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V2**

REPUBLIC OF MACEDONIA
Regional and Local Roads Program Support Project

SECTORAL ENVIRONMENTAL ASSESSMENT

Vol. II Annexes

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February 20, 2008

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Annex 1. Selected maps of baseline conditions



Figure 1: Map of Macedonia ¹

¹ Operational Programme Regional Development 2007 – 2009 (Draft), 2007



Figure 2: Eight regions in the Republic of Macedonia according NUTS classification²

² Source: Cadastre of Air Polluters and Pollutants in the Republic of Macedonia, Tehnoalb Ltd, 2004

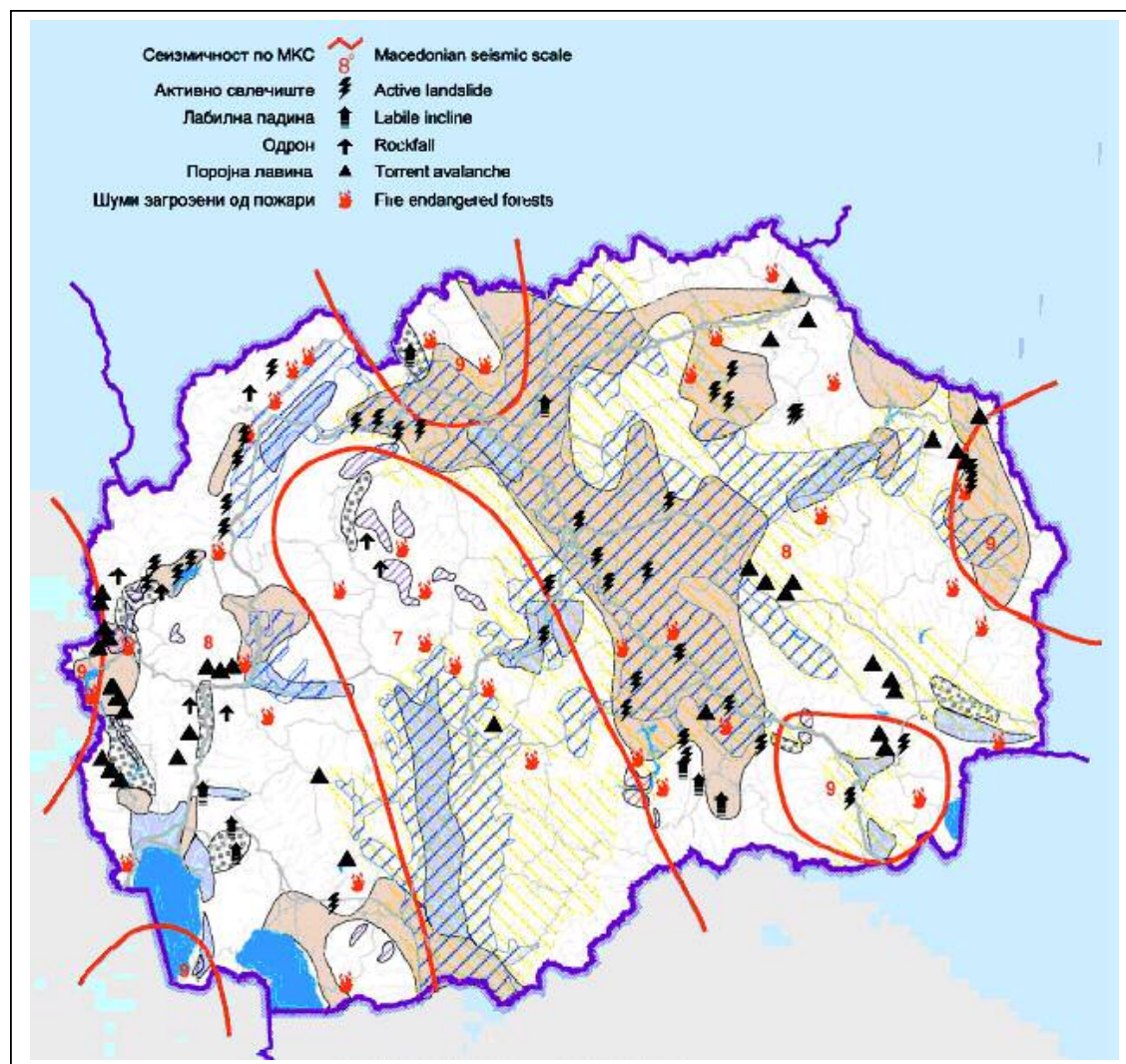


Figure 3: Seismic occurrences – earthquakes, and other natural disasters³

³ Source: Spatial plan of the republic of Macedonia, spatial planning strategy, 2004

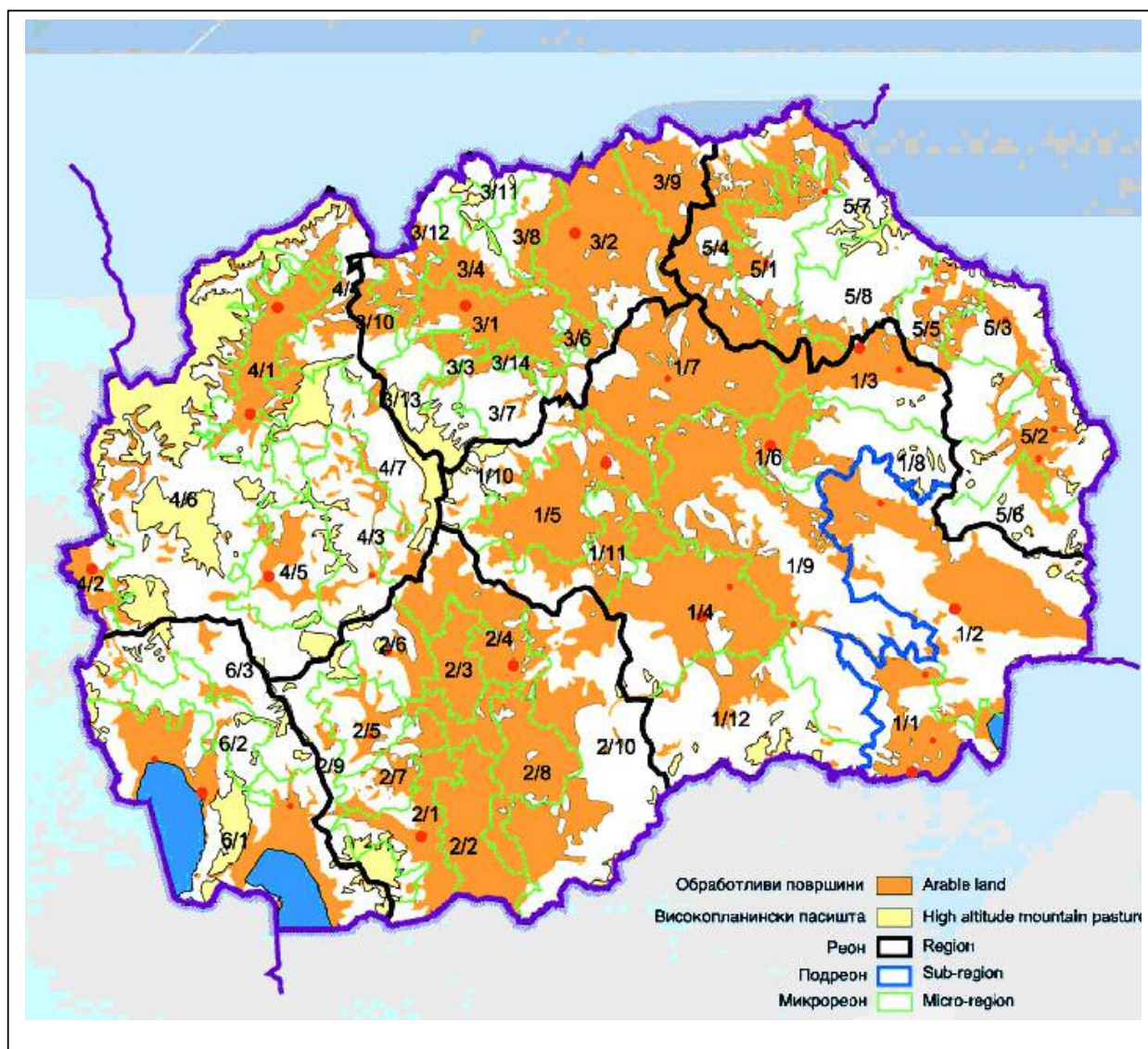


Figure 4: Disposition of arable land, pastures and relevant regions, sub-regions and micro regions⁴

⁴ Source: SPATIAL PLAN OF THE REPUBLIC OF MACEDONIA Spatial planning strategy, 2004

