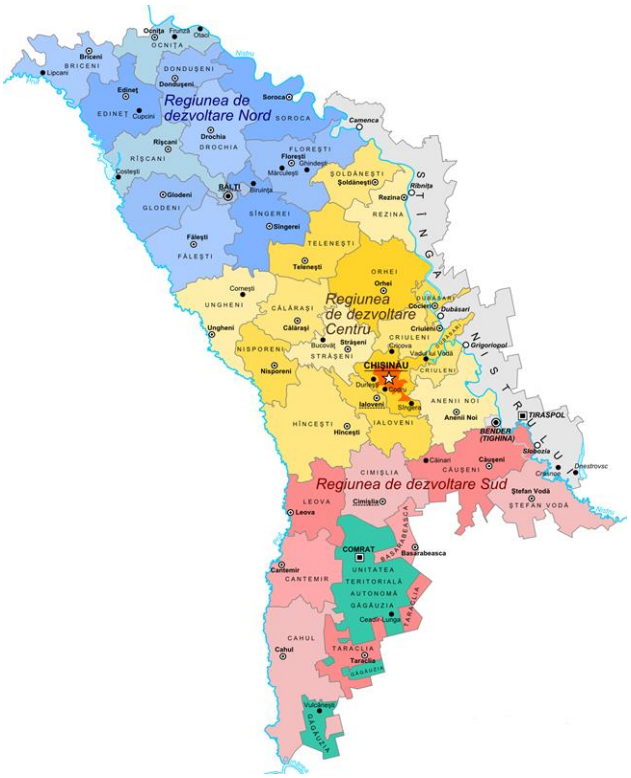
# Modernization of local public services in Republic of Moldova




## THE SECTORAL REGIONAL PROGRAM IN THE FIELD OF LOCAL AND REGIONAL ROAD INFRASTRUCTURE FOR UTA GĂGĂUZIA DEVELOPMENT REGION

## (2018-2025)

# C O R R I D O R # 3

## Ciadâr Lunga – Baurci – Congaz - Câetu – Ciselia Mare – - Chiselia Rusă – M3

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**Comrat - Chisinau, 2018**

# 1. INTRODUCTION

In this report, are presented the results of the technical inventory of the **road corridor # III Ciadâr Lunga – Baurci – Congaz - Câetu – Ciselia Mare – Chiselia Rusă – M3** (and preliminary design works for its rehabilitation). The project was identified in accordance with the methodology established in the Sectoral Regional Program for the development of regional and local roads in ATU Gagauzia and approved by the Working Group at the second meeting that took place on 11.04.2018 in Comrat. This report is part of the modernization project for local services in the Republic of Moldova, implemented by GIZ. It presents the results of the technical inventory and road state assessment as well as preliminary project solutions for rehabilitation.

An improved road condition will contribute to reduced transport costs, reduced traffic time for traffic participants, improving traffic safety and in-traffic convenience. In general, access to public and social centers will be facilitated, the social conditions of the inhabitants of Baurci, Congaz, Câetu, Ciselia Mare and Chiselia Rusă villages will be improved.

The report contains the general description of the corridor, the technical solutions proposed for improving the road condition and considerations regarding environmental protection and social issues.

The technical condition of the road was visually determined. Particular attention has been paid to the condition of the road as a more important criterion, which influences the cost of transport, the safety and convenience of road traffic. Also, the elements of road arrangement (pavements, accesses and entrances to the yards), and rainwater capture and evacuation systems.

For an objective approach, the traffic intensity, state and construction of the existing road system have been taken into account.

At the selecting the road structure, has been considered the experience of implementing new technologies for the rehabilitation of local and regional roads.

Various rehabilitation technologies are provided for existing cement, gravel and asphalt concrete coverage. Within the limits of the localities are planned construction of pavements and the entrances to the courtyards, as well as the access to the main road. Recommendations are given for the repairs and maintenance of pluvial water capture and drainage constructions (cuvettes, bridges and culverts).

The ecological situation was assessed in the area of influence of the road before and after the rehabilitation of the corridor. Recommendations for environmental protection are made during the execution of the rehabilitation works.

Taking into account the necessary level of reliability, depending on traffic intensity and structure, as well as the increase of prices for materials in relation to the higher transport distance in the southern regions of the Republic of Moldova, the average costs of rehabilitation of one km of road is 260 000 Euro (VAT excluded).

