

# Perspectives for the Public-Private Partnership for the construction of Sisian-Qajaran road



MINISTRY OF TRANSPORT, COMMUNICATION  
AND INFORMATION TECHNOLOGIES  
OF THE REPUBLIC OF ARMENIA



“NORTH-SOUTH ROAD CORRIDOR  
INVESTMENT PROGRAM” SNCO

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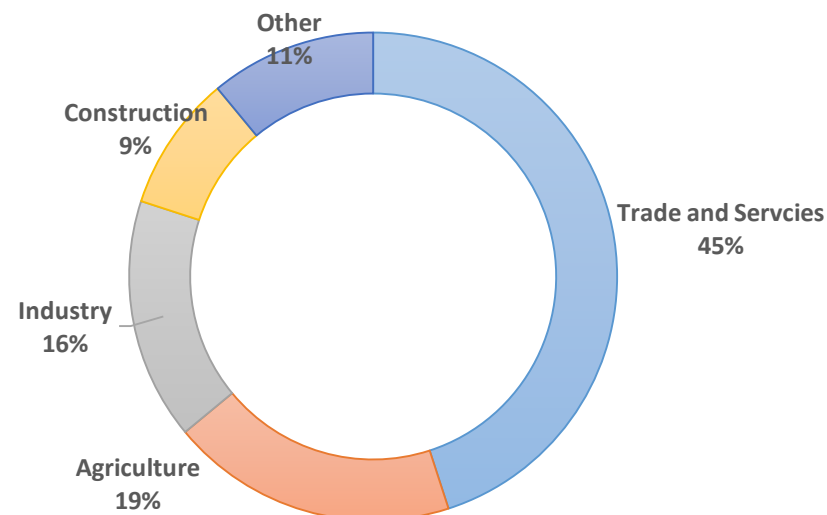
## Country Overview

Total area:	29,743 sq. km
Population:	3.1m
Pop distribution:	Armenian (98%), Yezidi (Kurd) (1.2%), Other (0.8%)
Life expectancy:	74.7 years
Urbanization:	64%



### Economic data

Nominal GDP:	USD \$10.75 bn
GDP Growth:	4.1% (IMF 2017 estimate)
GDP per Capita:	USD 3,535
Inflation:	2.6%
Total Public Debt:	USD \$5.571 bn (51.8% of GDP)



### Armenia: Country Risk Summary

Country risk rating: B+ stable

### Armenia Business environment ranking summary

Global rank:	45 (out of 189)
Economic freedom index:	52 (out of 178)

