German Agro Action, 2007

USAID Afghanistan (2007) ‘Draft Final-2: Impact Evaluation – Rebuilding Agricultural Markets Program (RAMP)’, October 23 – November 30, 2007

World Bank (2002): Socio-Economic Assessment of Rural Roads: Methodology and Questionnaire’, World Bank

ANNEX A: Scope of Work

USAID/AFGHANISTAN

ASSESSMENT OF SOCIOECONOMIC IMPACT OF THE KABUL TO KANDAHAR AND KANDAHAR TO HERAT ROADS

&

DISTRICT AND PROVINCIAL ROADS

FEBRUARY 10, 2008

SCOPE OF WORK

FOR THE SHORT – TERM ASSIGNMENT

UNDER SUPPORT PROJECT

ASSESSMENT OF SOCIOECONOMIC IMPACT OF THE KABUL TO KANDAHAR AND KANDAHAR TO HERAT ROADS

SCOPE OF WORK

FOR THE SHORT – TERM ASSIGNMENT

UNDER SUPPORT PROJECT

OBJECTIVE AND METHOD

The objective of this impact assessment is to quantify and describe the socio-economic impact of the roads improved by USAID in 2003 and 2004:

- the Kabul to Kandahar (about 500 Kms), and
- Kandahar to Herat (about 556 Kms) roads

The assessment of the Kabul to Kandahar and Kandahar to Herat roads builds on the Socioeconomic Baseline Studies conducted in 2003 by the Louis Berger Group that established estimates of initial values for a variety of indicators that measure the original socioeconomic conditions for a 30km wide corridor surrounding the Kabul to Kandahar and Kandahar to Herat roads.

In addition, the assessment will also help establish impact analysis of the selected Provincial and District Roads as selected by USAID/Afghanistan/OIEE. Since these roads were improved some time ago, the assessment will estimate the impact of improving these provincial and district roads. Two provincial and two district roads as selected by USAID/OIEE are the following:

Provincial Roads:

- Jalaabad – Asmar (Nangahar/Kunar Provincial road – 122kms)
- Panjshir Valley Road (Panjshir Provincial road – 67kms)

District Roads:

- Balkh-Dawatabad (Balkh District Road – 27kms)
- Imam Sahib Connector Road (Kunduz District Road – 19kms)

The indicators measure and report on:

- Household Incomes
- Employment
- Wages
- Incidence of Poverty
- Travel Times
- Travel Costs
- Cost of Public Transportation
- Cost of Freight Transport
- Prices of Key Foodstuffs
- Shopkeeper Monthly Sales
- Improved Access to Healthcare and Education

This impact assessment will gather current estimates of the indicators measured in the 2003 Baseline Study in order to compare socioeconomic conditions before and after the completion of the road improvement projects. The assessment will show the 2003 findings

by indicator and show the increases or decreases in these indicators as estimated in 2008. For those who wish to see the full list of indicators estimated in 2003, please see the baseline reports submitted to USAID in 2004. If copies are not readily available, LBG will supply the reports on request.

The assessment team will also perform a post-implementation project evaluation that assesses and quantifies the economic benefits brought by USAID's investments made on each road. These benefits will be calculated to demonstrate the impact of the project. As part of the Impact Assessment, the post-implementation project evaluation will follow the same method used for a standard roads feasibility study. The benefits of the investment will be calculated in terms of vehicle operating costs and time savings using the "with" and "without" project results. These benefits will be then compared to the costs over the lifetime of the investment, taking into account the existing data regarding vehicle fleet, vehicle operating costs, time values, road deterioration, and planned maintenance activities.

For the Impact Assessment, the assessment team will use the same methods from the Baseline Studies, which included surveys conducted by a local Afghan NGO, key informant interviews, focus groups and traffic counts.

Key informant interviews will be conducted to ascertain the views, opinions, historical perspectives, political significance, background and the Government of Afghanistan's point of view regarding the impacts of the road improvements. The interviewees will include ministers, governors, local officials, truck drivers, community leaders, passengers, businesses, World Bank, UN, and NGO personnel. The interviews will be semi-structured around topics based on the position and particular relevance of the person being interviewed, as was done for the baseline studies.