The cost of rehabilitation works for the corridor is **8 454 030 Euro**, the average cost per 1 km – **207,293 Euro**.

At the current stage (preliminary project), the project is viable and can be implemented.

The cost assessment was calculate based on effective prices for materials, transport and works in the area of the corridor's location during the period of these studies.

## 2. DESCRIPTION OF THE PROJECT

**Corridor III Ciadâr Lunga – Baurci – Congaz - Câetu – Ciselia Mare – Chiselia Rusă – M3**, includes two regional roads: partially G135 up to Câetu village and intergal G136.
Corridor III is located in the Ciadar Lunga, Cantemir and Cahul districts. The corridor crosses M3 expressway Chişinău - Comrat - Giurgiuleşti border with Romania: near the Congaz and Borceag villages. This connects the shortest way of the corridor localities with the M3 expressway leading to the industrial and commercial centers in the South (Vulcanesti, Taraclia, Cahul, Giurgiulesti International Port) and North (Comrat, Cimislia, Hancesti, Chisinau) of the country. The beginning of Corridor III is at the intersection of three republican roads: R36 Basarabeasca - Ciadar Lunga, R29 Comrat - Ciadar Lunga and R37 Ciadar Lunga - Taraclia. This greatly facilitates the possibilities of the corridor's inhabitants and their access to the South-Eastern market of the Republic of Moldova
The length of the Corridor is 40,783 km, the technical category of the road IV, the width of the carriageway 6,0 m outside the localities and 6,0 - 7,0 m through the localities. During 11.74 km (29%) the road passes through the localities and 29,043 km (71%) outside the localities. During 20,693 km road coverage is made of gravel and 20,09 km of asphalt concrete. On the way, 6 bridges with a length of 6m to 60m and 21 vulvert with a diameter of 0.8m to 2.00m are located on the way.
Corridor III serves 42275 inhabitants, 119 social institutions, 878 economic agents, 30 industrial enterprises and 436 commercial enterprises. The layout of Corridor III is shown in Figure 2.1.