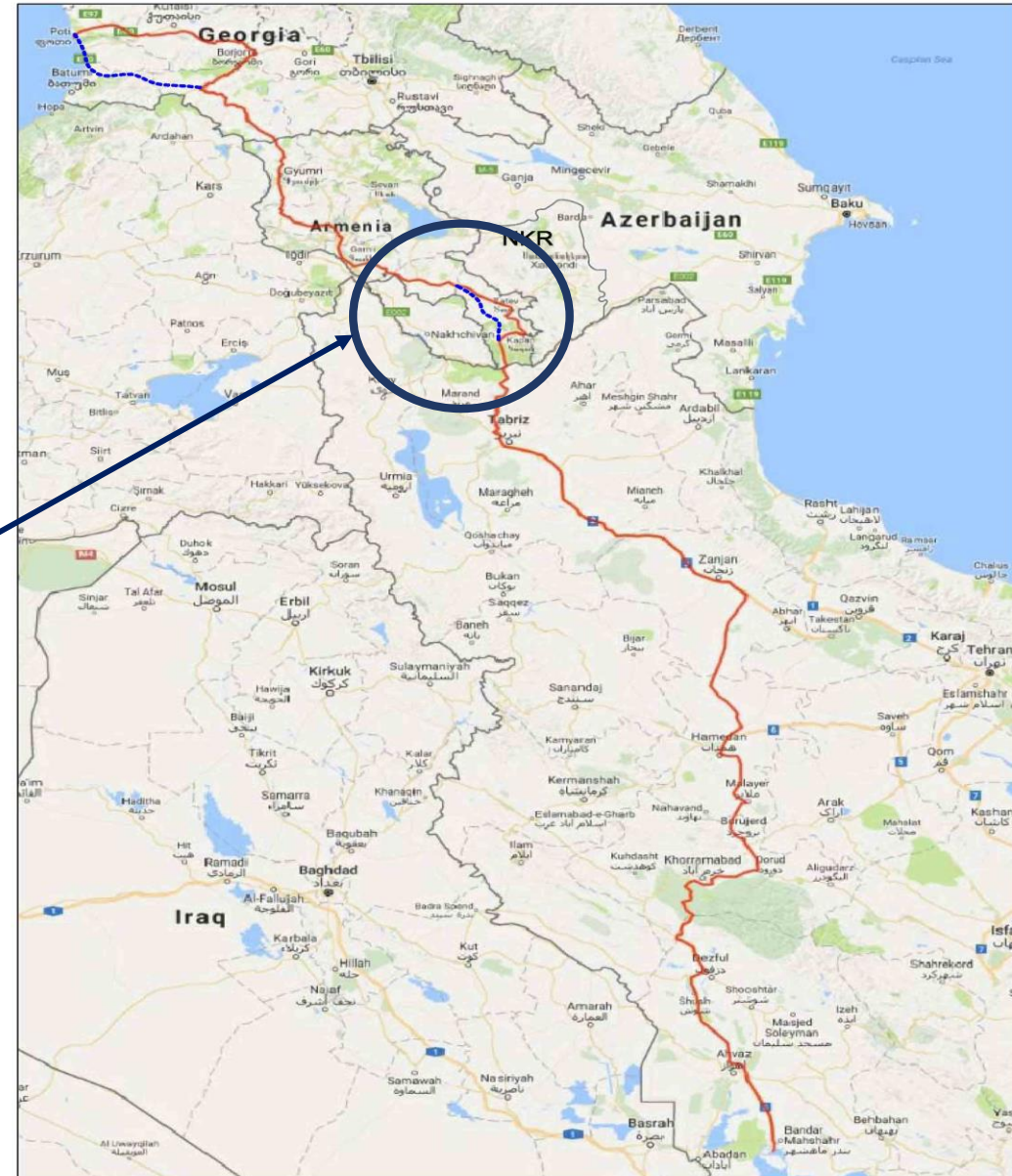




## North-South Corridor Over National contest

The construction of this **highly important strategic road** "North-South Road Corridor Investment Program" will ensure easier traffic from the Southern border of Armenia to the Georgian border that leads to easily connect the Black Sea ports in Georgia on North bound with the Persian Gulf in Iran. It also will allow passengers and cargo transportation in accordance with European standards. The highway will also provide **significant development opportunities** for all communities from the North to the South of Armenia.

TRANCHE 4 – PPP OBJECT





## North-South Corridor National Overview



"North-South Road Corridor Investment Program" is a major infrastructure project which will connect the Southern border of the country with the Northern border. The road is divided into 5 Tranches.

Sisian - Qajaran is a part of Tranche 4.

Estimated length of North-South Road Corridor: about **470 km**

Category: **2<sup>nd</sup>-3<sup>rd</sup>**  
Design speed: **100 km/h**  
Passing time: **4,5-5 hours**

The length of existing road: about **560 km**  
Category: **1<sup>st</sup>**  
Speed: **30-90 km/h**  
Passing time: **9,5-10 hours**

Total investment for the Project is about **\$2,0-3,0 billion USD**.

Existing and agreed:

- ADB financing: **\$500 million**
- EIB financing: **\$66 million + \$132 million**
- NIF Grant: **\$13.5 million + \$13.5 million**
- EADB financing: **\$150 million + \$350 million**
- Total: **\$ 1225 million**

Remaining: **\$0,7-1,7 billion USD**

Implementation period: **2010 – 2020**





## Sisian-Qajaran section

### Existing situation

The length of the existing road is about 130 km.

Driving time on the existing road is about 2 ½ hours.

The number of road users is approximately 2,900 AADT (Average Annual Daily Traffic).

### Designed situation

The length of the road to be constructed is about 60 km; approximately 50% less compared to existing one.

Driving time for the road to be constructed will be about 40 minutes, saving is about 2 hours.