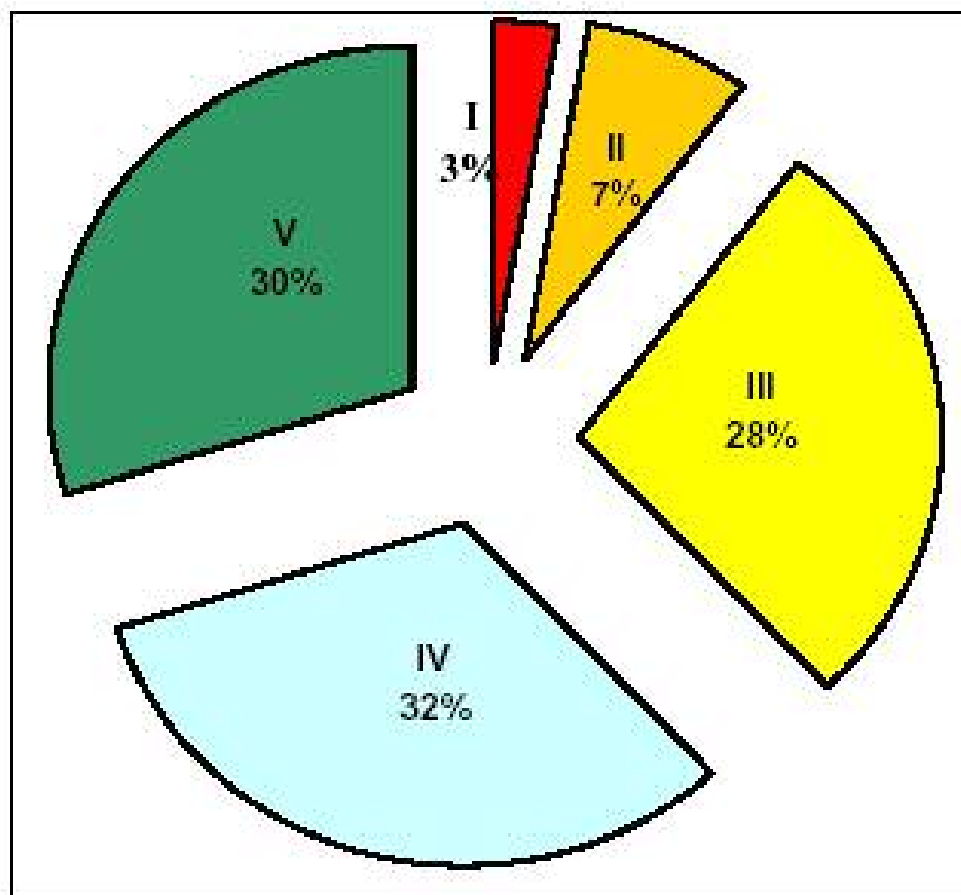


Figure 5: Area under different intensity of soil erosion⁵

⁵ Source: UNDP-NSCA Project

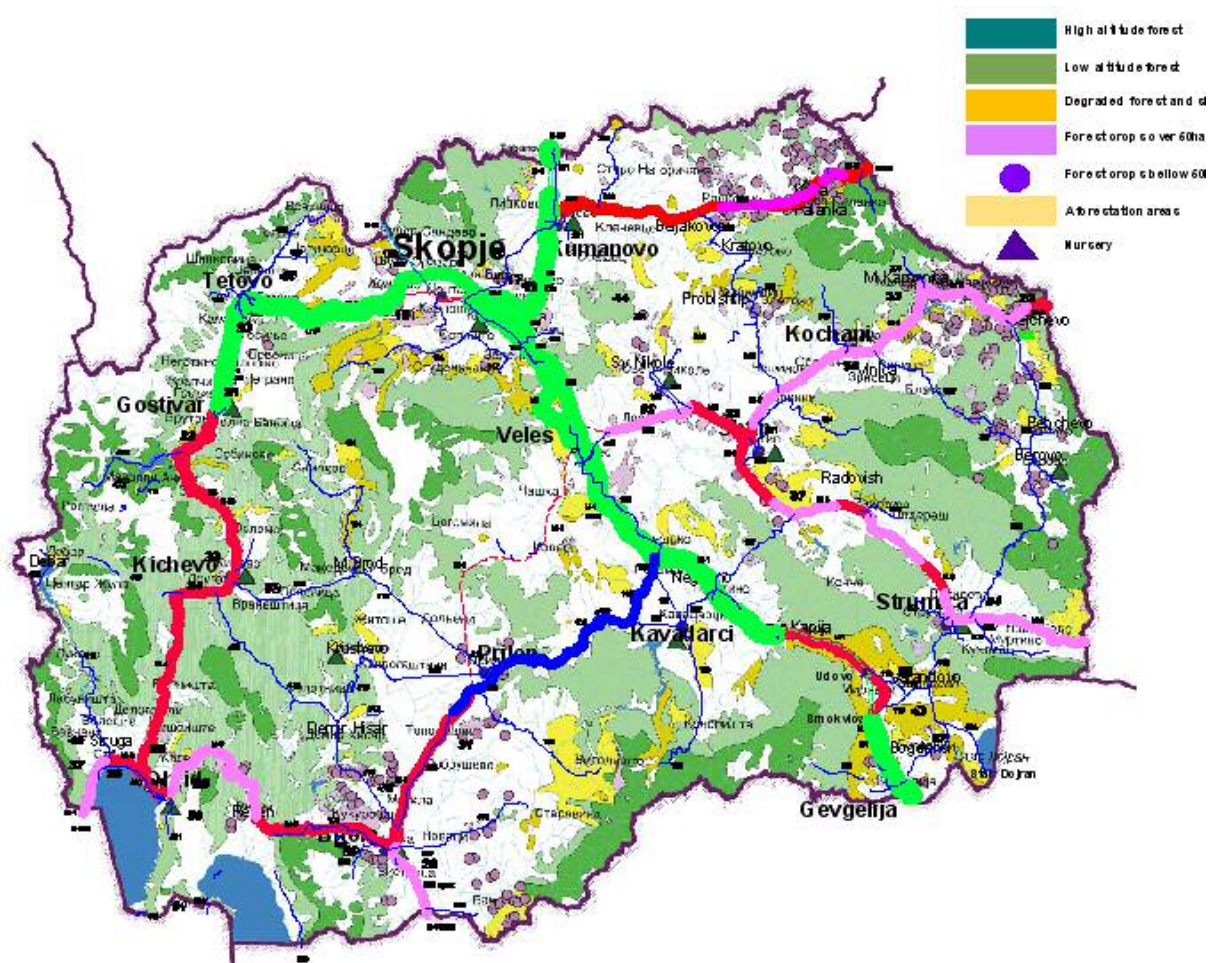


Figure 6: Roads in relation with the country forestry resources¹

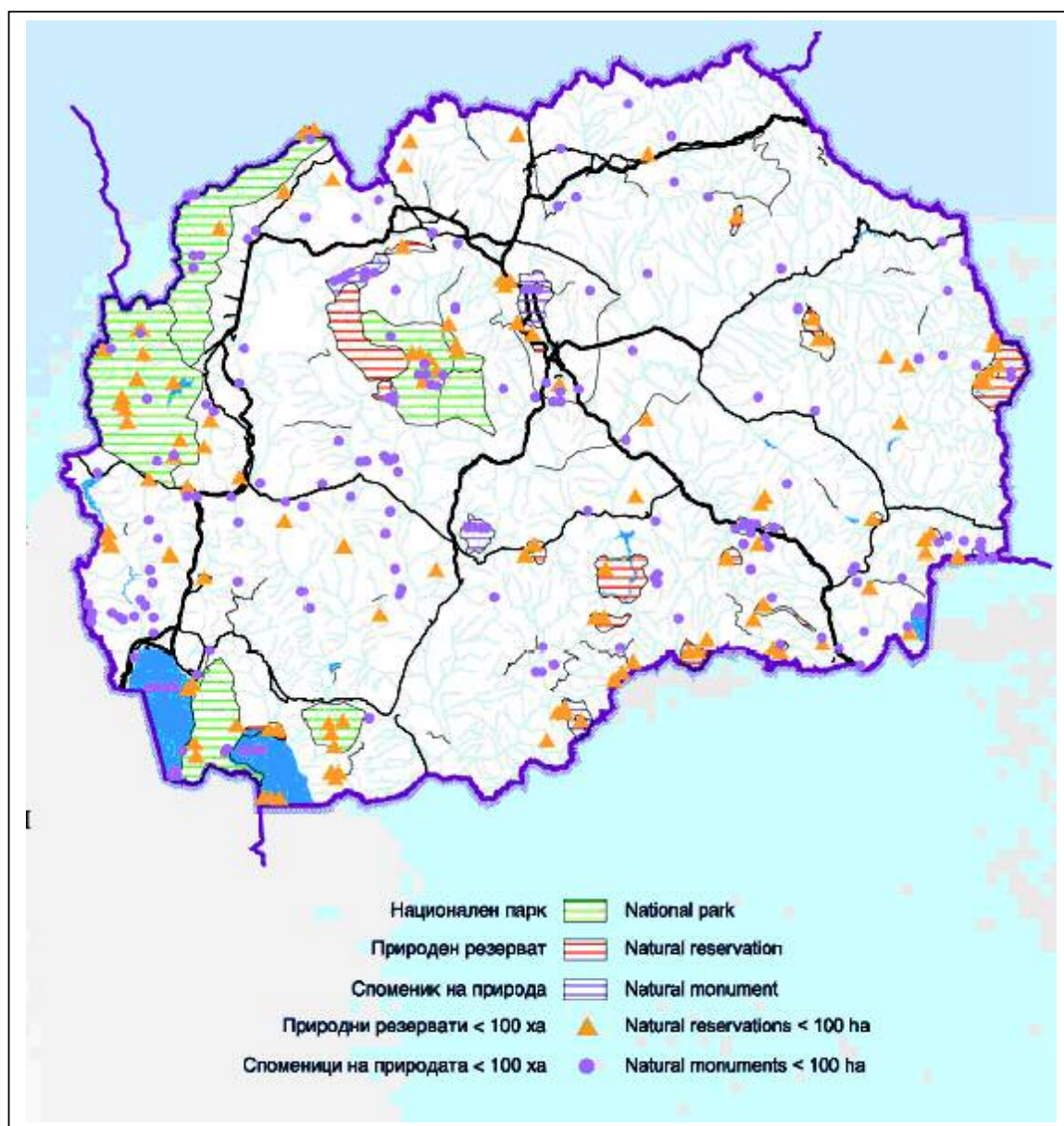


Figure 7: Natural resources⁶

⁶ Source: Spatial plan of the republic of Macedonia, spatial planning strategy, 2004

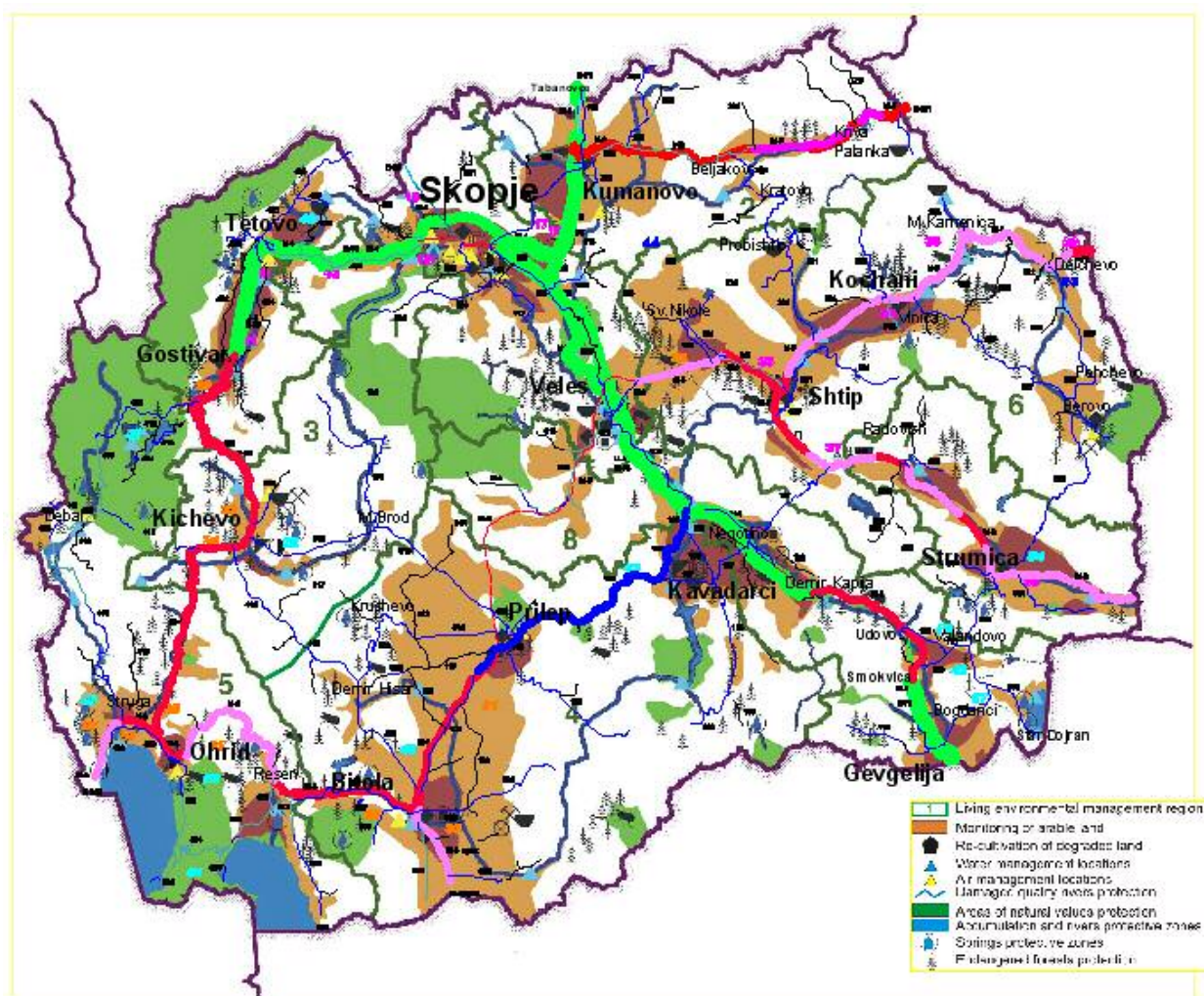


Figure 8: Roads in relation with the environmentally protected areas⁷

⁷ Source: R. of Macedonia, Spatial plan 2004 (Просторен план на Р.М., 2004)