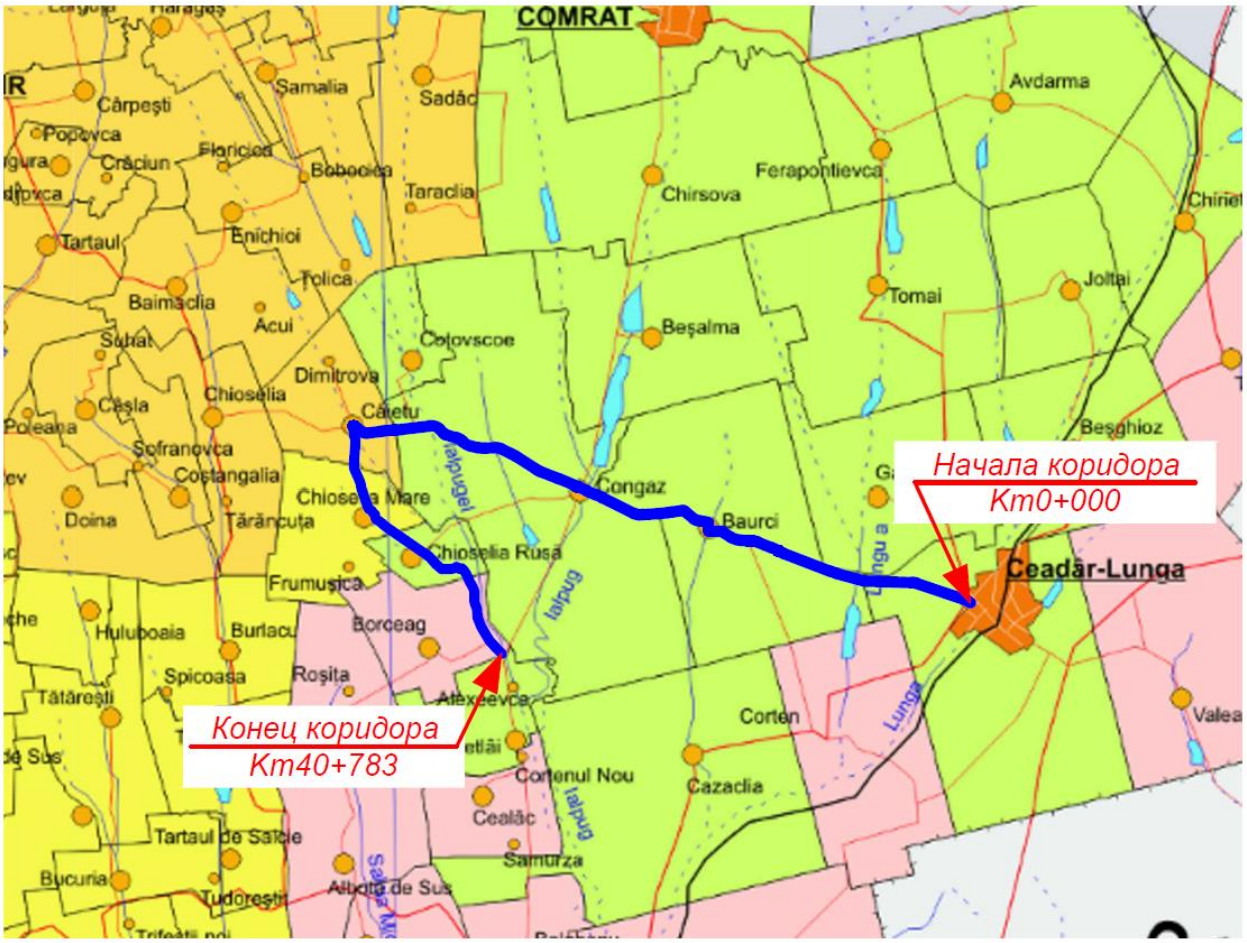

Figure 2.1 Scheme of Corridor III Ciadâr Lunga – Baurci – Congaz - Câetu – Ciselia Mare – Chiselia Rusă – M3.

# 3. THE EXISTING SITUATION

## 3.1 CLIMATE CONDITIONS.

The road is located in the climatic road zone - IV and has a seismicity of 8 degrees on the Richter scale.

**The relief**
The UTA Gagauzia territory is located in Stepa Bugeacului, which is a part of the Moldavian South Plain Plateau. Its surface is separated by wide valleys, and multiple ravines blunt the slopes. The relief of the region is steppe with insignificant heights. The maximum elevation is 160 m above sea level; the minimum height is 37 m.

**Climate**
The climate is warm, 10 degrees Celsius and more and it is kept for 179 - 187 days, which is much warmer than in other parts of Moldova. The maximum reached temperature was 42 ° C, the lowest temperatures between 27 - 29 ° C. The average annual temperature is 10 ° C, the maximum frost depth 60 - 65 cm, the average frost depth 30 - 35 cm.

**Hydrology**
The water resources of Gagauzia are generally presented by groundwater sources. Surface sources are limited. There are insignificant rivers: Ialpug, Ialpugel, Lunga and Lunguța. The length of Ialpug is 142 km, the surface of the accumulation basin is 3180 km2, the average flow is 2.9 m3 / sec. On the territory of Gagauzia are also two water basins: Comrat (1.7 km2) and Congaz 4.9 km 2). Corridor III is located in the Ialpug River Basin.

**Geology**
On the territory of Gagauzia predominantly clayey sands and sandy clays are spread, as well as significant reserves of brown coal, which are in the form of thin and low-grade layers, the extraction of this ore is not profitable. The lands on the route generally consist of sandy clay and clayey sand.

## 3.2 PLAN OF THE ROUTE

The beginning of the corrido III km 0,00 coincides with the edge of the republican road R29 Comrat - Ciadâr Lunga. The corridor passes through 6 localities: Ciadâr Lunga (km 0,00 - 1,23), Baurci (km 9,74 - 13,28), Congaz (km 17,22 - 19,56), Câetă (km 27,33 - 28,80) Chiselia Mare (km 31,77 - 32,93) and Chiselia Russian (km 33,21 - 34,72). At km 4.80 the route intersects Lunguta river (hjd 60 m), at km 11.30 intersects Avdarma (bridge 12 m), at km 17,18 intersects Ialpug (bridge 60 m) at km 17, 60 corridor intersects the express road M3, at km 25.02 under 48 m, at km 28.07 - Ialpugel river (bridge 36 m). In general, the route passes on a tranquil relief. The geometric elements in the plane correspond to NCM D. 02.01-2015 and SNIP 02.07.01 - 89.