The road users are expected to reach more than 9.000 AADT in 30 years including generated international traffic

### Design Steps taken

RA Government has ordered a Feasibility Study for Tranche 4 which has examined, through a:

- Conceptual highway design, as above described, with related economic estimation,
- A traffic study with traffic forecast,
- Geological/geotechnical and hydrological analyses of the interested land
- Preliminary Environmental and social influence and impact, with archaeological fallouts
- Economic efficiency of project, from the funding point of view;

In 2015 RA Government has ordered a Detailed Design from SPEA, which includes:

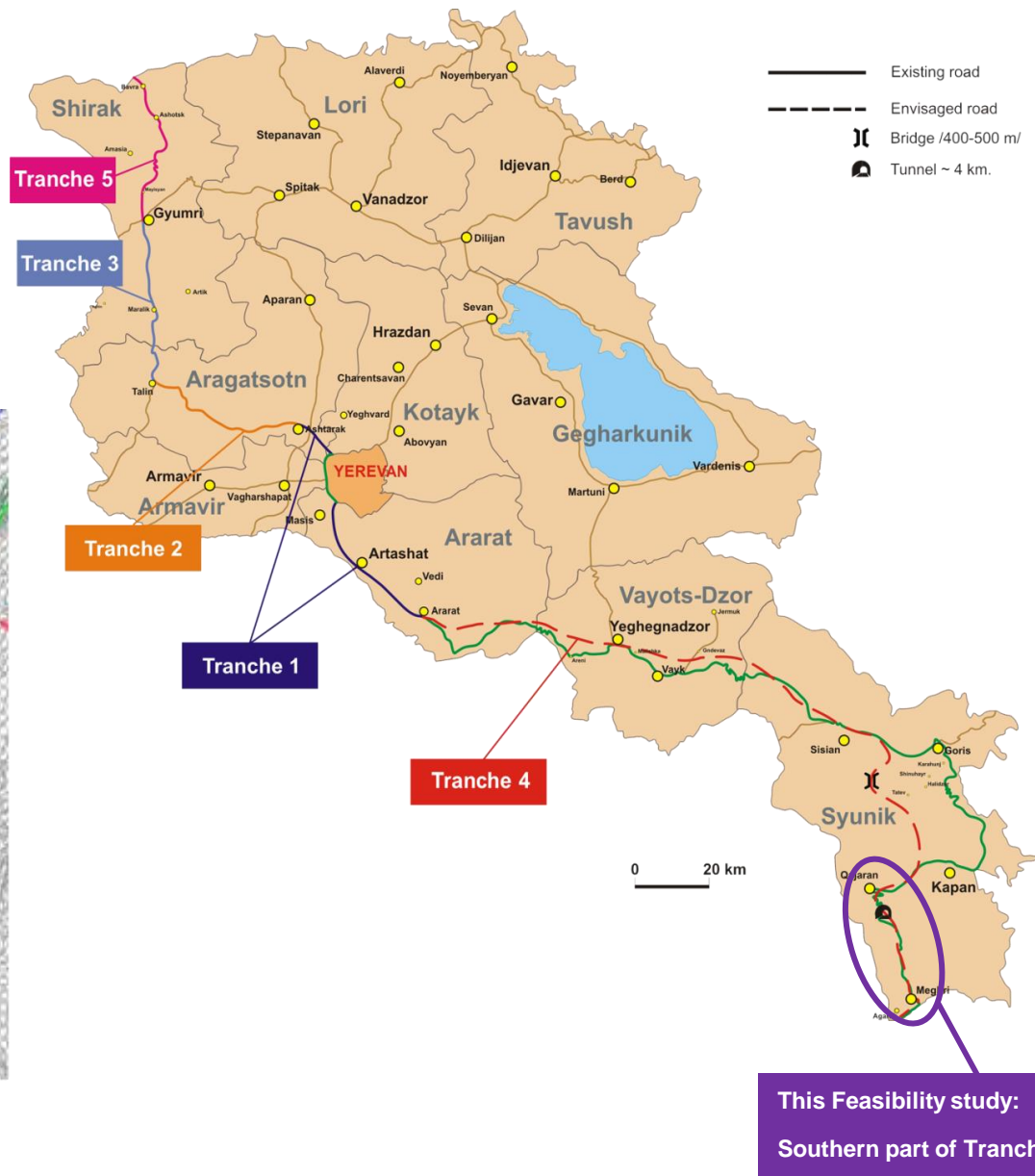
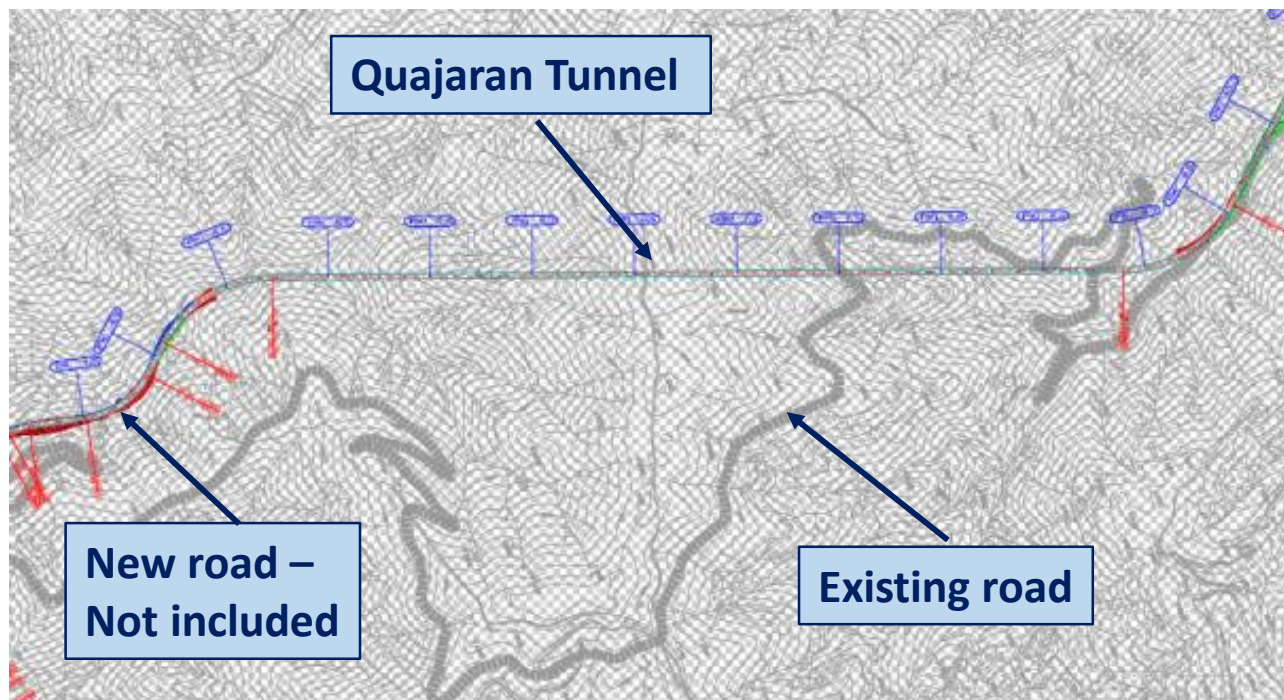
- Survey for DD of 60km
- Detailed Design 60km
- Final LARP, Final EIA, Final EMP 60km
- Final Due Diligence and Final Bidding Documents 60km
- 3D film on DD 60 km