A more detailed description of the surveys used in the original Baseline Study is listed below. By using these surveys again in this Impact Assessment (IA) and comparing the results to the 2003 Baselines, the IA will yield a richness of results far beyond a standard post-evaluation roads feasibility study.

Household Survey: Households are the basic economic unit of Afghan society, and the survey questionnaires developed by the Assessment team provide a useful description of their current economic and social circumstances. These questionnaires sought information on such topics as family size, employment characteristics, wealth and assets, education and health care practices, agricultural production, and gender issues, among others. In addition, the questionnaires tried to relate these characteristics to the roads and to their use by household members.

Settlement Demographic Survey: At the village level, the Assessment team used a separate questionnaire to collect information about its distance from the road, its population, its schools and clinics, its agricultural land base and its available amenities, in addition to its current access to the road. These questionnaires were completed through interviews with village leaders. The data generated through the Settlement Demographic Survey addressed

the economic conditions of the surveyed settlements, with particular regard to available resources and services in those communities.

Shopkeeper/Businesses Survey: This survey obtained information about shop ownership, goods sold including increase/decrease, product prices and the importance of the road to the shop's commerce. In addition to this questionnaire targeting individual shopkeepers, the Team also had surveyors count the numbers of shops categorized by the goods they were selling in larger bazaars within the area of influence of the roads.

Freight Transport Companies: While the previous three survey questionnaires were targeted at populations and businesses in villages and towns, the survey of freight transport companies focused on urban areas. Areas were identified where shipping companies tended to set up shop and structured interviews were held with those firms, seeking information on transportation routes, vehicle types used for transport, travel time, costs, prices and the expected impact of road improvements.

Driver Survey: Driver interviews were often undertaken in tandem with the freight transport company surveys. However, passenger and driver surveys were also undertaken along the road and, in the case of these surveys, at bus and taxi depots. The questionnaires sought information regarding such topics as vehicle operators' frequency of travel, travel patterns, ownership, costs, income, and security along the road, among others.

Passenger Survey: This survey provides basic data on origin/destination, travel times, fares, and income levels to determine the incidence of poverty among passengers. Passenger surveys were undertaken primarily at bus depots and along the road. These questionnaires also collected information on expected impacts of the rehabilitation of the road.

Traffic Counts: In addition to surveying households, businesses, settlements, and transportation enterprises, the Assessment team will conduct traffic counts along both roads. These traffic counts provide a measure of the volume and composition of traffic passing on the roads, which is important background information for determining economic impacts of the rehabilitation such as increased traffic volume, decreasing travel times and travel costs. The traffic counts entail directional counts of passenger vehicles (cars, buses and minibuses) and freight vehicles (two axle, three axle and articulated trucks) in the same locations used in the Baseline Studies. Additional traffic counts have been taken since the Baseline Studies, and these will be included and analyzed in the IA.

WORK PLAN

TIMELINE	
WEEK 1	• Home office preparation
WEEK 2	• Kick off meeting with USAID/Kabul and preparation of the detailed work plan • Mobilization of local staff
WEEKS 3&4	• Commencement of household, settlement and shopkeeper surveys. • Commencement of traffic counts. • Key informant interviews.
WEEKS 5&6	• Entry of traffic count data. • Supervision of household, settlement and shopkeeper surveys. • Key informant interviews.
WEEK 7	• Economic analysis of traffic count data. • Supervision of household, settlement and shopkeeper surveys. • Passenger, vehicle operator and freight shipper surveys.
WEEK 8	• Data entry and analysis of household, settlement and shopkeeper surveys. • Passenger, vehicle operator and freight shipper surveys.
WEEK 9	• Data entry and analysis of settlement and shopkeeper surveys. • Data entry and analysis of passenger, vehicle operator and freight shipper surveys. • Report drafting.
WEEK 10	• Submission of Draft Report. • Presentations to various stakeholders as directed by USAID.
WEEK 11	• USAID Review and USAID interaction with team to revise report. • Presentations to various stakeholders ad directed by USAID.
WEEK 12	• Finalization and submittal of all deliverables to USAID Mission in Kabul, to include the Final Report, and presentations of findings as directed by USAID in different venues.