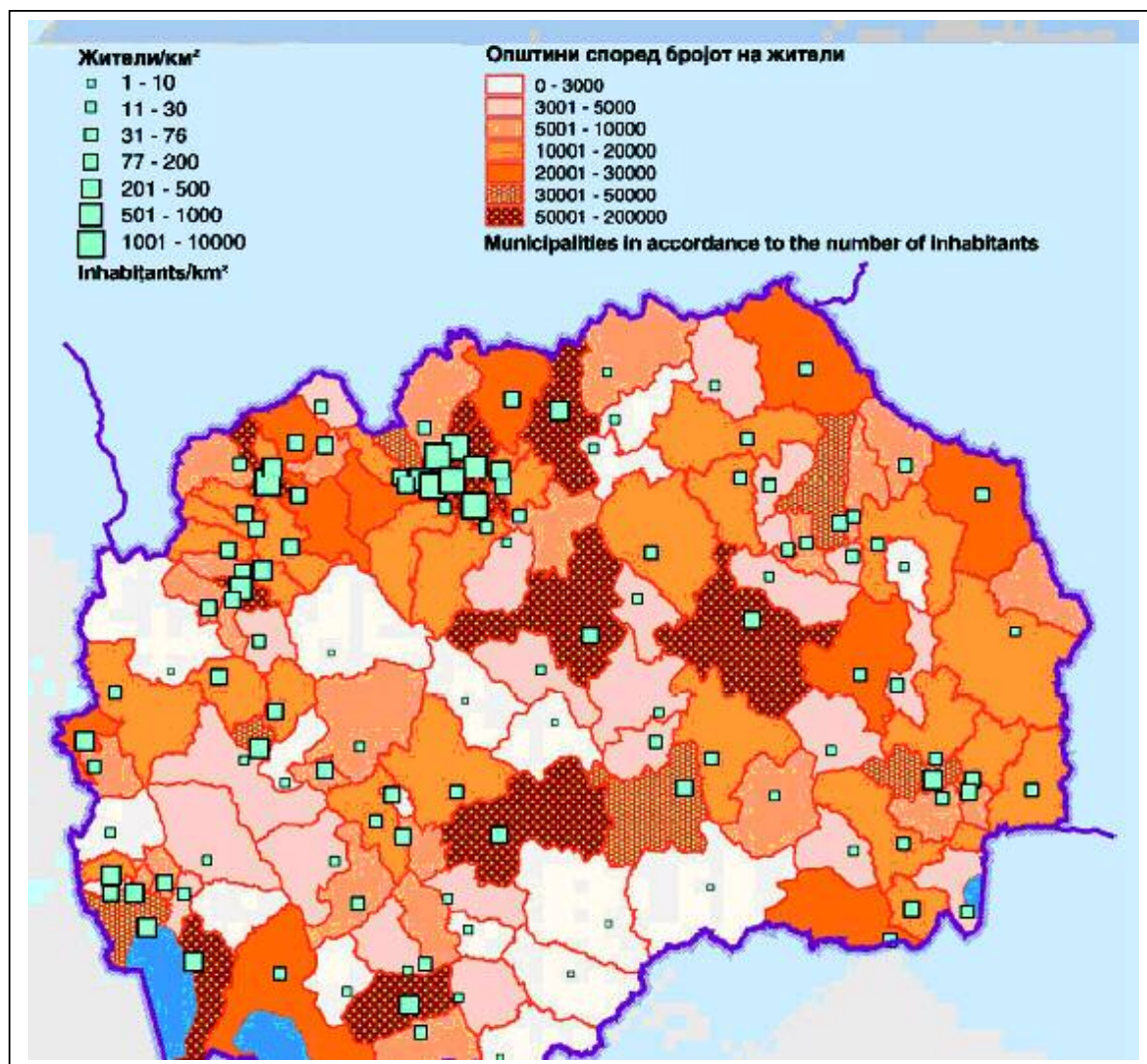


Figure 9: Urbanization and settlement network ⁸

⁸ Source: Spatial plan of the republic of Macedonia, spatial planning strategy, 2004



Figure 10: Macedonia and Transport Corridors in SEE Europe⁹

⁹ Source: Operational Programme Regional Development 2007 – 2009 (Draft), 2007

Annex 2. Potential Environmental Impacts of the road construction, rehabilitation, operation and maintenance

Table 1. Environmental and Social Impacts for Road construction Phase

Environmental and social components	Project activity	Potential Impact	Scale of the impact	Suggested Mitigation Measures
Physical Environment				
Soils and land	<ul style="list-style-type: none"> • Transportation, siting and operation of mobile asphalt plant/ or operation of statutory asphalt plant • Construction works linked with asphalt plant siting (construction of seat/ temporary haul roads, etc.) • Grading • Leveling • Potholes patching/ cracks priming • Pavement / Carriageway surfacing (laying of asphalt-concrete mixtures, laying cement-concrete slabs, etc.) • Use of hazardous materials, such as combustive-lubricating ones, bitumen, etc./ heating and spraying of bitumen • Heavy machinery and equipment operation • Traffic of construction vehicles 	<p>Negative:</p> <ul style="list-style-type: none"> • Damage to land due to: <ul style="list-style-type: none"> • land reclamation for siting of mobile asphalt plant, if needed/ reduced land use options • site preparation works/ earthworks • excavation of constructional materials • haul roads • Damage to soil structure due to traffic of vehicles and storage of constructional materials (cement-concrete slabs, gravel, et.) in the immediate vicinity of road construction works • Accident soil pollution by petroleum hydrocarbons and other hazardous and toxic materials in the area of mobile asphalt plant operation • Land damage/ soil pollution by bitumen, asphalt concrete mixtures during loading-unloading/ transportation and laying • Soil pollution due to leaks of lubricants • Temporary uncontrolled surface run-off due to construction of drainage channels • Soil pollution by components of combustion gases emitted by construction vehicles (esp. heavy metals) • Soil contamination due to constructional materials/ construction wastes disposals • Soil pollution due to contaminated surface runoff from the road under construction • Soil erosion caused by re-canalization of waterways • Formation of gullies along drainage channels • Soil contamination due to improperly arranged temporary accommodation facilitates 	Temporary/ local	<ul style="list-style-type: none"> • To plan carefully construction works to minimize land affected and ensure soil pollution prevention • To minimize construction site's size/ to minimize land affected/ to ensure soil pollution prevention • To select proper site for placing of mobile asphalt plant, if appropriate to minimize impact on land/soil • To ensure accuracy of road construction works/ to avoid spills, leaks, etc. • To provide proper haul roads to minimize impact on the land • To avoid loss of vegetation along the roads • To rehabilitate borrow areas, quarries and temporary haul /access roads by planting grass and trees and other measures • Proper design and installation drainage and retaining structures/ civil engineering structures/ clean up drainage channels/ culverts to minimize the risk of erosion and landslides on down lands • To avoid road construction works during heavy rains/ to mitigate velocity and volume of polluted surface run-off • Carry out landslides prevention activities/ physical stabilization of slopes (retaining walls, piles, etc.), if needed

	<ul style="list-style-type: none"> • Hauling of constructional materials such as bitumen, borrow materials, asphalt-concrete mixtures, concrete, cement-concrete slabs, gravel, etc.) • Construction of road drainage system (drainage channels, chutes, etc.) • Quarrying • Constructional materials stockpiling • Construction waste disposals • Construction/ of sidewalks in settlements • Establishment of construction camp/ accommodation facilities (sewage facilities, waste disposals, etc.) 	<p>Positive:</p> <ul style="list-style-type: none"> • Slopes stabilization towards landslides prevention/ reduced risk of landslides • Decreased risk of soil pollution, soil erosion and landslides resulting from construction of drainage system • Decreased risk of land degradation potentials/ gullies formation resulting from construction of drainage system 	Permanent/ local	<ul style="list-style-type: none"> • To provide proper construction waste disposals • To provide proper stockpiling of constructional materials • Planting / rehabilitation of vegetation (buffer strips) along the roads to minimize spreading of combustion gases/ particulates/ dust, if appropriate • Backfilling and restoration of eroded channels to natural conditions/ re-vegetation, if appropriate • Organize properly temporary sewage facilities • Clean up of the work site/ restoration of damaged areas after construction works are finished
Water Resources	<ul style="list-style-type: none"> • Transportation, siting and operation of mobile asphalt plant/ or operation of statutory asphalt plant • Construction works linked with asphalt plant siting (construction of seat/ haul roads, etc) • Road leveling • Potholes patching/ cracks priming • Pavement / Carriageway surfacing (laying of asphalt-concrete mixtures, laying cement-concrete slabs, etc.) 	<p>Negative:</p> <ul style="list-style-type: none"> • Groundwater pollution due to surface runoff from operating asphalt plant ground • Groundwater pollution due to contaminated surface runoff/ migration of spills/leaks from improperly stored lubricants and construction wastes • Groundwater pollution due to leaks from hauling vehicles during transportation/ loading-unloading • Groundwater pollution by bitumen spills • Increased situation of potential/ sediment runoff into down land waterways (if any) due to modifications of drainage patterns • Groundwater pollution by spills from road accidents of vehicles used for construction works • Disturbance to underground water table due to use of heavy machinery 	Temporary/ Local	<ul style="list-style-type: none"> • To plan carefully construction works to minimize impact on water resources • Minimize collection of water and mud, where possible, to execute road construction works during dry season • Mitigate run-off velocities and volumes/ design outfalls properly • To prevent leaks/spills during transportation/ loading-unloading of constructional materials • Stockpiles of constructional materials should be covered with fabric or other materials to prevent/ mitigate contaminated runoff

	<p>cement-concrete slabs, etc.)</p> <ul style="list-style-type: none"> • Use of hazardous materials, such as combustive-lubricating ones, bitumen, etc./ spraying of bitumen • Heavy machinery and equipment operation • Traffic of construction vehicles, machinery, etc./ hauling of constructional materials such as bitumen, borrow materials, asphalt-concrete mixtures, concrete, cement-concrete slabs, gravel, etc.) • Construction of road drainage system (drainage channels, chutes, etc.) • Quarrying/ removal and placing borrow materials • Heating and spraying of bitumen • Constructional materials stockpiling • Construction waste disposals • Establishment of construction camp/ accommodation facilities (sewage facilities, waste disposals, etc.) 	<ul style="list-style-type: none"> • Increased pressure on water resources due to additional water use for road maintenance works • Groundwater pollution by compounds of wastes produced by infrastructure connected with accommodation facilities during road construction / improper sewage facilitates <p>Positive:</p> <ul style="list-style-type: none"> • Decreased risk of water pollution resulting from construction of drainage systems as compared to previous road condition • Decreased risk of under-flooding resulting from construction of drainage system as compared to previous road condition • Decreased risk of sedimentation/ turbidity of waterways (if any) resulting from expected lower erosion potential 	<p>Permanent/ local</p>	<ul style="list-style-type: none"> • To provide proper stockpiling of constructional materials and disposals of hazardous wastes/ avoid stockpiling on the slopes or near waterways, if any/ contaminated run-off from stockpiles should be drained into ditches with oil traps facilities • Ideally, excavate cut off ditches around stockpiles to prevent materials from being washed away by surface runoff/ arrange interception ditches to prevent muddy water to reach waterways (if any) • All lubricants and engine oils should be collected and recycled or disposed off site • Design drainage system to ensure soil stability/ soil erosion prevention and thus to avoid surface water pollution by suspended solids • Where possible, maintain natural drainage • Water for road construction works should be obtained from such sources and used in such amount that would not affect appropriate domestic water supply in the settlements • To avoid loss of vegetation during road construction works • Re-vegetation or physical stabilization of eroded slopes along the road • Restoration of damaged lands, planting of grass and trees • To organize properly accommodation/ sanitary facilities for workers • To clean up the area after the construction work is completed
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Air Quality/ Acoustic Environment	<ul style="list-style-type: none"> Asphalt plant operation Traffic of vehicles used for road/ hauling of constructional materials and construction wastes Heating of bitumen Crushing and screening of materials 	<p>Negative:</p> <ul style="list-style-type: none"> Emissions from mobile/ statutory operating asphalt plant Air pollution by components of combustion gases (CO₂, NO_x, SO_x, CO, NMVOC, CH₄). Air pollution by volatile hydrocarbons aggravated by unfavourable weather conditions (wind, hot, etc) Local impairment of air quality during crushing and mixing of raw materials Noise pollution and vibrations from hauling vehicles, operating machinery and equipment <p>Positive:</p> <ul style="list-style-type: none"> Decreased risk of air pollution due to reduction of combustion gases emissions into the air 	<p>Temporary/ Local</p> <p>Permanent/ Local</p>	<ul style="list-style-type: none"> To plan carefully construction works to minimize air and acoustic pollution Control construction methods and used machinery and equipment Careful timing of works in residential areas)/ restrict construction to certain hours To avoid loud beep signals in settlements/ to minimize disturbance to residents Restrictions speed of construction vehicles, especially in residential areas Either use of sprinkling-machines “inhaling” dust... or control by water or other means/ water spraying twice a day during construction to avoid dust Watering of access roads to minimize dust formation, if applicable Vehicles delivering materials should be well maintained and covered to prevent/ reduce spills, emissions and dispersion
Biological Environment				
Fauna and flora/ habitats	<ul style="list-style-type: none"> Construction and operation of asphalt plant Road construction works (leveling/ potholes patching/ cracks priming/ pavement) Use of hazardous materials, such as combustive-lubricating ones, bitumen/ heating and spraying of bitumen Heavy machinery and equipment operation 	<p>Negative:</p> <ul style="list-style-type: none"> Soil and water pollution due to operation of asphalt plant Soil and water pollution by hazardous and toxic substances Impact on biota due to contaminated environmental media (air, water, soil) Noise pollution/ vibration due to operation machinery/ equipment Noise pollution due to traffic of construction vehicles Disturbance to habitats/ loss of fauna and flora species during road construction works Disruption of wildlife passages, local migration routes and patterns causing increased road kills, etc. 	Temporary/ local	<ul style="list-style-type: none"> To plan carefully construction works to minimize impact on flora, fauna, habitats/ careful siting, alignment, design of associated infrastructure to minimize impacts (especially in sensitive areas, if appropriate) Careful timing of works and work seasonally, as appropriate/ no construction during breeding season Trees and other vegetation should be protected during bitumen spraying To avoid excessive/ to minimize loss of