## Qajaran Tunnel Included in Qajaran – Agarak Project

As part of PPP framework, also the **Qajaran tunnel** will be included. Qajaran Tunnel is 4600 m long and it is located in the Qajaran – Agarak road project. It has the same layout and cross section of the main one included in the previous section (Sisian – Qajaran) and it will be connected with the existing road in a temporary phase and with the final road Qajaran – Agarak in the final configuration.





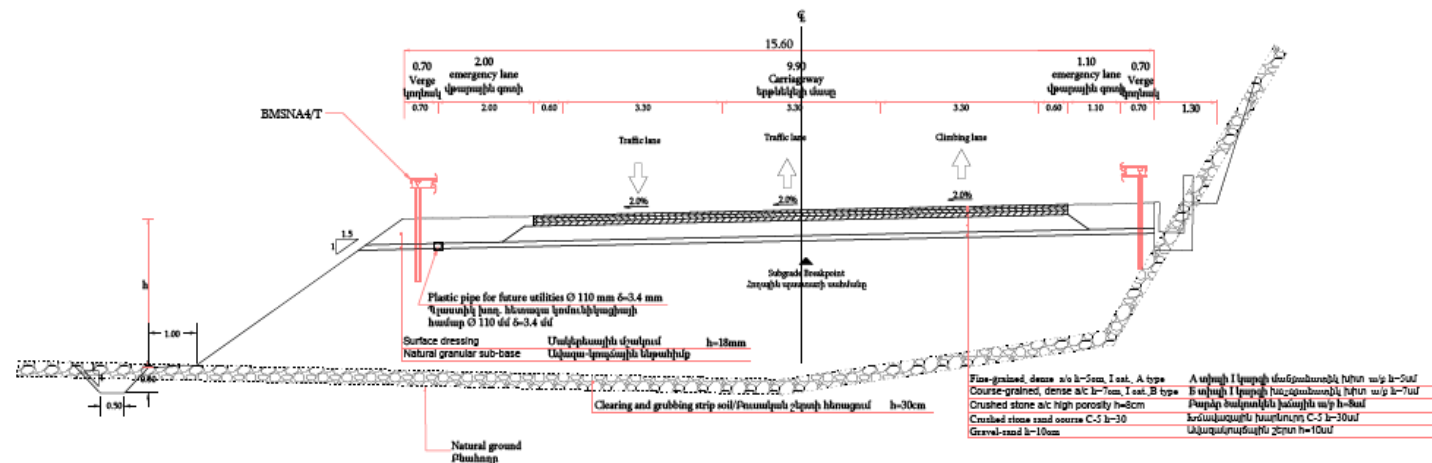


## Technical Parameters: general information

<b>Lenght of Highway</b>	<b>65.022,00</b>	<b>m</b>
<b>Widht of carriageway</b>	<b>11,10</b>	<b>m</b>
Lenght of excavation section parts	40.580,00	m
Volume of excavation	16.193.765,00	cm
lenght of embankment parts	16.260,00	m
Volume of embankment	3.311.147,00	cm
Number of interchanges	3	
Number of Overpasses	3	
Number of culverts	104	
Numeber of Retaining walls	75	
Total lenght of retaining walls	4.500,00	m
<b>Numeber of bridges</b>	<b>27</b>	
<b>Total lenght of bridges</b>	<b>4.752,00</b>	<b>m</b>
Number of prestressed beam bridges	5	
Total lenght of concrete bridges	384,00	m
Number of steel bridges	22,00	
Total lenght of steel bridges	4.368,00	m

<b>Number of tunnels</b>	<b>10</b>	
<b>Total lenght of tunnels</b>	<b>17.071,00</b>	<b>m</b>
Tunnels less than 1000 m	4.011,00	m
Min. Cross section short tunnels	110,00	sm
Max. Cross section short tunnels	128,00	sm
<b>Lenght of Bargushat tunnel</b>	<b>8.460,00</b>	<b>m</b>
<b>Lenght of Qajaran tunnel</b>	<b>4.600,00</b>	<b>m</b>
Min. Cross section of Main Tunnels	133,00	sm
Max. Cross section of Main Tunnels	141,00	sm
Cross section Laybay in Main Tunnels	195,00	sm