DELIVERABLES

- **Work Plan** Within four days of arrival, a revised final work plan will be prepared and presented to USAID/Afghanistan.

- **Summary of Metrics**. This report will provide an executive summary, no longer than five pages, that succinctly reports on the findings pertaining to socioeconomic conditions and a statement of the project's economic impact in terms of NPV. The summary will provide data on metrics that quantify the benefits and costs to the Afghan people in order to effectively communicate the project's effects to policy makers in the U.S. Government and the Government of Afghanistan.

- **The Effects of Improving Kabul to Kandahar Road and the Kandahar to Herat Roads: A Four-Year Retrospective Study**. The report will compare the initial values of the indicators listed above to the values estimated in the 2008 IA to show the nature and extent of the socioeconomic impacts (reporting what is found objectively, including positive and nay negative effects) of these important transport initiatives for the people of Afghanistan. They will quantify the projects' economic benefits in terms of NPV by conducting a post implementation economic evaluation, in addition to a number of other metrics briefly discussed above and elaborated in the 2003 Baseline Studies. In addition, this report will detail the methods used to arrive at these estimates and gather data.

- **Evaluation Study and baseline estimates of the Socioeconomic Impact of Selected Provincial and District Roads**. This report will establish baseline estimates for economic and social indicators for selected provincial and district roads in Afghanistan. Since many of these roads were improved some time ago, the assessment will estimate the impact of improving these provincial and district roads. Two provincial and two district roads as selected by USAID/OIEE are the following:
    - Jalaabad – Asmar (Nangahar/Kunar provincial road – 122kms)
    - Panjshir Valley Road (Panjshir provincial road – 67kms)
    - Balkh-Dawatabad (Balkh District Road – 27kms)
    - Imam Sahib Connector Road (Kunduz District Road – 19kms)

- **De-brief and Exit Report**. The consultant/team leader shall submit to the COP of SUPPORT within 10 calendar days following departure a brief written report describing the purpose of the consultancy, progress made, any observations to be shared, issues identified and/or problems encountered and expected follow up work.

Deliverables

- Draft Final Reports will be submitted through the COP of SUPPORT to USAID for review and comment no later than the end of the tenth (10th) week after mobilization to Kabul of the Impact Assessment Team.

- During the tenth (10th) and eleventh (11th) week after mobilization to Kabul, the assessment team will give presentations as requested by USAID, including, as requested, presentations to small internal USG audiences as well as a major presentation to the public, GOA, and the other donors.

- During the eleventh (11th) week after mobilization to Kabul, the assessment team will work with USAID as required while USAID reviews and comments on the draft reports.

- By the end of the twelfth (12th) week after mobilization to Kabul, the assessment team will submit the Final Reports through the COP of SUPPORT, incorporating USAID's comments on the draft reports.

CVs and Budget

Checchi and Company consulting will respond to this Scope of Work with a description of its plans plus proposed CVs and an estimated budget. It will draw on its sub-contractor Wiles and McLaughlin, LLC, to propose a skilled team of seasoned professionals to work for USAID to assess the socioeconomic impacts of the Kabul to Kandahar and Kandahar to Herat Road Projects plus two provincial and two district roads. In addition to the two firms' key personnel, Checchi and its subcontractor will provide Afghan surveyors, translators, and a data entry specialist through an NGO with extensive experience and presence in Afghanistan.