	<ul style="list-style-type: none"> • Traffic of construction vehicles, machinery, etc. • Hauling of constructional materials • Construction of road drainage system (drainage channels, chutes, etc.) • Constructional materials stockpiling • Construction waste disposals 	<ul style="list-style-type: none"> • Changes to aquatic eco-systems due to increased sediment runoff into waterways due to construction/ modification of drainage patterns 		<p>vegetation during road construction works</p> <ul style="list-style-type: none"> • Big potholes should be either covered or sand or fenced if they are going to left opened over night • To avoid loud beep signals from vehicles and machinery in the areas where wild animals inhabit • Ideally, to provide passages through the road for animals/ wire fence in sites where wild animals inhabit • Careful selection of sites to be used for constructional materials stockpiles/ construction wastes disposals • Use of appropriate construction methods • Clean-up of construction sites • Rehabilitate work sites/ asphalt plant operation sites quarries/ borrow areas, access roads by planting grass and trees and other relevant measures
Social Environment				
Landscape/ Aesthetic	<ul style="list-style-type: none"> • Siting of mobile asphalt plant, if appropriate/ relevant construction works • Construction of detours/ access routes/ haul roads • Earthworks/ quarrying/ removal and placing borrow materials • Traffic of construction vehicles/ heavy machinery and equipment operation • Construction of road 	<p>Negative:</p> <ul style="list-style-type: none"> • Local visual impacts/ marred landscape • Damage to vegetation along the roads • Damage to or degradation to some natural and manmade landscape valuable sites, if any, due to easier access • Loss of trees and other vegetation • Dust, waste, debris etc. during road construction works 	Temporary/ Local	<ul style="list-style-type: none"> • To minimize construction site's size to minimize impact on landscape/ careful planning, siting and design of works • Screening/ fencing of intrusive items • Careful de-commissioning of construction areas/ waste disposal sites// clean up construction sites after road construction works are finished/ re-vegetation of work area, etc. • Excavated materials, if any, should be used for backfilling of borrows and gravel pits

	drainage system <ul style="list-style-type: none"> • Constructional materials stockpiling • Construction waste disposals • Establishment of construction camp/ accommodation facilities 	Positive: <ul style="list-style-type: none"> • Improved manmade landscape 	Permanent/ Local	
Human health / settlements	<ul style="list-style-type: none"> • Road construction works: <ul style="list-style-type: none"> ○ excavations and other earthworks ○ levelling/patching/priming ○ pavement ○ crushing and screening of materials ○ heating of bitumen ○ repair of aggregates ○ construction & reconstruction of drainage channels; etc. • Hazardous, toxic and inflammable materials loading-unloading, transportation and disposal • asphalt plant operation • traffic of construction vehicles • Constructional materials stockpiling • Construction waste disposals 	Negative: <ul style="list-style-type: none"> • Road accidents due to disruption of traffic flows due to road maintenance works • Health impact on construction workers due to work with toxic and hazardous materials (damage to respiration system, skin, eyes, etc) aggravated by unfavorable weather conditions (strong wind, rain, etc.) • Impact on human health due to: <ul style="list-style-type: none"> ○ Polluted by combustion gases and dust air along the roads ○ Polluted surface run-off into adjacent agricultural lands and agricultural plants contamination ○ Noise pollution and vibrations from construction works, traffic of vehicles and operating machinery/ equipment • Fire and explosion hazards due to accidents during road construction works • Construction vehicles road accidents • Accidents during road construction works (spills, blasts, etc.) • Accidents due to disruption of traffic flows due to road construction works • Pressure on local water supply sources 	Temporary/ Local	<ul style="list-style-type: none"> • To train personnel on occupational safety and measures towards compliance with occupational safety requirements • Appropriately experienced contractor, good supervision, careful planning and scheduling of work activities • Incorporation of safety and environmental requirements in contract documents/ providing of workers with uniform, glasses, gloves, etc. • Foreseeing compensations in case of health damage • Fencing of dangerous areas (stockpiling of hazardous materials) • Excavated potholes should be either covered with crushed stone or sand or fenced if they are going to left opened over night • Avoid work during unfavorable weather conditions to minimize risk of accidents/ bitumen should be not applied during strong winds or heavy rains • Proper establishment of construction camp/ temporary accommodation • To ensure accident prevention for population in residential areas/ to plan carefully construction works to minimize impact on local residents

		<p>Positive:</p> <ul style="list-style-type: none"> • Decreased risk of car and local residents accidents due to improved road conditions • Decreased risk to health damage due to reduction of air pollution by combustion gases • Decreased risk to health damage due to lessening of polluted surface runoff to agricultural lands 	<p>Permanent/ Local</p>	<ul style="list-style-type: none"> • Restrict transportation of hazardous/ explosive materials in residential areas/ comply with regulation on transportation of hazardous materials • Restrict construction vehicle speed limits, especially in residential areas • Careful timing of works to minimize disturbance especially during night time • Ideally, to design acoustic barriers along the roads in residential areas • To construct/ rehabilitate sidewalks in residential areas/ the required width of the sidewalk corresponds to the intensity of pedestrian's traffic (final determination of the location shall be arranged with local stakeholders) • Road warning signs posting to warn road users about construction works/ warn road users about traffic diversion • Provide advise to the public on shorter alternative routs/bypasses • To ensure proper constructional materials stockpiling/ construction waste disposals • Stone crushing plants; asphalt plants should be fitted with approved dust control devices and operate in accordance with environmental protection requirements and manufacturer' specifications • To ensure regular watering of roads under construction to minimize formation of dust • Ideally, to install speed calming devices, e.g. humps, in residential areas • To ensure emergency medical service/ to provide telephone communication • To ensure proper sanitary-hygienic facilities (sewage disposal)/ appropriate
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				waste disposal <ul style="list-style-type: none"> Water for road construction works should be obtained from such sources and such amount that would not affect appropriate domestic water supply in the area of concern
Social/ Economic component				
Social/ Economic	<ul style="list-style-type: none"> Construction on new small roads 	Positive: <ul style="list-style-type: none"> Creation of job opportunities/ recruitment of the labour force among local population/ temporary decrease of unemployment in residential areas along the road Development of relevant work skills at local residents reduction of vehicles operating cost; less fuel consuming, safe driving and riding; better transportation conditions/ less time for transportation of passengers, goods, livestock, etc. opportunity to create new work places along the road: filling station, shops bars, parking facilities improved communication opportunities between settlements/ local residents etc. 	Permanent / local	

Table 2. Environmental and Social Impacts for Road Rehabilitation Phase

Environmental and social components	Project activity	Potential Impact	Scale of the impact	Suggested Mitigation Measures
Physical Environment				
Soils and land	<ul style="list-style-type: none"> • Transportation, siting and operation of mobile asphalt plant/ or operation of statutory asphalt plant • Construction works linked with asphalt plant siting (construction of seat/ temporary haul roads, etc.) • Grading • Leveling • Potholes patching/ cracks priming • Pavement / Carriageway surfacing (laying of asphalt-concrete mixtures, laying cement-concrete slabs, etc.) • Use of hazardous materials, such as combustive-lubricating ones, bitumen, etc./ heating and spraying of bitumen • Heavy machinery and equipment operation • Traffic of construction vehicles • Hauling of constructional materials such as bitumen, borrow materials, asphalt-concrete mixtures, concrete, cement-concrete slabs, gravel, etc.) 	<p>Negative:</p> <ul style="list-style-type: none"> • Damage to land due to: <ul style="list-style-type: none"> • land reclamation for siting of mobile asphalt plant, if needed/ reduced land use options • site preparation works/ earthworks • excavation of constructional materials • haul roads • Damage to soil structure due to traffic of vehicles and storage of constructional materials (cement-concrete slabs, gravel, et.) in the immediate vicinity of road rehabilitation works • Accident soil pollution by petroleum hydrocarbons and other hazardous and toxic materials in the area of mobile asphalt plant operation • Land damage/ soil pollution by bitumen, asphalt concrete mixtures during loading-unloading/ transportation and laying • Soil pollution due to leaks of lubricants • Temporary uncontrolled surface run-off due to construction / rehabilitation of drainage channels • Soil pollution by components of combustion gases emitted by construction vehicles (esp. heavy metals) • Soil contamination due to constructional materials/ construction wastes disposals • Soil pollution due to contaminated surface runoff from the road under rehabilitation • Soil erosion caused by re-canalization of waterways • Formation of gullies along drainage channels • Soil contamination due to improperly arranged temporary accommodation facilitates 	Temporary/ local	<ul style="list-style-type: none"> • To plan carefully construction works to minimize land affected and ensure soil pollution prevention • To minimize construction site's size/ to minimize land affected/ to ensure soil pollution prevention • To select proper site for placing of mobile asphalt plant, if appropriate to minimize impact on land/soil • To ensure accuracy of road rehabilitation works/ to avoid spills, leaks, etc. • To provide proper haul roads to minimize impact on the land • To avoid loss of vegetation along the roads • To rehabilitate borrow areas, quarries and temporary haul /access roads by planting grass and trees and other measures • Proper design and installation drainage and retaining structures/ civil engineering structures/ clean up drainage channels/ culverts to minimize the risk of erosion and landslides on down lands • To avoid road rehabilitation works during heavy rains/ to mitigate velocity and volume of polluted surface run-off • Carry out landslides prevention activities/ physical stabilization of slopes (retaining walls, piles, etc.), if needed