## 3.3 LONGITUDINAL PROFILE

The route is located on an uniform relief. The elements of the longitudinal profile (longitudinal gradients, vertical curves) correspond to the requirements of NCM D. 02.01-2015 and SNIP 02.07.01 - 89 for the technical category IV of the road. Non-essential changes in the longitudinal profile are possible at the stage of the technical design.

## 3.4 CROSS-SECTIONAL PROFILES

The width of the embankment outside the settlements is 10 m, the width of the carriageway is 6-8 m (it is difficult to determine the width of the carriageway on the sectors with gravel coverage. In localities the width of the carriageway is 6 - 7 m, the total length of the sidewalks is only 2,53 km (19%) out of the 13.42 required in localities. Existing sidewalks are in bad condition and require repair works (tab.1 annex 1). In order to ensure the safety of pedestrians, in localities where they are missing, it is necessary to build new sidewalks. Existing cross-sections generally meet the requirements of NCM D. 02.01-2015 and SNIP 02.07.01 – 89.

## 3.5 ROAD STRUCTURE

The road structure of the corridor consists of two types: asphalt concrete19,66 km, or 48% of the length and gravel 21,35 km or 52% of the length. Asphalt concrete sections have an asphalt layer thickness of 5 to 10 cm on a 15 to 25 cm crushed stone base layer. Sectors with gravel cover are 15 to 25 cm thick. The technical condition of the road was determined by video footage: 2,10 km (11%) is in very good condition (new asphalt concrete layer), 4,58 km (11%) - in good condition, 20, 20 km (50%) - mediocre, 9.72 km (11%) - bad and 4.44km (10%) - very bad. The road structure is generally mediocre and bad (84%), only 16% of the entire length of the road is in good and very good condition. Taking into account the ones exposed, the need to rehabilitate the road is argued.
More detailed road state information is given in Table 2, Appendix 1

## 3.6 EMBANKMENT, ROADWAY VERGES AND WATER EVACUATION SYSTEMS

The width of the **embankment** is 10 m, which corresponds to the NCM requirements D.02.01-2015 for the technical category IV. In some places, deformations in the form of erosions and sediments are found near the culverts. The width of the **verges** is around 2.0 m, which also meets the normative requirements in force. There is an insufficient level of maintenance. In several sectors (km 1,40 – 14,39), the verges are agglomerated with shrubs; also, there are sectors with lower elevations (lower elevations as the edge of the road), km 12; 13. On the km 5,30 - 5,70 and km 15,28 – 15,44 sectors, due to the difficult water evacuation conditions, the left lane is subject to erosion. The **water evacuation system** is generally made of land (cuvettes) ditches and reinforced with cement concrete.

## 3.7 ART WORKS

Works of art are represented by 7 bridges with the length of 6 to 60 m and 21 culverts with a diameter from 0.80 m to 2.0 m and from one to three openings, of which 6 (29%) are silted at the level of 20 -100%. Totally silted culverts on km 3,400; 33,07 and 39,875 and 40,009. Entrances and exits to some culverts are crowded with shrubs (km 11.83; 28.30; 31.116; 40,753; etc.), which substantially diminishes the capacity of the culvert. Also, the erosion and the degradation of the consolidations at the exit of the culverts (km 7.10; 9.10; etc.), which represent a threat to the integrity of the embankment. More detailed information on the state of the culverts is provided in Table 3, Annexes 1 and 2.

## 3.8 ACCESSES, COURTYARDS' ENTRANCES, MEANS TO ENSURE ROAD SAFETY

Over the route there are **159 accesses**, including: 27 with asphalt concrete, 44 with gravel, and 88 with land coverage. The state of access along the rest of the road is generally bad. Detailed access information is given in Table 4, Annex 1.
In the localities it is necessary to arrange **323 entrances in the courtyard**. At present, the built-in arranged entries are only on asphalted sectors and with curbs. It is evidenced the fitting of the entrances to the yards with different materials (pavements, cement concrete, etc.) by the inhabitants of the villages. Entrance to

existing yards is mediocre and poor. This report provides for the arrangement of all entries into the courtyard. Detailed information about the entrances to the courtyard is given in Table 5, Annex 1.
On the sector km 0,00 – 17,20 **the road safety and assurance system** generally correspond to the normative requirements in force, there are still missing guide pillars in the region of the culverts, there are missing warning signs on curves, gradients and intersections. On paved areas there is no horizontal marking.is at an insufficient level.