### Single carriageway with climbing lane to accommodate the heavy truck







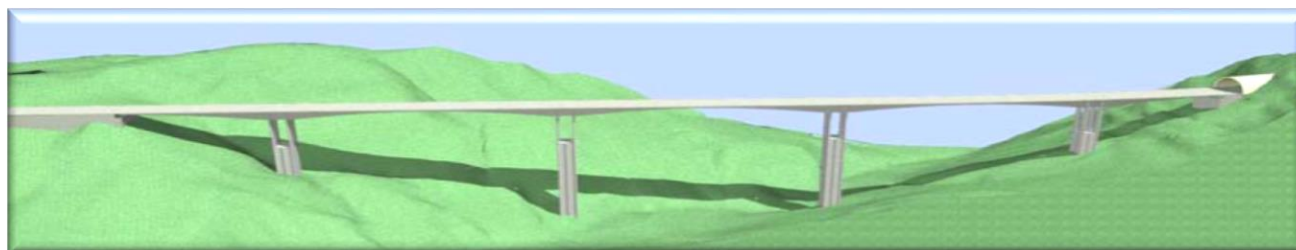
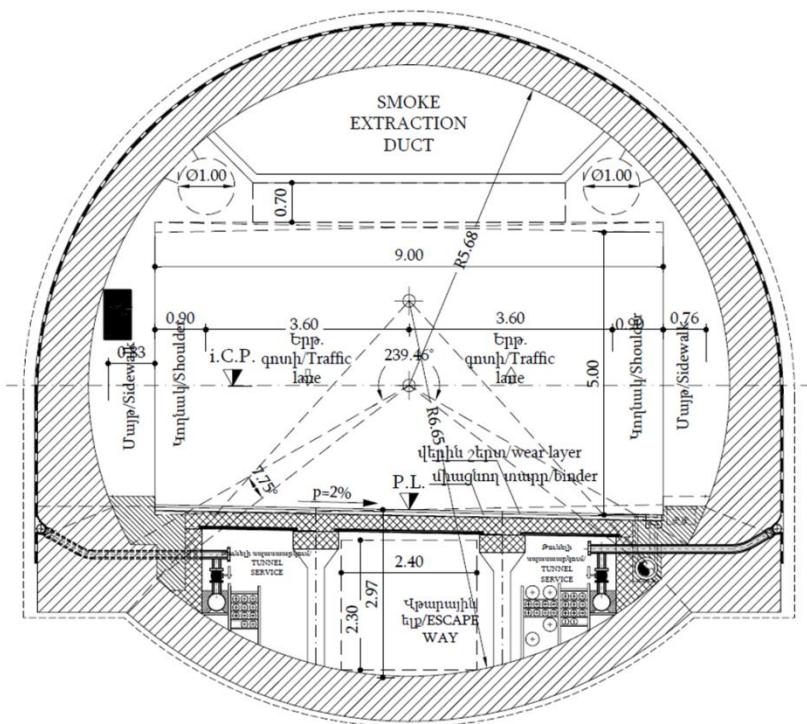
## Technical Parameters: Tunnels and Bridges

The construction of the **ten** natural tunnels (Tot. Length **17,071 m**) , has been assumed made by a single tube, that means single carriageway with two-ways traffic, and the completion (the second tube) is postponed in a second construction stage. The longest tunnels are the **Bargushat Tunnel L = 8,460 m** and the **Qajaran Tunnels L = 4,600 m**.

Main structures of the project consist of bridges aimed to cross valley, rivers or other kind of obstacles.

The total number of bridges is **27 (Tot. Length 4,750 m)** , and they can be grouped into the following main typologies:

- Steel-concrete bridges: maximum span length up to 76 m;
- Precast concrete bridges: maximum span up to 28 m.