	<ul style="list-style-type: none"> • Rehabilitation of road drainage system (drainage channels, chutes, etc.) • Quarrying • Constructional materials stockpiling • Construction waste disposals • Construction/ rehabilitation of sidewalks in settlements • Establishment of construction camp/ accommodation facilities (sewage facilities, waste disposals, etc.) 	<p>Positive:</p> <ul style="list-style-type: none"> • Slopes stabilization towards landslides prevention/ reduced risk of landslides • Decreased risk of soil pollution, soil erosion and landslides resulting from rehabilitation of drainage system • Decreased risk of land degradation potentials/ gullies formation resulting from rehabilitation of drainage system 	Permanent/ local	<ul style="list-style-type: none"> • To provide proper construction waste disposals • To provide proper stockpiling of constructional materials • Planting / rehabilitation of vegetation (buffer strips) along the roads to minimize spreading of combustion gases/ particulates/ dust, if appropriate • Backfilling and restoration of eroded channels to natural conditions/ re-vegetation, if appropriate • Organize properly temporary sewage facilities • Clean up of the work site/ restoration of damaged areas after rehabilitation works are finished
Water Resources	<ul style="list-style-type: none"> • Transportation, siting and operation of mobile asphalt plant/ or operation of statutory asphalt plant • Construction works linked with asphalt plant siting (construction of seat/ haul roads, etc) • Road leveling • Potholes patching/ cracks priming • Pavement / Carriageway surfacing (laying of asphalt-concrete mixtures, laying cement-concrete slabs, etc.) 	<p>Negative:</p> <ul style="list-style-type: none"> • Groundwater pollution due to surface runoff from operating asphalt plant ground • Groundwater pollution due to contaminated surface runoff/ migration of spills/leaks from improperly stored lubricants and construction wastes • Groundwater pollution due to leaks from hauling vehicles during transportation/ loading-unloading • Groundwater pollution by bitumen spills • Increased situation of potential/ sediment runoff into down land waterways (if any) due to modifications of drainage patterns • Groundwater pollution by spills from road accidents of vehicles used for construction works • Disturbance to underground water table due to use of heavy machinery • Increased pressure on water resources due to additional water use for road maintenance works 	Temporary/ Local	<ul style="list-style-type: none"> • To plan carefully construction works to minimize impact on water resources • Minimize collection of water and mud, where possible, to execute road rehabilitation works during dry season • Mitigate run-off velocities and volumes/ design outfalls properly • To prevent leaks/spills during transportation/ loading-unloading of constructional materials • Stockpiles of constructional materials should be covered with fabric or other materials to prevent/ mitigate contaminated runoff • To provide proper stockpiling of constructional materials and disposals of hazardous wastes/ avoid stockpiling on the slopes or near waterways, if any/

	<ul style="list-style-type: none"> • Use of hazardous materials, such as combustive-lubricating ones, bitumen, etc./ spraying of bitumen • Heavy machinery and equipment operation • Traffic of construction vehicles, machinery, etc./ hauling of constructional materials such as bitumen, borrow materials, asphalt-concrete mixtures, concrete, cement-concrete slabs, gravel, etc.) • Rehabilitation of road drainage system (drainage channels, chutes, etc.) • Quarrying/ removal and placing borrow materials • Heating and spraying of bitumen • Constructional materials stockpiling • Construction waste disposals • Establishment of construction camp/ accommodation facilities (sewage facilities, waste disposals, etc.) 	<ul style="list-style-type: none"> • Groundwater pollution by compounds of wastes produced by infrastructure connected with accommodation facilities during road rehabilitation/ improper sewage facilities <p>Positive:</p> <ul style="list-style-type: none"> • Decreased risk of water pollution resulting from rehabilitation of drainage systems as compared to previous road condition • Decreased risk of under-flooding resulting from rehabilitation of drainage system as compared to previous road condition • Decreased risk of sedimentation/ turbidity of waterways (if any) resulting from expected lower erosion potential 	<p>Permanent/ local</p>	<p>contaminated run-off from stockpiles should be drained into ditches with oil traps facilities</p> <ul style="list-style-type: none"> • Ideally, excavate cut off ditches around stockpiles to prevent materials from being washed away by surface runoff/ arrange interception ditches to prevent muddy water to reach waterways (if any) • All lubricants and engine oils should be collected and recycled or disposed off site • Design drainage system to ensure soil stability/ soil erosion prevention and thus to avoid surface water pollution by suspended solids • Where possible, maintain natural drainage • Water for road construction works should be obtained from such sources and used in such amount that would not affect appropriate domestic water supply in the settlements • To avoid loss of vegetation during road rehabilitation works • Re-vegetation or physical stabilization of eroded slopes along the road • Restoration of damaged lands, planting of grass and trees • To organize properly accommodation/ sanitary facilities for workers • To clean up the area after the construction work is completed
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Air Quality/ Acoustic Environment	<ul style="list-style-type: none"> Asphalt plant operation Traffic of vehicles used for road/ hauling of constructional materials and construction wastes Heating of bitumen Crushing and screening of materials 	<p>Negative:</p> <ul style="list-style-type: none"> Emissions from mobile/ statutory operating asphalt plant Air pollution by components of combustion gases (CO₂, NO_x, SO_x, CO, NMVOC, CH₄). Air pollution by volatile hydrocarbons aggravated by unfavourable weather conditions (wind, hot, etc) Local impairment of air quality during crushing and mixing of raw materials Noise pollution and vibrations from hauling vehicles, operating machinery and equipment <p>Positive:</p> <ul style="list-style-type: none"> Decreased risk of air pollution due to reduction of combustion gases emissions into the air 	Temporary/ Local	<ul style="list-style-type: none"> To plan carefully construction works to minimize air and acoustic pollution Control construction methods and used machinery and equipment Careful timing of works in residential areas)/ restrict construction to certain hours To avoid loud beep signals in settlements/ to minimize disturbance to residents Restrictions speed of construction vehicles, especially in residential areas Either use of sprinkling-machines “inhaling” dust... or control by water or other means/ water spraying twice a day during construction to avoid dust Watering of access roads to minimize dust formation, if applicable Vehicles delivering materials should be well maintained and covered to prevent/ reduce spills, emissions and dispersion
Biological Environment				
Fauna and flora/ habitats	<ul style="list-style-type: none"> Construction and operation of asphalt plant Road rehabilitation works (leveling/ potholes patching/ cracks priming/ pavement) Use of hazardous materials, such as combustible-lubricating ones, bitumen/ heating and spraying of bitumen 	<p>Negative:</p> <ul style="list-style-type: none"> Soil and water pollution due to operation of asphalt plant Soil and water pollution by hazardous and toxic substances Impact on biota due to contaminated environmental media (air, water, soil) Noise pollution/ vibration due to operation machinery/ equipment Noise pollution due to traffic of construction vehicles Disturbance to habitats/ loss of fauna and flora species during road rehabilitation works 	Temporary/ local	<ul style="list-style-type: none"> To plan carefully construction works to minimize impact on flora, fauna, habitats/ careful siting, alignment, design of associated infrastructure to minimize impacts (especially in sensitive areas, if appropriate) Careful timing of works and work seasonally, as appropriate/ no construction during breeding season

	<ul style="list-style-type: none"> • Heavy machinery and equipment operation • Traffic of construction vehicles, machinery, etc. • Hauling of constructional materials • Rehabilitation of road drainage system (drainage channels, chutes, etc.) • Constructional materials stockpiling • Construction waste disposals 	<ul style="list-style-type: none"> • Disruption of wildlife passages, local migration routes and patterns causing increased road kills, etc. • Changes to aquatic eco-systems due to increased sediment runoff into waterways due to construction/ modification of drainage patterns 		<ul style="list-style-type: none"> • Trees and other vegetation should be protected during bitumen spraying • To avoid excessive/ to minimize loss of vegetation during road rehabilitation works • Big potholes should be either covered or sand or fenced if they are going to left opened over night • To avoid loud beep signals from vehicles and machinery in the areas where wild animals inhabit • Ideally, to provide passages through the road for animals/ wire fence in sites where wild animals inhabit • Careful selection of sites to be used for constructional materials stockpiles/ construction wastes disposals • Use of appropriate construction methods • Clean-up of construction sites • Rehabilitate work sites/ asphalt plant operation sites quarries/ borrow areas, access roads by planting grass and trees and other relevant measures
Social Environment				
Landscape/ Aesthetic	<ul style="list-style-type: none"> • Siting of mobile asphalt plant, if appropriate/ relevant construction works • Construction of detours/ access routes/ haul roads • Earthworks/ quarrying/ removal and placing borrow materials 	Negative: <ul style="list-style-type: none"> • Local visual impacts/ marred landscape • Damage to vegetation along the roads • Damage to or degradation to some natural and manmade landscape valuable sites, if any, due to easier access • Loss of trees and other vegetation • Dust, waste, debris etc. during road rehabilitation works 	Temporary/ Local	<ul style="list-style-type: none"> • To minimize construction site's size to minimize impact on landscape/ careful planning, siting and design of works • Screening/ fencing of intrusive items • Careful de-commissioning of construction areas/ waste disposal sites// clean up construction sites after road rehabilitation works are finished/ re-vegetation of work area, etc.

	<ul style="list-style-type: none"> • Traffic of construction vehicles/ heavy machinery and equipment operation • Construction/ rehabilitation of road drainage system • Constructional materials stockpiling • Construction waste disposals • Establishment of construction camp/ accommodation facilities 	Positive: <ul style="list-style-type: none"> • Improved manmade landscape 	Permanent/ Local	<ul style="list-style-type: none"> • Excavated materials, if any, should be used for backfilling of borrows and gravel pits
Human health / settlements	<ul style="list-style-type: none"> • Road rehabilitation works: <ul style="list-style-type: none"> ○ excavations and other earthworks ○ levelling/patching/priming ○ pavement ○ crushing and screening of materials ○ heating of bitumen ○ repair of aggregates ○ construction & reconstruction of drainage channels; etc. • Hazardous, toxic and inflammable materials loading-unloading, transportation and disposal • asphalt plant operation • traffic of construction vehicles • Constructional materials stockpiling • Construction waste disposals 	Negative: <ul style="list-style-type: none"> • Road accidents due to disruption of traffic flows due to road maintenance works • Health impact on construction workers due to work with toxic and hazardous materials (damage to respiration system, skin, eyes, etc) aggravated by unfavorable weather conditions (strong wind, rain, etc.) • Impact on human health due to: <ul style="list-style-type: none"> ○ Polluted by combustion gases and dust air along the roads ○ Polluted surface run-off into adjacent agricultural lands and agricultural plants contamination ○ Noise pollution and vibrations from construction works, traffic of vehicles and operating machinery/ equipment • Fire and explosion hazards due to accidents during road construction works • Construction vehicles road accidents • Accidents during road rehabilitation works (spills, blasts, etc.) • Accidents due to disruption of traffic flows due to road construction works • Pressure on local water supply sources 	Temporary/ Local	<ul style="list-style-type: none"> • To train personnel on occupational safety and measures towards compliance with occupational safety requirements • Appropriately experienced contractor, good supervision, careful planning and scheduling of work activities • Incorporation of safety and environmental requirements in contract documents/ providing of workers with uniform, glasses, gloves, etc. • Foreseeing compensations in case of health damage • Fencing of dangerous areas (stockpiling of hazardous materials) • Excavated potholes should be either covered with crushed stone or sand or fenced if they are going to left opened over night • Avoid work during unfavorable weather conditions to minimize risk of accidents/ bitumen should be not applied during strong winds or heavy rains • Proper establishment of construction camp/ temporary accommodation

		<p>Positive:</p> <ul style="list-style-type: none"> • Decreased risk of car and local residents accidents due to improved road conditions • Decreased risk to health damage due to reduction of air pollution by combustion gases • Decreased risk to health damage due to lessening of polluted surface runoff to agricultural lands 	<p>Permanent/ Local</p>	<ul style="list-style-type: none"> • To ensure accident prevention for population in residential areas/ to plan carefully construction works to minimize impact on local residents • Restrict transportation of hazardous/ explosive materials in residential areas/ comply with regulation on transportation of hazardous materials • Restrict construction vehicle speed limits, especially in residential areas • Careful timing of works to minimize disturbance especially during night time • Ideally, to design acoustic barriers along the roads in residential areas • To construct/ rehabilitate sidewalks in residential areas/ the required width of the sidewalk corresponds to the intensity of pedestrian's traffic (final determination of the location shall be arranged with local stakeholders) • Road warning signs posting to warn road users about rehabilitation works/ warn road users about traffic diversion • Provide advise to the public on shorter alternative routs/bypasses • To ensure proper constructional materials stockpiling/ construction waste disposals • Stone crushing plants; asphalt plants should be fitted with approved dust control devices and operate in accordance with environmental protection requirements and manufacturer' specifications • To ensure regular watering of roads under rehabilitation to minimize formation of dust • Ideally, to install speed calming devices, e.g. humps, in residential areas
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				<ul style="list-style-type: none"> • To ensure emergency medical service/ to provide telephone communication • To ensure proper sanitary-hygienic facilities (sewage disposal)/ appropriate waste disposal • Water for road construction works should be obtained from such sources and such amount that would not affect appropriate domestic water supply in the area of concern
Social/ Economic component				
Social/ Economic	<ul style="list-style-type: none"> • Road rehabilitation 	Positive: <ul style="list-style-type: none"> • Creation of job opportunities/ recruitment of the labour force among local population/ temporary decrease of unemployment in residential areas along the road • Development of relevant work skills at local residents • reduction of vehicles operating cost; • less fuel consuming, • safe driving and riding; • better transportation conditions/ less time for transportation of passengers, goods, livestock, etc. • opportunity to create new work places along the road: filling station, shops bars, parking facilities • improved communication opportunities between settlements/ local residents etc. 	Permanent / local	