PROPOSED SUPPORT TEAM AND LOE*

KEY PROFESSIONAL STAFF

- **SENIOR TRANSPORT ECONOMIST AND TEAM LEADER , LOE 58 DAYS**
- **SENIOR TRANSPORT ECONOMIST AND DEPUTY TEAM LEADER, LOE 58 DAYS**
- **SENIOR ECONOMIST, LOE 29 DAYS**
- **ECONOMIST, LOE 32 DAYS**
- **ECONOMIST, LOE 32 DAYS**

*** INCLUDES TRAVEL TIME.**

AFGHAN LOCAL SPECIALISTS*

TBD MID-LEVEL TRANSLATOR: LOE 42 DAYS
TBD SENIOR-LEVEL TRANSLATOR: LOE 54 DAYS

IT IS PROPOSED THAT ALL FIELDWORK IS DONE BY AFGHANS TO AVOID SURVEY BIAS, AS WELL AS FOR SURVEY DATA ENTRY. POTENTIAL SOURCES: HAFO, ALTAI, BDF, ASCOR, THE GRAIN INDUSTRY ALLIANCE INTERNATIONAL, CAF, AHBL, SRI, AREU, CORDOVA LTD., AND THE SOCIAL RESEARCH CENTER WITH A REQUEST FOR PROPOSALS. ALL OF THESE ARE AFGHAN-BASED NGOS. HAFO IS THE NGO THAT DID THE SURVEY WORK FOR THE BASELINE.

ROLES AND RESPONSIBILITIES	
Senior Transport Economist and Team Leader	• Liaison with SUPPORT Project Chief of Party and USAID/Kabul • Technical direction of the project • Overall quality assurance and quality control. • Quantification of project's economic and social benefits. • Estimate the extent to which the improved roads increased business activity in the roads' corridors of influence, and also facilitated regional and international trade. • Quality control of all data collection & analyses • Make Presentations
Senior Economist and Deputy Team Leader	• With Team Leader, liaison with SUPPORT Project Chief of Party and USAID/Kabul • With Team Leader, technical direction of the project. • With Team Leader, overall quality assurance and quality control. • With Team Leader, quantification of project's economic and social benefits. • With Team Leader, estimate the extent to which the improved roads increased business activity in the roads' corridors of influence, and also facilitated regional and international trade. • With Team Leader, quality control of all data collection & analyses • As needed make presentations with the Team Leader

SENIOR ECONOMIST	• Supervision of team members. • Ensure surveys are being done correctly. • Data analysis. • Report drafting.
ECONOMIST I	• Key Informant Interviews. • Data analysis. • Supervision of surveyors. • Report Drafting.
ECONOMIST II	• Supervise data entry. • Analysis of household, settlement and shopkeeper surveys. • Supervision of surveyors. • Analysis of passenger, vehicle operator and freight shipper surveys.

ANNEX B: List of Survey Villages

SDLR
SOCIAL DEVELOPMENT & LEGAL RIGHTS
AFGHANISTAN
د افغانستان د ټولنیزې پرمختیا او حقوقي مرستو ټولنه

List of Survey Villages

Panjsher Valley - Charikar (PC) Road				
157	35.116744	69.266813	Bazar-i-Ghoja Sayed	
158	35.100156	69.266685	Hasham Khail(School)	
159	35.083336	69.250040	Bazar-i-Sayedkhel	
160	35.033443	69.200179	Bayan Bala	
161	35.016889	69.200054	Deh Mola Yosaf	
162	35.000241	69.166918	Bazar-i-Lycee Noman	
163	35.300210	69.500134	Bazarak	
164	35.300128	69.933595	Rahmankhel	
165	35.283518	69.483587	Khanez	
166	35.266941	69.483343	Parakh	
167	35.266700	69.433592	Pyawusht	
168	35.266694	69.466847	Lab-i-Aw	
169	35.23109	69.38548	Anaba	
170	35.140000	69.300000	Gulbahar	
171	35.250156	69.450221	Bazar-i-Rukha	
172	35.333476	69.550124	Badqol	
173	35.333355	69.550040	Malaspa	
174	35.316768	69.516813	Jangalak	
175	35.300019	69.483601	Malakhel	
176	35.250050	69.433354	Dashtak	
177	35.233554	69.383549	Tawakh	
178	35.216864	69.333409	Zamankor	
179	35.066878	69.233334	Ezatullah Khel (Zadkhel)	
180	35.133422	69.266922	Sabzikhel	
181	35.050274	69.216875	Sadullah	
182	35.45417	69.76092	Safed Chihr	
183	35.4591	69.76505	Chak Salih Khel	
184	35.44629	69.75239	Center (Khenj)	
Balkh - Dawlatabad (BD) Road				
185	36.99437	66.76556	Hayata	
186	36.96962	66.82412	Dawlatabad	
187	36.90551	66.90355	Dehwali	
188	36.84846	66.85446	Boryabaf	
189	36.95625	66.91616	Surkh Gubaz	
190	37.00531	66.79781	Joi Arab	
191	36.84895	66.84188	Mishak	
192	36.88063	66.84749	Shah Ab	
193	36.90487	66.91694	Maydan	
194	36.84417	66.84353	Vazirabad	