### 3.9 ECOLOGICAL SITUATION

The technical condition of the road essentially influences the environment. Road unevenness (pits, subsidence, etc.) stimulate noise and vibration increase as well as fuel consumption (up to 20%), which increases the amount of harmful emissions in the atmosphere. Roads with gravel coverage are sources of dust, which negatively affect the area around the road (50-100 m). In particular, this is evidenced during the summer, when the plantations are covered with dust, which essentially diminishes the photosynthesis process, thus reducing the harvest of the agricultural crops. It also negatively affects the localities, where dust clouds settle in the households of the inhabitants
The unsatisfactory level of maintenance of art works has contributed to the erosion of downstream alluviums to some culverts, as well as the mudslide of an essential part of the culverts. This has contributed to the acceleration of the erosion process and the flooding of the neighboring territory.

## 4. PROPOSALS FOR ROAD REHABILITATION

### 4.1 PLAN OF THE ROUTE

As outlined in Chapter 3.1, the geometric elements of the route plan correspond to the requirements of NCM D.02.01-2015 and SNiP 2.07.01-89 for technical category IV and require changes. The scheme of the route plan is shown in figure 1, annex 3.

### 4.2 LONGITUDINAL PROFILE

Elements of the corridor longitudinal profile meet the requirements of NCM D.02.01-2015 and SNiP 2.07.01-89 for technical category IV roads and do not require special modifications. Changes are possible due to the equalization and increase of the road structure thickness

### 4.3 CROSS-SECTIONAL PROFILES

Outside the localities the cross-sections do not require any improvement, the width of the road section meets the normative requirements. Within the limits of localities, for the safety of pedestrians, it is proposed to build new sidewalks with a total length of **13,421 km**. In some sectors, due to the unsatisfactory condition, 2,53 km of sidewalks are rearranged. Through the localities, the transverse profile with borders was established to ensure water evacuation. It is planned to demolish 2,530 km of existing borders and to install 3,482 km of new borders. Detailed information on the construction of new sidewalks, the demolition of existing borders and the installation of new ones is given in Tables 1, 2, 3, of Annex 3.
The characteristic cross-sections profiles for each sector of road are shown in Figure 2, Annex 3.

### 4.4 ROAD STRUCTURE

Variants of rehabilitation have been selected as a result of the analysis (comparison) of traditional technologies and new technologies used in recent years for local and regional roads. Gravel roads are proposed to pass from temporary to light or capital coverage. Repairing gravel clothing by adding a broken

stone layer is characterized by a lower service life (7-9 years depending on traffic and land-use), lower average speed, less comfort and safety. Gravel coverage has a negative impact on the environment due to dust, vibration and higher noise.

For sectors with asphalt concrete clothing in bad and very bad condition it is proposed to be used maximum of the material of the existing structure. For this reason, it is proposed to mash the existing asphalt concrete, its kneading with bituminous emulsion and additional gravel (if necessary). For the mediocre and good sectors, is proposed the use of traditional technologies.

**The following project solutions are proposed for the rehabilitation of Corridor III:**

**For gravel sectors km 13,00 – 17,140, km 19,190 – 31,140, km 35,970 – 39,200** the next construction of the road structure was established:

**Type 1**

- Layer of crushed stone fr. 20 – 40 mm, 10 -20 mm and 5 -10 mm with an average thickness of 12.5 cm by the spin method;
- Vibro-cladded concrete layer with a thickness of 14 cm.

**For sectors with asphalt concrete coverage in mediocre condition km 0,00 – 1,23, km 17,580 – 18,170, km 18,290 – 19,190** the next construction of the road structure was established:

**Type 2**

- Sealing the potholes;
- Equalization layer with average thickness of 2,5 cm;
- Asphalt concrete layer with a thickness of 4 cm.

**For sectors with asphalt concrete coverage in bad and very bad condition km 1,230 – 11,03, km11,290 – 11,540, km 31,170 – 35,970, km 39,200 – 40,783** the next construction of the road structure was established:

**Type 3**

- Milling of existing asphalt concrete coverage;
- Mixing of milling material with the bituminous emulsion with addition of crushed stone (if necessary) with a thickness of 12 cm;
- Asphalt concrete layer with a thickness of 4 cm

**For sectors with asphalt concrete coverage in good condition km 11,031 – 11,290, km 11,510 – 13,00, km 17,140 – 17,580, km 18,170 – 18,290** the next construction of the road structure was established:

**Type 4**

- Double bituminous treatment.