Table 3. Environmental and Social Impacts for Road Operation Phase

[illegible]

[illegible]

Biological Environment				
Fauna and flora/ habitats	<ul style="list-style-type: none"> Existence of the road Traffic of vehicles Road associated infrastructure 	Negative: <ul style="list-style-type: none"> Continuous damage to biodiversity Continuous damage/ disturbance to habitats Death of wild animals due to road accidents Disturbance to wild animal passages/ local migration routes and patterns Changes of aquatic eco-systems due to sedimentation potential in waterways Secondary contamination of biota due to pollution potential of soil and water in the area of road operation/ pollution of vegetation along the roads by emitted combustion gases and their compounds (esp. heavy metals) 	Permanent/ Local	<ul style="list-style-type: none"> Traffic signs posting along the roads (indication of speed limits, warning about valuable habitats and animals inhabited in the area, etc) To ensure stricter control to conserve biodiversity/ poaching and illegal cutting prevention To provide appropriately designed rest stops to minimize impact on environment To undertake continuous measures towards prevention and minimization of erosion Continuous vegetation/ re-vegetation along the roads To ensure compliance of vehicles conditions with technical standards to minimize risk of environmental pollution (air, soil, water) Ideally, to provide facilities for wildlife to cross the road, e.g. tunnels Ideally, to ensure protection measures to avoid danger to animal species due to road accidents (e.g., fences along the roads, where acceptable and possible)
Social Environment				
Landscape/ Aesthetic	<ul style="list-style-type: none"> Existence of the road Road associated infrastructure 	Negative: <ul style="list-style-type: none"> Loss of vegetation/ poor vegetation Impaired lands/ loss of some land uses along the roads Garbage/ waste disposals along the roads 	Permanent/ Local	<ul style="list-style-type: none"> Planting of trees (at allowed distance) and bushes to improve the landscape Planting of trees to stabilize the slopes/ prevent soil erosion and landslides

		Positive: <ul style="list-style-type: none"> Improved visual effects/ improved conditions of surroundings/ manmade landscape 	Permanent/ Local	<ul style="list-style-type: none"> To control properly development and operation of road associated infrastructure
Human health / settlements	<ul style="list-style-type: none"> Existence of the road Traffic of vehicles Road crossing by humans and domestic animals Road crossing by cars from country roads Passenger/ goods transportation 	Negative: <ul style="list-style-type: none"> Car accidents Killed and injured humans due to road accidents Domestic animals accidents Damage to health due air pollution by combustion gases and dust (esp. in settlements) Damage to health due to consumption of agricultural products grown up on adjacent agricultural lands affected by contaminated surface run-off Noise pollution/ vibrations from vehicles traffic (esp. trucks) Disturbance to over night sleep in settlements 	Permanent/ Local	<ul style="list-style-type: none"> To provide regular road quality control and maintenance To provide highway stripping To provide emergency strips along the road, where appropriate To provide outside stone, wire or other suitable types of barriers in dangerous sites on the road, if any, to minimize risk of road accidents To provide parking facilities for accidental drive in and drive out along the road, where appropriate Road police and ecological authorities to check regularly vehicles quality and their compliance with air, noise and technical standards quality Restrict vehicle speed limits, esp. at the entrance and in the residential areas in order to minimize the risk of pedestrian's injury The passage through the village shall be speed controlled in combination with measures for the improvement of visibility: 30 km/h, 50 km/h Provide pedestrian's sidewalk in the residential areas (esp. in village centres, schools, outside of curves, etc.)

		<p>Positive:</p> <ul style="list-style-type: none"> • Decreased number of car accidents due to improved road conditions/ safe driving and riding • Decrease number of killed and injured people due to improved road conditions • Lower damage to health due to reduction of air pollution by combustion gases as compared to previous road conditions • Lower damage to health due to decreased polluted surface runoff to agricultural lands as compared to previous road conditions • Improved communication opportunities between settlements/ local residents 	<p>Permanent/ Local</p>	<ul style="list-style-type: none"> • Road police to properly control vehicles traffic to minimize risk of road accidents • Road signs posting with indication of speed limits along the road out of settlements in dependence of type of landscape - flat, hilly; road geometry (curved turnings), etc. • To plant trees along the roads (at allowed distance) to prevent excessive air pollution especially along residential areas • To provide telephone and other communication facilities along the road to immediately inform about accident, if any • To provide road traffic signs with indication of distance to medical centres/ rest facilities/ name of settlements • To organize properly public transport stops to exclude risk of humans accidents. Asphalted bus station shall be organized offside the main road, probably at a side road • Install warning for drivers about pedestrians on the road/ provide facilitates (road traffic signs, regulated traffic lights) for pedestrians to cross the road • Install speed control devices along the road, especially at the entrance to settlements, near rural school, schools, if any
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Social/ Economic component				
Social/ Economic	<ul style="list-style-type: none"> Road operation 	Positive: <ul style="list-style-type: none"> Reduced vehicles operating cost as compared to previous road conditions Improved access to settlements Improved access to labour, goods, livestock and other markets Reduced transportation cost to markets Improved opportunities for business activities Development of employment and business opportunities associated with road operation (road associated infrastructure - shops, bars, restaurants; selling of homemade articles and household agricultural products, etc.) Increase of household income Reduced time needed to reach destination point Improved access to hospitals/ health centres and educational institutions for rural population Improved access to recreation sites in rural area More opportunities for tourism business development (easier access to cultural, natural and other heritage sites) etc. 	Permanent/ Local	

Table 4. Environmental and Social Impacts for Road Maintenance Phase

[illegible]

Water Resources	<ul style="list-style-type: none"> • Periodical & Routine maintenance: • light - & medium – scale grading • Culvert repair/replacement ③ Clearance of drainage channels ③ Levelling of roadsides ③ Potholes patching ③ Cracks priming ③ Winter maintenance (snow removal, dusting by sand-salt mixture) • Operation of machinery and equipment • Traffic of construction vehicles • Construction materials stockpiling • Construction wastes disposals • Short-term accommodation facilities for road workers 	<p>Negative:</p> <ul style="list-style-type: none"> • Groundwater pollution due to surface run-off contaminated by petroleum hydrocarbons/ engine oil, lubricants/ compounds of fuel (esp. heavy metals) • Groundwater pollution by spills due to vehicles accidents and broken equipment, vehicles and machinery used for road maintenance works (engine oil, lubricants) • Groundwater pollution due to improperly arranged constructional materials and construction wastes disposals • Groundwater pollution by wastes produced by infrastructure connected with temporary workers' camps (improperly arranged toilet facilities, etc.) • Groundwater pollution due to improperly arranged accommodation facilities for workers (sewage system, etc.) • Increased situation potential/ sediment runoff into down land waterways (if any) due to repair/ clearance of drainage channels/ culvers • Increased turbidity of down land waterways (if any) • Increased pressure on water resources due to additional water use for road maintenance works <p>Positive:</p> <ul style="list-style-type: none"> • Decreased risk of water pollution/ sedimentation/ turbidity of waterways resulting from maintenance of drainage systems • Decreased risk of under-flooding resulting from maintenance of drainage system 	Temporary/ Local	<ul style="list-style-type: none"> • To plan carefully maintenance works to minimize surface area under the impact from roan maintenance activities • To ensure accuracy of road maintenance works/ machinery and equipment used for repair work • To provide proper stockpiling of constructional materials • To provide proper constructional materials waste disposals • Excavated materials should be used properly stockpiled and covered to prevent their washing away • To arrange interception ditches, to prevent muddy water to reach waterways (if any) • To provide infiltration ditches/ soak pits to prevent direct contaminated water discharge • All lubricants and engine oils should be collected and recycled or disposed off site • To organize properly short-term accommodation facilities for workers • To clean up the work area after repair works are completed • Water for road maintenance works should be obtained from such sources and such amount that would not affect appropriate domestic water supply in the area of concern
			Permanent/ Local	

Air Quality/ Acoustic Environment	<ul style="list-style-type: none"> Periodical & Routine maintenance: ③ Road repair works Culvert repair/ replacement/ clearance of drainage channels ③ Winter maintenance Traffic of construction vehicles Operation of machinery and equipment 	<p>Negative:</p> <ul style="list-style-type: none"> Emissions into the air/ air pollution by components of combustion gases CO₂, NO_x, SO_x, CO, NMVOC, CH₄). Local impairment of air quality during mixing of raw materials Noise pollution/ vibration from traffic of construction vehicles and operating machinery and equipment <p>Positive:</p> <ul style="list-style-type: none"> Decreased risk of air pollution due to reduction of combustion gases emissions into the air as a result of proper maintenance of the road 	Temporary/ Local	<ul style="list-style-type: none"> To plan carefully maintenance works to minimize air and acoustic pollution Control road maintenance methods and of works (to avoid maintenance works in residential areas over night) To minimize disturbance/ restrict road maintenance works to certain hours/ timing of works Either use of sprinkling-machines “inhaling” dust... or control by water or other means/ water spaying twice a day during construction to avoid dust Speed restrictions of vehicles used for road maintenance, especially in residential areas Vehicles transported materials for road maintenance (e.g., sand) should be covered to avoid extra dusting
Biological Environment				
Fauna and flora/ habitats	<ul style="list-style-type: none"> Periodical & Routine maintenance: Repair of pavement Culvert repair/ replacement/ clearance of drainage channels Care of vegetation along the road 	<p>Negative:</p> <ul style="list-style-type: none"> Disturbance to habitats Disturbance to wild animals passages, local migration routes and patterns Death of wild animals due to road accidents Pollution of vegetation along the roads by heated emitted combustion gases and their compounds (esp. heavy metals) and other hazardous substance 	Temporary/ Local	<ul style="list-style-type: none"> To plan carefully road maintenance works to minimize disturbance to habitats/ animal species inhabited in the area Careful timing of works and work seasonally, as appropriate/ no construction during breeding season

[illegible]

Human health / settlements	<ul style="list-style-type: none"> • Road repair works • Traffic of construction vehicles • Operation of road repair machinery/equipment • Stockpile of constructional materials/ construction waste disposals • Short-term accommodation facilities for road workers 	<p>Negative:</p> <ul style="list-style-type: none"> • Road accidents due to disruption of traffic flows due to maintenance works • Impact on human health due to: <ul style="list-style-type: none"> ○ Polluted by combustion gases and dust air along the roads ○ Polluted surface run-off into adjacent agricultural lands ○ Noise pollution/ vibrations from hauling tracks/ moving vehicles and working equipment • Fire and explosion hazards due to accidents during road maintenance works • Health impact on road workers due to work with hazardous materials • Pressure on local water supply sources <p>Positive:</p> <ul style="list-style-type: none"> • Decreased risk of car and local residents accidents due to properly maintained road conditions • Decreased risk to health damage due to reduction of air pollution by combustion gases as a result of properly maintained road conditions • Decreased risk to health damage due to lessening of polluted surface runoff to agricultural lands as a result of properly maintained road conditions 	Temporary/ Local	<ul style="list-style-type: none"> • To train road workers on occupational safety • Restrict vehicle speed limits, esp. at the entrance and in the residential areas in order to minimize the risk of humans injury • Warning signs posting and advice for drivers to use alternative roads to avoid delays due to road maintenance works • Road signs posting with indication of speed limits • To control vehicles traffic during road maintenance works • To provide telephone and other communication facilities to immediately inform about accident, if any • Excavated potholes should be either covered with crushed stone or sand or fenced if they are going to left opened over night to avoid humans injury • Excavate cut off ditch around stockpiles to prevent materials being washed away by surface runoff to minimize risk of soil and water pollution • Stockpiles materials should be covered with fabric or other materials; • Avoid stockpiling near waterways (if any) or on slopes • Proper stockpiling of constructional materials and construction wastes disposals • Water for road maintenance works should be obtained from such sources and such amount that would not affect appropriate domestic water supply in the area of concern • To ensure proper accommodation facilities for road workers to minimize possible health impact
			Permanent/ Local	