195	36.83711	66.84716	Mumandan	
196	36.92852	66.83495	Bukhshor	
197	36.95393	66.83518	Sar-i-Deh	
198	36.95425	66.84422	Pay Mashhad	
199	36.89439	66.61839	Chochak	
200	36.88773	66.60641	Quraish Tepa	
201	36.89954	66.63347	Ahmad Abad	
Imam Sahib Connector (IC) Road				
202	37.16534	68.78746	Basuz	
203	37.18128	68.91099	District 1	
204	37.18128	68.91099	District 2	
205	37.18128	68.91099	District 3	
206	37.18128	68.91099	District 4	
207	37.18853	68.60709	Qazel Qala	
208	37.20005	68.97571	Alefberdi	
209	37.17707	68.78395	Mara Shekh	
210	37.22021	68.88908	Zabar	
211	37.20306	68.73979	Barzani-i-Arab	
212	37.17116	68.72336	Barzangi Afghani	
213	37.19477	68.86109	Qanjugh-i-Uzbakeya	
214	37.13491	68.8872	Majar	
215	37.15358	68.68169	Kara Kutarma	
216	37.1562	6885391	Guzari Majnun	
217	37.17161	68.89109	Dang Qeshlaq	
218	37.17789	68.87719	Qaburgha	
219			Jungle Imam Sahib	GPS was not allowed to be used.

ANNEX C: Survey Questions

SURVEYOR: _____ CODE: _____

We work for the company that is building the road and we are trying to find out about economic activity along the road. We hope that you will be willing to help us with some information that will be confidential – no one will know what particular information you gave us because it will be combined with other people's information.

Name of Village: _____ Bazaar:_____

1) What is your relationship with the owner of this shop?
2) How long have you been selling goods, here?
3) What are the major items that you sell in order of importance?

Goods	Price/ Unit	Locally made	Foreign
1			
2			
3			
4			
5			
6			
7			

4) What is your estimated total daily sales? _____ Afs.
5) How far do you live from this market?
6) Do you use the Herat-Kandahar road to get to your shop from home?
7) How long does it take you to get from home to here?
8) Does the merchandise in this shop get delivered by using the Herat-Kandahar road?
9) How far is the next (nearest) market from here?
10) How do most of your goods reach your shop? a) Donkey ___ b) Car/Van ___c) Truck ____
11) How far do customers travel to shop in this bazaar? _____
12) How many family members depend on your earnings from this shop?

Market Overview

1. Name of bazaar: _____
2. Village/Town _____
3. District_____
4. Number of stalls selling agricultural produce: _____
5. Number of stalls selling dry goods: _____

6. Number of stalls selling meat: _____
7. Number of stalls selling hardware: _____
8. Number of pharmacies. _____
9. Total number of stalls: _____
10. Comments:

Sample Vehicle Operator Survey

We are documenting how improving the Herat-Kandahar Highway affects commerce. We would like to know how the condition of the highway affects you. Your answers are important in forming recommendations for improvements in roads and road-related services. **This questionnaire is anonymous.**

Questionnaire for Vehicle Operators

Location:_____
(Rural/Urban) _____

1. How many times did you drive the Herat – Kandahar road during the last month? _____

2. On average, how far do you go before you break for the day?

_____Kms. _____ (location)

3. Where did you begin this journey? _____

4. Where is your final destination? _____

5 a) Do you own the vehicle? Yes ____ No ____

b) If no, who pays your salary? _____

If yes, go to question 8.

c) Do you lease the vehicle? Yes ____ No_____

If no, go to question 7.

d) if you lease the vehicle, do you lease from the government?

e) do you lease from a private owner?