## Technical Parameters: CAPEX

**Estimated cost of construction: \$ 820 millions (Excluding VAT)**

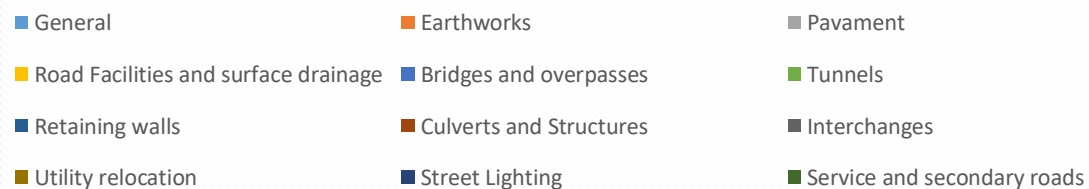
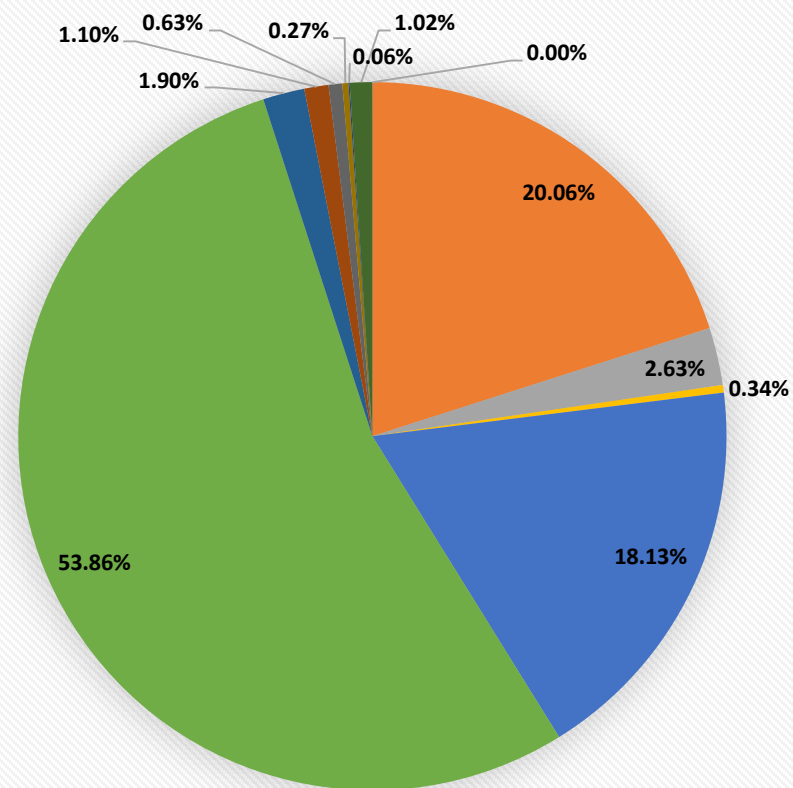
**CAPEX estimated by Designer based on:**

Preliminary Design;

Local methodology for cost estimation improved with international approach for special productions such as Tunnels and Steel Bridges