The following sidewalk road structure has been established:

- Drainage layer made of sand – 5,0 cm;
- Base of broken stone - 10,0 cm;
- Asphalt concrete coverage – 3 cm.

Detailed information on proposed road structures as well as work volumes is given in Table 5, Annex 3

## 4.5 EMBANKMENT, ROADWAY VERGES AND WATER EVACUATION SYSTEMS

In general, the parameters of the embankment correspond to the requirements of the technical regulations in force. When performing repair works in connection with the elevating the carriageway edge, it would be necessary to fill and strengthen the verges. In some sectors, the geometric parameters of the cuvettes must be brought into line with the requirements of the normative and prolonged documents until the works of art. On some sectors it is necessary to repair the concrete cuvettes.

## 4.6 ART WORKS

There are 7 bridges on the route, 5 of which require mud and shrub cleaning, as well as local repair works and 21 culverts of wich 13 culverts require reparation. Expenditures for the cleaning of works of art has been estimated and included in other expenses of the estimations. The proposed solution for art works is shown in Table 7 of Annex 3. The volumes of works for repairing the culvert are shown in Table 6, Annex 3.

## 4.7 ACCESSES, COURTYARDS' ENTRANCES, MEANS TO ENSURE ROAD SAFETY.

It is planned to arrange 159 accesses to the main road. The access length is 15 m. The structure of the coverage accesses is analogical to the roadway of corridor. Structure of non-consolidated accesses (from the land) has additional sand drainage layer and crushed stone base layer. Detailed information on the road structure of accesses and work volumes are shown in Table 8, Annex 3.

In addition, it is foreseen improvement for 324 entrances to the courtyards. The road structure at the entrances to the yards is the following: sand drainage layer – 10 cm; base layer of broken stone – 15 cm; coverage of asphalt concrete – 5 cm. Detailed information on sidewalks is given in Table 8, Annex 3.

The installation of road signs and marking shall be carried out in accordance with the applicable regulatory requirements. For the rest of the sectors it is necessary to install the necessary means to guide the road traffic: signs, metallic parapets, the execution of the horizontal marking.

# 5. CONSIDERATIONS ON ENVIRONMENTAL PROTECTION AND SOCIAL ISSUES

## 5.1 ENVIRONMENTAL PROTECTION

In general, rehabilitation of the corridor will lead to a significant improvement in the roadside environment.

### 5.1.1 Dust reduction

Changing gravel coverage into cement concrete coverage will significantly reduce dust concentration in the 50-100m area of the road. In particular, this will be emphasized in localities, where dust clouds were sitting in the households of the inhabitants.

Figure 5.1.1.1 Dust clouds formation on the gravel roads

### 5.1.2 Reduction of erosion and land flooding.

Due to defects in capture and evacuation systems of rainwater, there are cases of soil erosion with the tendency of forming the ravines, which in the future can lead to the destruction of the road embankment. In the place where are culverts with sludge, there is evidence of the flooding of the adjacent land with the subsequent formation of a sludge layer on the roadside and around it.


Figure 5.1.2.1. Downstream erosion of the culvert with partial degradation of the culvert

Figure 5.1.2.2. Silted culvert on km 14,800

### 5.1.3 Reduction of vibration, noise and harmful emissions.

Improving the flatness of the tread surface will contribute to the reduction of vibration and noise in the area of influence of the road, especially when passing heavy trucks. Optimizing the operation of motor vehicles with improved traffic conditions will reduce fuel consumption and thus reduce harmful emissions to the atmosphere (in an average of 10 to 20%)

### 5.1.4 Environmental protection measures during the execution of the rehabilitation works.

The technological process of road rehabilitation is characterized by the use of large quantities of construction materials, special machines for loading, transporting, distributing and compacting the road structure materials. Lately, mechanisms and installations are used to move materials directly to the site.
During the execution of works, it is necessary to permanently monitoring the observance of the environmental protection requirements by limiting and excluding the negative effects on the environment until the admissible norms.
For the stationing of machines and mechanisms it is necessary to arrange special reinforced lands with waterproofing materials to exclude soil pollution. Carrying out the machines will be done in special places.
During operation of the mechanisms, vibration and noise must not exceed the limits set by the rules in force.
When vibrating compacters work in localities, it must be borne in mind that the frequency of the oscillations of the foundations of the constructions is close to the frequency of vibration of the compactor. The distance to houses should not be less than 10m.
Storage of building materials need to be carried out on specially designed land. Keeping bituminous materials in open containers is forbidden.
Once the construction works have been completed, the land for storing materials and stationing the machinery must be re-cultivated.