Social/ Economic component				
Social/ Economic	<ul style="list-style-type: none"> Road maintenance works 	Positive: <ul style="list-style-type: none"> Job opportunities for local people/ giving preferences to local communities in awarding road maintenance labour contracts Development of relevant work skills reduction of vehicles operating cost; less fuel consuming, safe driving and riding; better transportation conditions/ less time for transportation of passengers, goods, livestock, etc. opportunity to create new work places along the road: filling station, shops bars, parking facilities improved communication opportunities between settlements/ local residents etc. 	Temporary/ Permanent/ Local	

Annex 3. Model ¹⁰ of the Environmental Screening Checklist for road sub-projects

PART 1 (to be completed by the FNRR environmental specialist with assistance from the FNRR field engineer and consultant assistance (as needed))

1. Sub-project Name:

2. Format for brief description of sub-project¹¹.

Item	Description
nature (background) of the sub-project	
sub-project objectives	
physical size (length, (km), other indicators (if applicable)	
site area (location)	
executing agency (if known)	
beneficiaries	
type of sub-project (new road, expansion, rehabilitation or maintenance),	
appurtenant facilities (bridges, warehouses, deposits, carriers, asphalt plants, etc.) with short description	

3. Format for brief description of sub-project corridor and related sites¹²

Item	Description
Socio-economic environment	Affected inhabitants (localities, population, indigenous peoples, etc)
	Land use along the road (urban, agricultural, forests, pastures, waters, historic/cultural sites, nature protection sites, etc.)
	Local economy (industry, farming, fishery, commerce, etc.)
	Transportation (traffic rate, passengers, goods, livestock, etc.)
Natural environment	Topography and geology (slopes, ravines, landslides, soft grounds, wetlands)
	Surface and groundwater (rivers, hydrology, water table, water sources, water quality, etc.)
	Fauna and Flora, (habitats of rare and endangered species, migration, major ecosystems, etc.)
Pollution	Existing known sources of air, soil, water pollution and wastes.

¹⁰ Model is prepared as example and may be slightly modified if specific aspects will be found important during sub-project selection.

¹¹ Format to be filled by available existing data and information. In some cases professional judgment may be apply with relevant indications.

¹² Format to be filled by available existing data and information. In some cases professional judgment may be apply with relevant indications.

Item		Description
Other		

1. Format for potential environmental impacts identification¹³

Item	Evaluation (short description of anticipated impacts and its significance)		If any additional study will be required (YES/NO) if YES indicate details	If mitigation measures will be required (YES/NO)
	Construction Phase	Operational Phase		
Socio-economic environment				
Resettlement				
Economic activities				
Traffic and public facilities				
Cultural/historic property				
Rights (land, water, common)				
Public health				
Hazards (risk)				
Natural environment				
Topography and Geology				
Soil				
Surface water				
Groundwater				
Flora and Fauna				
Pollution				
Air pollution				
Water pollution				
Soil contamination				
Noise and Vibration				
Offensive odor				
Wastes				
Other				

Important issues to be considered during evaluation of impacts are summarizing below as examples for assessment:

- Resettlement - needs for re-allocation of peoples, houses, facilities due to additional land occupancy
- Economic activities – loss or significant limitation for normal economic activities near sub-project corridor (sites)
- Traffic and public facilities – impacts on present traffic conditions (car's speed, traffic rate, accidents, use of detour roads and relevant impacts) and impacts to vulnerable public facilities (schools, hospitals, etc.)
- Cultural/historic property – damage or loss of value of churches, temples, archeological remains or other cultural assets
- Rights (land-use, water-use, water abstraction, common) – obstruction of respective rights due to construction (temporal or permanent)

¹³ Will the sub-project have impacts on the environmental parameters listed below during construction or operational phases? Indicate during what phase impacts will occur, is any additional study will be required and whether mitigation measures are required with a check.

-
- Public health – worsening of public health due to air pollution and wastes
 - Hazards (risk) – increase in danger from ground failure, landslides, ravines, etc.
 - Topography and Geology – changes of valuable topography and geology due to excavation works, deterioration of aesthetic harmony by structures
 - Soil – top soil erosion by rainfalls due to land reclamation, improvement of roads sides, cleaning of water by-pass
 - Surface water – changes of river flows, sedimentation and riverbeds conditions due to construction and bridges repairing
 - Groundwater – changes of groundwater table and flows due to construction works
 - Flora and Fauna – loss or significant impacts to natural habitats, particularly to rare species, obstacles for migration
 - Air pollution – pollution caused by exhaust gas, operation of asphalt plants, transportation of constructional materials
 - Water pollution – pollution caused by accidental spills, improperly stored lubricants, wastes, constructional materials, etc.
 - Soil contamination – due to wastes and spills
 - Noise and Vibration – generated by construction machines, vehicles, construction works
 - Offensive odor – generated by asphalt preparation facilities, bitumen works, etc.
 - Wastes – generated during construction
 - Other – other potential impacts and impacts of unfavorable natural factors to the sub-project operation (like floods, extreme temperatures, strong winds, rainfalls, etc.)

2. **Format for identification of mitigation measures¹⁴**

Environmental Issue	Phase (C, O or B)	Description of mitigation measures

6. Summary of public consultation (location, participants, summary conclusion, comments)

¹⁴ For the environmental issues that were indicated under point 4 with a check, describe the mitigation measures that will be included during the construction (C) or operational (O) phase of the sub-project or both (B)

PART 2 (to be completed by the FNRR environmental specialist and confirmed by the relevant environmental authority (Administration regarding Environment within MoEPP) based on the findings of the environmental screening and scoping process)

7. Environmental “Risk” Category (A, B or C) _____

8. Are additional specific studies required? (YES or NO) _____, if YES provide details and specific issues to be addressed:

9. What type of Environmental Assessment is required? (Simple EMP or EIA and EMP)

10. Is the State Ecological Review required? (YES or NO) _____, if YES provide details (authority to submit for reviewing, list of documentation required, time-schedule for reviewing, etc.):

11. What major environmental and social issues are raised by the sub-project and to be included in the simple EMP or EIA and EMP?

12. What is the time frame and estimated cost of (1) conducting additional specific studies, (2) preparation of simple EMP, or (3) preparation of EIA and EMP ?

Signatures (and stamps if applicable):

On behalf of FNRR

FNRR Environmental Specialist:

Date:

FNRR consultant (if needed):

Date:

On behalf of reviewing authority

Reviewing authority:

Name of reviewer:

Working position of reviewer:

Date:

Annex 4. Model ¹⁵ for simple Environmental Management Plan (category C sub-projects)

Sub-project activity	Potential impacts (effects)	Mitigation measures	Monitoring requirements
1. Planning and Design			
1.1. Setting design criteria			
1.2. Design, general			
1.3. Design, drainage (if applicable)			
1.4. Design, asphalt factory (if applicable)			
1.5. Design, (specify any other applicable designs)			
1.6. Land acquisition (if applicable)			
1.7. Modification of normal traffic (speed regulation, use of detour roads, etc.)			
1.8. Restrictions (within residential areas, livestock road passing, for bridges, etc.)			
2. Construction Mobilization			
2.1. Mobilizing Equipment			
2.2. Mobilizing Workforce			
2.3. Establishing and Operation of Labor Camp(s)			
2.4. Establishing and Operation of Base Camp, Deposits, other Facilities and Workshop(s)			
2.5. Setting up and Operation of Asphalt Plant and Asphalt preparation area.			
2.6. Operation of Quarry(ies) or Borrow Pit(s)			
3. Construction			
3.1. Earthworks (specify if applicable)			
3.2. Drainage works (specify if applicable)			
3.3. Other works if applicable			
3.4. Pavement base construction (specify if applicable)			
3.5. Bituminous Surfacing (specify if applicable)			
3.6. Transportation of project materials			
4. Maintenance			
4.1. Periodical & Routine maintenance (grading, culvert repair, clearance of drainage, potholes patching, winter works)			
4.2. Operation of machinery and equipment			
4.3. Traffic of maintaining machines			
4.4. Maintaining materials stockpiling and depositing			
4.5. Short-term accommodation facilities for road workers			

¹⁵ Model is prepared as example only and should be adapted to the specific aspects of the sub-project.

Annex 5. Example ¹⁶ of the environmental clauses for contract documents in construction

General

- Notwithstanding other obligations, if, in the opinion of the Engineer, damage is being done to the environment by the Works under construction the FNRR environmental specialist or FNRR supervising engineer may instruct the Contractor to cease work immediately, or change the approach or method of work.
- The Provisional sum, Item ____ in the Bill of Quantities, is for any work deemed to be required by the Engineer to remedy any unexpected environmental problems, or potential environmental problems, which may arise as a result of the Works. The Engineer may instruct either the Contractor, or a nominated Subcontractor, to carry out the work.
- The Contractor shall ensure that full consideration is given to the control of environmental aspects, and that all provisions of the design and specification requirements relating to pollution of the environment, and protection of adjacent land and waterways, are complied with.

Road works

- Mobilization of heavy equipment to and from the site shall be carried out at time of lowest traffic on the routes used.
- The Contractor shall use selected routes, as advised by the Engineer, and appropriately sized vehicles suitable to the class of road, and shall restrict loads to prevent damage to roads and bridges used for transportation purposes to the project site. The Contractor shall be held responsible for any damage caused to the roads and bridges due to the transportation of excessive loads, and shall be required to make good such damage to the approval of the engineer.
- The Contractor shall not use any vehicles, either on or off road, whose exhaust or noise emissions are grossly excessive, and in any built up areas noise mufflers shall be installed and maintained in good condition on all motorised equipment under the control of the Contractor.
- The Contractor shall limit construction works to between 6am and 10pm if it is to be carried out in or near residential areas. The Contractor shall also avoid the use of heavy or noisy equipment in specified areas late at night, or in sensitive areas such as near a hospital.
- To prevent dust pollution during dry periods the Contractor shall carry out regular watering of earth and gravel haul roads and shall cover soil haulage trucks with tarpaulins if the soil is dry.
- Adequate traffic control measures shall be maintained by the Contractor throughout the duration of the Contract, and prior to any restriction being applied to two way traffic movement written permission must be obtained from the Engineer for the proposed traffic control measures to be used and for the length of time the restriction is proposed to be in place.
- The Contractor shall recruit locally as large a proportion of the workforce as is possible, and shall provide appropriate training where necessary.
- The Contractor shall install and maintain a temporary septic tank system for any residential labour camp established and ensure that this does not cause any pollution of nearby watercourses. The contractor shall also make the system inoperative and safe on completion of the contract and the removal of the camp.

¹⁶ Taken from SEA Moldova and should be used as example only. It should be carefully adapted to the specific sub-project activities, related potential effects identified and mitigation measures proposed.

-
- The Contractor shall establish a method and system for storing and disposing of all solid wastes generated by the labor camp and/or the base camp.
 - The Contractor shall not allow the use of fuelwood for heating or cooking in any labor or base camp but shall provide alternate facilities using other fuels.
 - The Contractor shall ensure that site offices, depots, asphalt plants and workshops are located in appropriate areas, as approved by the Engineer, and not within 500 metres of existing residential settlements, and asphalt plants not within 1000 metres.
 - The Contractor shall also ensure that site offices, depots and particularly storage areas for diesel fuel and bitumen, and asphalt plants, are not located within 500 metres of watercourses, and are operated so that no pollutants enter watercourses, either overland or through groundwater seepage, especially during periods of heavy rain. This will require lubricants to be recycled and a ditch to be constructed around the area with an approved settling pond/oil trap at the outlet.
 - The contractor shall not use fuelwood as a means of heating during the processing or preparation of any materials forming part of the Works.