6. What vehicle leasing fees do you pay per month? Afs.._____

7. Who usually pays for the vehicle repair?

8. How much do you pay (or the owner pays) for vehicle repairs per month? _____ Afs.

9. What is the value of the freight you haul, on average, per trip_____ Afs.

10. Do you (or the owner) have freight insurance?

11. If yes, what is the cost of the insurance per 5,000 Afs. of freight? _____ (cost)

12. How many vehicles do you or your boss own? _____ (number)

13. How dose the freight rates set? Does some person or organizations set your fares or freight rates? Yes _____ No _____

14. If yes, does

a. the government set rates?

b. the truckers association set rates?

c. rates set by owner.

15. Does the road condition affect your fees? a. yes b. no

16. How much do you earn per month by driving this vehicle? Afs.._____

17. Are you paid by the trip?

18. Is there a bonus for a faster trip?

19. In the last six months, have you been:

Personally robbed?

Vehicle stolen?

Physically injured?

Merchandise stolen?

20. How many years have you been driving a truck or in the trucking business?

21. Due to security concerns, do you stop driving at night?

22. Along the Herat-Kandahar road:

a) How many times are you stopped by Afghan authorities to pay fees? _____

b) On average, how much do you pay in fees per stop? _____ Afs.

23. Along the Herat-Kandahar road:

a) How many times are you stopped by other people to pay fees? _____

b) On average, how much do you pay in fees per stop? _____ Afs.

24 What is the price per liter for fuel? _____ Afs.

25. Is fuel readily available along the route?

26. On average, how long do you wait to refuel at stops along the way?

27 Where do you buy your fuel? _____

From a tanker fuel truck_____

From a fuel station _____

28. What type of vehicle do you operate? _____

29. If it is a passenger vehicle, how many passengers do you transport? _____

Sample Transportation and Freight Companies

City _____ Date_____ Initials _____ No. _____

1. Which is the road you most frequently use for shipping goods?
   a. Herat-Kandahar road
   b. Other roads

2. How many trucks did you send down the K-H road during last month?

3. What are the three most common destinations for your shipments?
   a. _____
   b. _____
   c. _____

4. What type of vehicle do you use for shipping your goods?
   a. Car or jeep
   b. Bus
   c. Minibus
   d. Truck (2axle)
   e. Truck (3 axle)
   f. Tractor Trailer

5. How many vehicles do you own? _____
6. How many drivers work for you? _____
7. Do your drivers own their own trucks?
8. What type of cargo you usually ship?
   a. Food
   b. Non food (please specify_____)

9. How many tons of freight do you send on average per trip?
10. Does road condition affect the fees you pay/charge?
11. When you price a shipment, what are the major elements of the price?
    1._____
    2._____
    3._____
    4._____
    5. _____

12. Are there any (non-market) controls on freight rates?
13. If yes, please explain:
    a. Controlled by few owners of trucks
    b. Controlled by shipper's associations
    c. Controlled by government

14. How many major competitors are there in this city?
15. Who are your five biggest competitors? 1_____, 2_____, 3_____, 4_____, 5_____
16. How would an improved road affect you? (Number _____)

Sample Passenger Survey

We represent the Herat-Kandahar Road project. As a passenger and user of the road your answers will help inform recommendations for improving roads and road services. Your name will not be used.

Location survey taken _____ (Province/District/Rural/Urban)

---

1. Respondent a) Age:___ b) Gender:___ c) Occupation: _____d) Years of education: ___

2. Location of your household? _____ (town/village/district)

   Urban/Rural: _____

3. What is your **most** frequent destination? _____.

   Frequency (number of times): _____ per month.