## 5.2 IMPACT ON SOCIAL STATUS

Particular attention in the rehabilitation of the corridor are landscaping works of localities: construction of sidewalks, entrance to the courtyards, entrance design, organizing pluvial water evacuation by building of sinks and profile curbs.

Because of these measures, dust formation, noise and vibration in the road area will reduce substantially. All these complex measures will contribute to the improvement of the social conditions of the inhabitants of the Ciadâr Lunga town and Baurci, Congaz, Câetu, Chiselia Rusă and Chiselia Mare villages. Landscaping will positively influence the attractiveness of investment in the region. Implementation of the project will have a positive impact on:

- The health of the inhabitants of the adjacent territory;
- Creating additional jobs;
- Improving the quality of transport services;
- Reduction of transportation costs.

In general, the project will contribute to improving the quality of life of the inhabitants of Ciadâr Lunga town and Baurci, Congaz, Câetu, Chiselia Rusă and Chiselia Mare villages.

## 5.3 ISSUES OF LAND EXPROPRIATION AND DEMOLITION OF BUILDINGS

Throughout the corridor, the existing road area is sufficient to accommodate all road elements. There is no need for land expropriation and construction demolition.

## 5.4 GENDER ASPECTS

The corridor passes through three villages with a total population of 42 275 inhabitants, including 48.5% men and 51.5% women, so women will have more opportunities. Road rehabilitation will help improve living conditions for residents and especially women. Pavement landscaping will allow children to ride in comfortable and safe conditions. Decreasing the concentration of dust will reduce the workload of women in sanitation and washing.

## 6. COSTS EVALUATION

In the report were determined the volumes of the basic works: the rehabilitation of the road structure, the landscaping of the sidewalks, the accesses and the entrances to the yards. The volume art repair works (culverts) was determined roughly, because a more detailed assessment, require additional studies. The costs were assessed based on the prices for works and materials in the road rehabilitation area at the time of this report. The volume of works and the indicative costs are shown in the table 6.1.

**Table 6.1: The estimated cost of the rehabilitation of road corridor III Ciadâr Lunga – Baurci – Congaz - Câetu – Ciselia Mare – Chiselia Rusă – M3**