**Approved by SNCO**

### TRANCHE 4 • Section Sisian-Qajaran road section + Qajaran Tunnel



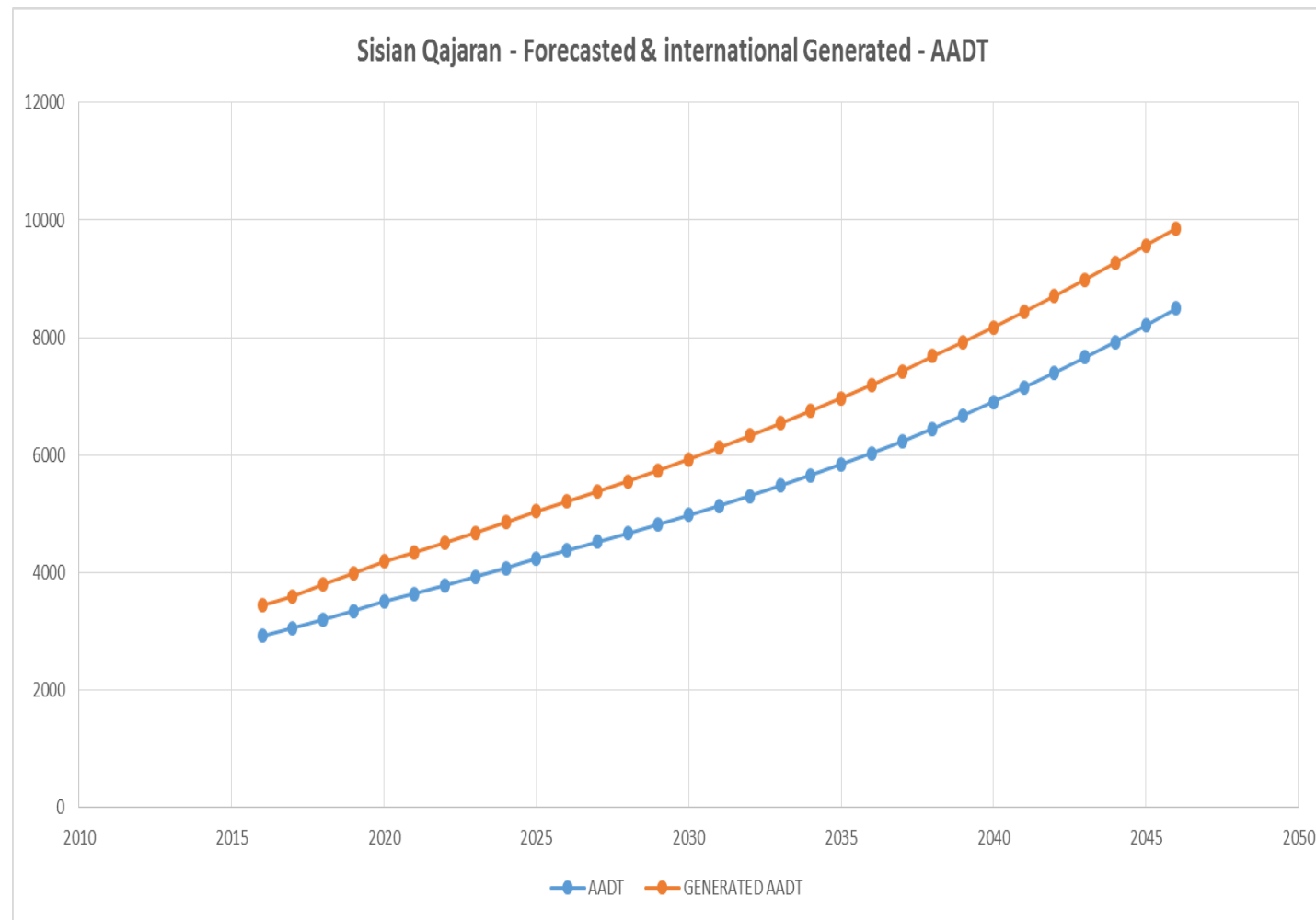


## Technical Parameters: TRAFFIC

- TRAFFIC DATA COUNTS (MANUAL AND AUTOMATIC)
- TRAFFIC FORECASTED – (GDP)
- INTERNATIONAL DIVERTED AND GENERATED TRAFFIC



- The generated traffic, coming from the international trading considerations, lead to an annual average increment of the traffic approximately 3% .
- Section Sisian Qajaran at 2046: 9,000 - 10,000PCUs







## Financial Model: basic assumptions

The business case is based on the following assumptions:

Average Daily Traffic	2016	average yearly growth rate	2046
Cars	2,357	3.5%	6,809
Mini buses and Buses	211	3.5%	609
Trucks	350	3%+	905+1342
<b>Total</b>	<b>2,918</b>		<b>8,323+1342</b>

Tolls (tariffs)	USD	average yearly growth rate	2046
Cars	5.00	2%	8.00
Buses	15.00	2%	25.00
Trucks	90.00	2%	151.00

AADT assumptions are based on existing traffic studies including traffic composition, volumes and its distribution along the project road. Separate traffic survey report has been prepared. The comprehensive traffic studies were made not only between the two ends of the project road but also in the middle points for more accurate analysing.

Generated International Traffic

The basis for toll amount determination is the calculation of the saving of the cars regular depreciation and the fuel expenses for the mountain road bypassing about 75 km.



## Public-private partnership options

### For the Corridor North-South a Public-private partnership is under development

The primary criteria for any option to be chosen is the shortest period of investment payback.

### The preferred option would be a Build, Operate and Transfer (B.O.T.)

This structure is, generally, the preferred one for road infrastructure. The “own” option will be excluded, since roads are public, strategic assets, and they are owned by the Government.

### Tolling and Payment

A tolling system is likely to be imposed at Bargushat Tunnel, and various services to the traffic participants in adjacent road sections (gas stations, fuelling, technical service, etc.) will be provided.

The Private will be compensated with annual installments (Availability Payments).

### Legislation

The lack of legislation regulating PPPs can be considered as a disadvantage, however it can also serve as an advantage, as in this case the International Commercial Contract serves as a regulatory base.



### RISK MATRIX

	Private	Public
Land Acquisition and Resettlement		V
Design	V	
Construction	V	
Traffic risk (O&M costs)	V	
Traffic risk (toll income)		V
For-Ex Risk		V

# Thank You!

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