4. How long does it take you to get to your **mos**t frequent destination?

   a) by bus _____hours/minutes

   b) by mini-van _____hours/minutes

   c) by car _____hours/minutes

   d) other _____

5. What is the cost of a one-way trip to your **most** frequent destination?

   a) by bus, Afs. _____

   b) by mini-van, Afs. _____

   c) by car Afs. _____

6. Which means of transportation do you use **most** often to your most frequent destination?

   a) bus; b) mini-van; c) car or d) Other

7. a) Other than your **most** frequent destination, where else do you travel very often? _____ (district/province/town)

   b) Do you travel on the Herat / Kandahar Road for this travel _____ (Yes/No)

8. a) When traveling on the Herat/Kandahar Road by bus, do you transport goods for sale?

   b) If yes, what type of goods do you transport? _____

   c) If yes, how much do you pay for transportation? Afs _____

9. When the road improvements are complete, how will you be affected?

a). Easier movement

b). Reduction in transportation cost

c). Opening more job opportunities

d). Increase in income sources

e). Increase political involvement

f). Increase trips to hospitals, schools, banks, other social institutions

g). Other (describe)

Sample Settlement Demographic Information

Surveyor_____GPS_____

Introduction: We represent the Herat / Kandahar road project. We want to know how the current circumstances affect you. Your answers to these questions will guide us for future road improvements.

---

1. Name of settlement:
_____

2. Number of individuals in settlement:_____

3. How far is this village from the Herat/ Kandahar road:_____

4. Number of primary schools:
_____

5. Number of enrolled students: male_____ female_____

6. Number of secondary schools. (Or distance to nearest one) _____

7. Number of enrolled students: male_____ female_____

8. Number of health care centers: clinics _____ hospitals_____

9. Sources of drinking water: _____

a) Percentage of people using common well/karez_____

b) Percentage of people using private well/karez_____

10. Number of flour mills: _____

10.a) Number of Threshing Machines_____

11. How many jeribes of irrigated field in this village: _____

11a). What is the source of water? _____

12. Public facilities for settlement:

(a) Mosque :_____

(b) Post offices: _____

(c) Telephone offices:_____

(d) Petrol pumps: _____

(e) Public baths: male _____female _____

(f) Other: _____

13. Do buses stop in this village?:_____

13a): How often? _____

14. How Much does it cost to go to:

Place	By small car	By minibus	By bus
Bus Station			
Herat			
Ghazni			
Kandahar			

Sample Household Survey

Surveyor: _____

A. GENERAL INFORMATION

A1. GPS coordinates: _____ A2. GEO Code: _____ A3. Village: _____ A4. District: _____ A5. Province: _____

B. INFORMANT'S PROPERTY INFORMATION

B1. Property user is: __Owner, __ Tenant, __ Relative of absent owner, __ Other (explain)_____

C. SOCIAL GROUP

Pashtun ___ Uzbek___ Tajek ___ Hazaras___ Turkman ___ Kuchi ____ Other_____

D. HOUSEHOLD INFORMATION

D1. List ALL people sleeping & eating in the household (unless living out of town)

*	Male/ Female	Age	Years of School	Currently Enrolled in School	Monthly Income	Source of Income	Not Working

Continue below if more than 15 * = Person(s) interviewed

D2. How many widows live in this household?

D3. How many members of this household have returned from living in exile during the past 2 years and are now living in this compound? _____

E. LIVELIHOOD INFORMATION

E1. Do you earn wages outside the home? _____If yes, answer E2., and E3.:

E2. Do you use the Herat-Kandahar road to reach your place of employment?

E3. What mode of transport do you use to get to work?

Mode travel	*Distance*	*travel time1-way*	*Cost/trip 1-way*
Walk			N/A
Non-motorized			
Motor Bike			
Private Vehicle			
Bus			
Mini-van			
Bicycle			

F. HOUSEHOLD MEMBERS

F1. How often do you travel on the Herat-Kandahar Road to look for work? _____

F2. How far do you travel to look for employment? _____

F3. What is your monthly income? _____

F4. What is the total monthly income of your entire household? _____

F5. How many people contribute money to the total household income? _____

F6. How many relatives send money to your household who do not live in your household? _____.