| № | Name of the works | | | Units cost | | | The volume | | Sum, Euro | Sum, MDL |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. | Rehabilitation of the road structure: | | | | | | | | | |
| | - Type 1 | | | 396,73 | MDL | /m² | 147440,00 | /m² | 2949736,84 | 58493281,44 |
| | - Type 2 | | | 290,73 | MDL | /m² | 17550,00 | /m² | 257305,30 | 5102364,15 |
| | - Type 3 | | | 471,08 | MDL | /m² | 100672,00 | /m² | 2391556,52 | 47424565,76 |
| | - Type 4 | | | 79,73 | MDL | /m² | 13854,00 | /m² | 55701,74 | 1104565,57 |
| | TOTAL: | | | | | | 279516,00 | m² | 5654300,40 | /m² |
| 2. | Demolition of existing curbs БР100.30.15 | | | 20,00 | MDL | /m | 1205,50 | m | 1215,83 | 24110,00 |
| 3. | Instalation of curbs БР100.30.15 | | | 245,00 | MDL | /m | 3481,65 | m | 43015,85 | 853004,25 |
| 4. | Building access to the main road | | | | | | | | | |
| | - Type 1 | | | 396,73 | MDL | /m² | 708,00 | /m² | 15103,48* | 299502,01* |
| | - Type 2 | | | 290,73 | MDL | /m² | 265,50 | /m² | 5301,04* | 105119,61* |
| | - Type 3 | | | 471,08 | MDL | /m² | 3982,50 | /m² | 104232,53* | 2066931,10* |
| | - Type 4 | | | 79,73 | MDL | /m² | 1239,00 | /m² | 4981,55 | 98784,23 |
| | - Type 5 | | | 472,49 | MDL | /m² | 5575,50 | /m² | 134959,15* | 2676240,00* |
| | - Type 6 | | | 437,83 | MDL | /m² | 2301,00 | /m² | 50804,24* | 1007448,00* |
| | TOTAL: | | | | | | 14071,50 | m² | 402897,63 | /m² |
| 5. | Demolition of existing pavement | | | 8,00 | MDL | /m² | 2530,00 | /m² | 1020,68 | 20240,00 |
| 6. | Building new sidewalk | | | 250,00 | MDL | /m² | 13421,00 | /m² | 169200,71* | 3355250,00* |
| 7. | Arrangement of entries in the yards | | | 300,00 | MDL | /m² | 1776,50 | /m² | 26875,95* | 532950,00* |
| Repair of artificial structures | | | | | | | | | | |
| 8. | Repair of culverts, m³ reinforced concrete | 3 | X Ø0,8m | 4600,00 | MDL | /m³ | 17,85 | /m³ | 4140,70 | 82110,00 |
| | | 6 | X Ø1,0m | 4600,00 | MDL | /m³ | 35,70 | /m³ | 8281,39 | 164220,00 |
| | | 1 | X Ø1,5m | 4600,00 | MDL | /m³ | 9,82 | /m³ | 2277,96 | 45172,00 |
| | | 1 | X 3x2,0x2,0m | 4600,00 | MDL | /m³ | 10,60 | /m³ | 2458,90 | 48760,00 |
| 9. | Repairing of bridges | | | 11898,00 | MDL | /m² | MDL | /m³ | 1053000,00 | /m³ |
| TOTAL | | | | | | | 40,783 | km | 7351330,25 | 145776878,8 |
| Means of organization of road traffic, restoring the cuvettes, cleaning of man-made structures and filling up of roadside - 15% | | | | | | | 40,783 | Km | 1102699,53 | 21866531,82 |
| GRAND TOTAL | | | | | | | 40,783 | km | 8454029678 | 167643410,62 |
| | | | | | | | 1,00 | km | 207292,98 | 4110619,88 |

Notes

* The cost of the congresses, entrances to yards and sidewalks includes the cost of installing side stones and curbs.

* * The exchange rate in accordance with the data of the National Bank on 15.05.2018, 1 Euro=19.83 mdl

**Table 6.2: Estimated cost excluding VAT**

| Details | Euro | MDL |
|---|---|---|
| Total costs | 8 454 029.78 | 167 643 410.62 |
| The cost of 1 km | 207 292.98 | 4 110 619.88 |
| Cost per 1 person | 326.19 | 6 468.38 |

The calculation of the estimate cost did not include VAT, the expenses for the elaboration of the feasibility study, technical project, technical supervision and others.

## 7. FINAL STATEMENTS

The purpose of this report is to assess the technical condition of the road **CORRIDOR III Ciadâr Lunga – Baurci – Congaz - Câetu – Ciselia Mare – Chiselia Rusă – M3** to determine the type of works required their volume, as well as evaluation of rehabilitation costs. These studies as well as the results of previous evaluations (in RSP) will facilitate decision-making process on the prioritization of the road corridor.

Field studies have highlighted the level of degradation of the road, works of art, collecting and drainage systems, as well as landscaping elements (entrances to courtyards, sidewalks, etc.).

The accumulated information has allowed the determination of the technical solutions for each type of existing road structure depending on its technical condition and traffic. It has also helped to determine the solutions for access, courtyard entry, sidewalks and repair of art works. As a result, the cost assessment was made based on the technical solutions proposed by multiplying unit costs to their volume.

Costs by types of works were determined according to the prices set at the time of the studies in the area of the road corridor. For cleaning and repairing drainage ditches, cleaning works, installing road signs, and so on. It was difficult to determine volumes at this stage. These expenses were included in the estimate with a weight of 15%.

It is necessary to mention that the cost estimates will be specified when the technical project will be elaborated.

The project's rehabilitation will allow: to reduce transport costs, to improve the social conditions for the inhabitants of Ciadâr Lunga town and Baurci, Congaz, Câetu, Chiselia Rusă și Chiselia Mare villages, to improve the environmental status of the road, to increase traffic safety and in general to increase the living standards and the health of the inhabitants.

The cost of rehabilitation of the **40.873 km** long corridor constitutes **8 454 030 Euro, 207 293 Euro/km and 326 Euro/inhabitant.**