F7. About how much money does your household receive per month from relatives not living in this household? _____ AFS/month.

G HOUSEHOLD WEALTH ASSESSMENT

G1. What is the size of the household compound? _____

Items	*Number of items in household*
Radios	
Television	
Bicycles	
Car	

Truck	
Animal drawn cart	
Well on compound	
Electric pump for well	
Generator	
Indoor plumbing	
Tractor	

H HEALTH CARE

H1a. What are the principal reasons that men in this household seek healthcare or medical attention?

a. _____ b. _____

c. _____ d. _____

H1b. What are the principal reasons that women in this household seek healthcare or medical attention?

a. _____ b. _____

c. _____ d. _____

H1c. What are the principal reasons that children in this household seek healthcare or medical attention?

a. _____ b. _____

c. _____

d. _____

H2. How many times per year do members of this household normally go to health centers or hospitals?

Men: ____ (times/year); Women: ____ (times/year); and Children: ____ (times/year)

H3. How far do you travel for health care? _____

H4. Do you use the Herat-Kandahar Road to obtain medical care? _____

H5. How long does it take to reach a maternal-child clinic? _____

H6. How much does a round-trip to the nearest hospital cost? _____

H7. Do mid-wives practice in this community? _____if not

H8.How far away do women have to travel to be assisted in child birth?_____

H7. How do you get to the hospital/clinic; how long does it take; and how much does it cost?

Mode of Transport	*Time it takes*	*Cost*
Walk		
Bus		
Minibus		
Private car		
Other		

H8. a) What is the name of the health facility that you use most often? _____
b)In which village is it located?_____

I EDUCATION

I1. How far is the nearest primary school? _____ (# kilometers)

I2. How far is the nearest secondary school? _____ (# kilometers)

I3. How do your children travel to primary school?

a. walk ____ b. bus____ c. minivan ____ d. private car _____ e. non-motorized ___

I4. How do your children travel to secondary school? _____(# kilometers)

J WOMEN AND TRANSPORTATION

J1. In a year, how often do the women of this household travel on the Herat-Kandahar Road?

J2. What are the most common reasons women travel on the Herat-Kandahar Road?

J3. When women travel away from the household, who normally travels with them?

K. AGRICULTURE

K1. Do you raise crops? Yes____ No ___ (if no, go to Section L, below)

K2. How many jeeribs of rain-fed land do you

farm? _____

K3. How many jeeribs of irrigated land do you farm? _____

K4. Information on household agricultural output

a. Types of crops cultivated	*b. % for use in household*	*c. % for sale in market*	*d. Unit sale price (Afs/kg)*	*e. Total annual yield (Seers)*

K5. How do you cultivate your land?

a. Animal traction
b. Machine (tractor)
c. Hand plowed

K6. How much do you spend per year on:

a. fertilizers: _____ Afs.

b. pesticides: _____ Afs.

c. seeds: _____ Afs.

d. transport: _____ Afs.

K7. Of the following animals how many of each do you keep?

Poultry: _____; Donkeys: _____; Cows: _____;

Sheep: _____; Camels: ____; Horses: _____;

Goats: _____;

K8. Do you use the Herat-Kandahar road to take your products to market?

____ yes, ____ no

K9. Where do you sell your farm products? _____

L. OTHER HOUSEHOLD PRODUCTION

L1. Do you or others in your household produce other goods or services for sale?

L2. If so, what goods or services do you produce?

List: _____

_____

_____

L3. Where do you sell your goods and services?

L4. Do you sell (a) to a middleman or (b) directly in the market?

L5. Do you use the Herat-Kandahar road to transport your goods for sale?

L6. How much of the final sale value is spent on transporting the goods?

L7. Can you estimate how much you earned from the sale of goods and services during the past year?