Quarries or Borrow Pits

- Approval to open a new borrow area on land or in river, or to operate an existing area, shall be obtained from the Engineer in writing before any borrow operation is commenced, and the operation shall cease immediately and permanently at any location when instructed to by the Engineer. Pits shall be prohibited, or have restrictions applied to their operation, where they might interfere with the natural or designed drainage. River locations shall be prohibited where they might undermine or damage the river banks or cause too much fine material to be carried downstream.
- The Contractor shall ensure that all borrow pits used are left in a trim and tidy condition with stable sides and slopes, and drained so that no stagnant water bodies are created which could breed mosquitoes.
- Rock or gravel won from a river shall be removed over some distance so as to limit the depth of material removed to one tenth of the width of river at any one location, and not disrupt the river flow or damage or undermine the river banks.
- The contractor shall ensure that rock crushing plants are located as approved by the Engineer, and not close to environmentally sensitive areas, or within one kilometer of existing residential settlements, and operated with approved dust control devices fitted.

Earthworks-General

- The Contractor shall not carry out any earthworks during the rainy season unless specific permission is obtained in writing from the Engineer or his representative for properly controlled earthworks at specific locations.
- The Contractor shall maintain stable cut and fill slopes at all times and shall cause the minimum possible disturbance to areas outside the prescribed limits of the work.
- The Contractor shall complete cut and fill operations to final cross-sections at any one location as soon as possible and preferably in one continuous operation and not leave partly completed earthworks, especially during the rainy season.
- The Contractor shall ensure that any cut or fill slopes are planted in grass or other plant cover as soon as possible to protect them from erosion.
- To prevent erosion cut off drains and toe-drains shall be provided at the top and bottom of slopes as shown on the drawings or as directed by the Engineer.

Earthworks - Disposal of Surplus Material

- Any spoil cut to waste, or material removed from drains, shall be disposed of to designated stable tipping areas as directed by the Engineer, and separate items are included in the Bill of Materials to allow for this.

- Side tipping of surplus excavated material shall only be permitted where specifically allowed by the Engineer.
- Before starting any earth-moving operation at any location the Contractor shall obtain the Engineer's approval of the areas he proposes to use as waste dumps.
- Locations for waste dumps are not to be sites where they will cause future slides, interfere with agricultural land or any other properties or cause soil from the dump to be wasted into any watercourse. During may need to be dug within and around the waste dumps as directed by the Engineer and this, together with the proper placement of the spoil, should be allowed for in the cut to waste item in the Schedule of Quantities. The only item in the Schedule of Quantities paid for separately is the haul distance (m^3 times kms) to the waste dump directed by the Engineer.

Drainage Works

- The Contractor may need to construct temporary drains and particularly temporary sedimentation basins and brushwood barriers to avoid excessive sedimentation entering local streams river or lakes. These works will be carried out by the Contract when instructed to by the Engineer but no separate payment will be made for the work. The onus is therefore on the Contractor to carry out all works in such a manner so as to avoid erosion and the subsequent of sedimentation.

Annex 6. Outline of EIA and EMP (category A and B sub-project)

Typical EIA and EMP report will include following considerations and modalities.

Summary

A summary of the main findings of the study, including the major positive and negative impacts, proposed mitigation measures and monitoring should be prepared.

Sub-project development objectives

A brief description of the sub-project is required which states objectives, expected alignments, new construction, major rehabilitation works, area of influence, including length and location, environmentally and socially sensitive sites.

Policy context (WB, national legislation)

A brief description of WB, EBRD, IDA and other donors in relation to the expected development is required as well as national policy and legal content. Other national/local plans, programs and projects within the area of influence can be shortly described and evaluated in the context of road development objectives.

Baseline

Baseline information for the sub-project area of influence and for proposed alternatives should be collected, stating actual environmental status and clearly present indicators for further monitoring of impacts. Baseline information typically includes socio-economic environment, bio-physical environment and existing pollution sources. Issues to be studied may include:

- Topography, geology
- Soils
- Climate and rainfalls
- Land use
- Population
- Livestock
- Major economic activities
- Public health
- Sites of cultural and historic value
- Surface and ground waters
- Ecosystems and habitats
- Protected natural areas
- Local government set up
- Other

Much of this information can be obtained from existing environmental reports, environmental action plans, local development plans, statistical office, local governments. In some cases additional studies may be required if important and feasible.

Project Components

This covers the basic design details, for example:

- Type of road (bitumen, gravel, earth)
- Length for improvements
- Number and lengths for new construction, alignments
- Number of bridges, drainage structures, underpasses, etc.

The types of activities, envisaged during the sub-project to be described under different phases:

Site preparation (mobilization)	eg. cleaning of vegetation for camps, realignments, deviations; excavation of quarries; access routes to quarries, deposits, asphalt plants, workshops, detour roads, etc.
Construction	eg. earthworks, haulage, drilling, production of asphalt, crushing, etc.
Build facilities	eg. labour camps, base camp, deposits, plants, workshops, machinery equipment, etc.
Operations	eg. occupational safety, location and number of labour camps, sources and supply of materials, etc.
Closure and restoring	eg. rehabilitation of camp sites, wastes places, etc.

It is also important to prescribe in short any capacity buildings elements and trainings planned under the sub-project.

Specific (technical, technological, location, time, season, etc.) alternatives should be defined with short description.

Assessment of Environmental Impacts and Alternatives

Assessment of impacts are originated from the sub-projects (and alternatives) should be conducted for socio-cultural, bio-physical, and human environments and should include both negative and positive impacts. Impacts should be evaluated by type (long or short term; local/specific or widespread; permanent or temporal; reversible or irreversible; seasonal or perennial; cumulative or not; direct or indirect) and magnitude (significant, moderate, minor or negligible). The results of assessment may be presented by the different formats as shown below:

Environmental issues	Classified impacts (negative/positive; type; magnitude) during:				Mitigation	Comments
	Mobilization	Construction	Operation	Maintenance		

Project interventions at different phases	Environmental impacts		Impacts classified by:		Mostly affected environment						
	Positive	Negative	Type	Magnitude	Socio-economic	Human	Bio-physical				
							Ambient air	Surface water	Groundwater	Soil	Biodiversity

Specific (technical, technological, location, time, season, etc.) alternatives (eg. for labour camps, detour roads, quarries, realignments, equipment) should be evaluated, compared and recommendations for the most preferable options should be given.

Environmental Management Plan

The basic elements of an EMP are a Mitigation Plan and Monitoring Plan. When the mitigation measures have been established, a Mitigation Plan must be drawn up indicating where each measure is to be incorporated in the design, when it should be implemented, who will be responsible for implementation, and where funds for mitigation may be sourced. The model for summary table of Mitigation Plan is shown below:

Sub-project phase and activities	Summary of potential impacts	Description of mitigation measures	When and where mitigation measures should be applied	Costs per location		Responsibility		Comments (e.g. Secondary impacts)
				Install	Operate	Supervise	Operate	

Mitigation measures must be monitored to ensure that they are appropriated, functional and successful. The Monitoring Plan should include monitoring of mitigation measures efficiency by means of its implementation (performance indicators) and environmental indicators (developed during the baseline study), ensuring that the roads causes no adverse impacts to the natural and social environments.

The model for summary table of Monitoring Plan is shown below:

Sub-project phase and activities	What parameter is to be monitored?	Where is to be monitored?	How is it to be monitored/ type of monitoring equipment?	When is it to be monitored - frequency or continuous?	Why is the parameter to be monitored (optional)?	Cost		Responsibility	
						install	operate	install	operate

Institutional arrangements and budget

The institutional responsibilities should be summarized, training and capacity building elements should be prescribed with indicative cost for implementation.

Consultation

Public and stakeholders consultations should be conducted at least two times. First consultation is required during scoping stage, when outline of the EIA report and major environmental concerns, priorities, preliminary ideas for mitigations and monitoring should be discussed. The second round should be implemented for presentation and discussion of draft EIA report and EMP. Summary of consultations may be presented in the following format.

Location	Objective	Invitees	Participants	Summary conclusions and Comments	Responsibility for action

Conclusion and recommendations

A statement of the environmentally and social acceptability of the sub-project and the viability of proposed alternatives should be prepared, including summary of mitigation measures proposed and other recommendations/conditions necessary to ensure mitigation.

Annex 7. Sample of a matrix with the proposed mitigation measures

Phase*				Issue/ Impact	Mitigation measure	Super vision require ment	Locati on	Perform ance indicator	Comm ence momen t	Cost		Institutional Responsibility	
P	C	O	SD							Insta ll	Op era te	Install	Opera te
Physical and human Environment													
				Soil	Re-vegetation of embankments	Monitor implemen tation	Earthwork s areas	Visual/ Construction Works	Works comple tion	work spe cs	N/ A	Designer/ Contractor/ Engineer	N/ A
					Prevent soil compaction		Temporari ly occupied areas	Visual/ Remedial Works		Contractor/ Engineer			
				Water resour ces and water qualit y	Scheduling construction activities near waterways for seasonably dry periods, wherever possible	Monitor implemen tation	Constructi on sites located near waterways	Visual/ Construct ion Works	Works forecast	work spe cs	N/ A	Contractor/ Engineer	N/ A
					Waste oils and other liquids must be disposed off in a proper manner				Perman ent				
				Air qualit y	Traffic speed should be reduced (in the villages) and regular application of water on unpaved roads may be required to prevent high dust emission	Monitor implemen tation	Constructi on sites located near villages	Visual/ Construction Works	Perman ent	work spe cs	N/ A	Contractor/ Engineer	N/ A
					All trucks carrying fine material should be covered								
					Construction machinery must be well maintained to minimize emissions								
				Nuisa nce noise	Activities producing excessive noise levels (asphalt and concrete plants, borrow pits and dump sites, site management) should be normally restricted to the day time and equipment normally producing high levels should be suppressed working during night	Monitor implemen tation	Asphalt and concrete plants, borrow pits and dump sites, site managem ent	Visual/ Construction Works	Perman ent	work spe cs	N/ A	Contractor/ Engineer	N/ A
					Protection the critical surrounding areas (kindergartens, schools, hospitals) with temporary noise barriers		Constructi on road					Contractor/ Engineer	
					Creation of green screens with shrubs and bushes on embankments >3m height		High embankme nt areas					Designer/ Contractor/ Engineer	
				Const ructio n site	Consultations with local officials before locating and building the camps, including discussions on appropriate sites, resources, dispute resolution procedures and rights and responsibilities of various parties	Monitor implemen tation	All areas temporari ly occupied during construction	All legally required permits and agreements are valid and in place	Before/ during constru ction works	work spe cs	N/ A	Contractor/ Engineer	N/ A
					Restore vegetation immediately after end of works			Visual/Reme dial Works	Works comple tion				

Phase*				Issue/Impact	Mitigation measure	Supervision requirement	Location	Performance indicator	Commencement	Cost		Institutional Responsibility	
P	C	O	SD							Install	Operate	Install	Operate
					Assess vector ecology in work areas and avoid creation of undesirable habitats (e.g. stagnant water)								
					Proper storage of the hazardous materials by the construction camps and during their use in construction (vehicles, asphalt plants etc.). Install and operate proper disposal system as not to harm environment.		All construction areas	Visual. No of fines paid	Before/ during construction works			Designer/ Contractor/ Engineer	
					Maximum care should be taken in selection of access routes to all areas temporarily occupied during construction			All legally required permits and agreements are valid and in place	Before/ during construction works			Contractor/ Engineer	
				Natural vegetation	Minimize destruction of trees and vegetation	Monitor implementation	All areas temporarily occupied during construction	Visual. Permits in place		work specs	N/A	Designer/ Contractor/ Engineer	N/A
					Restore vegetation immediately after the end of works			Visual/Remedial Works	Works completion				
					Forbid project staff to fish, hunt, kill, injure or poach fauna			All construction areas	Visual; No. of complaints			Before/ during construction works	
				Borrow pits, quarries and waste dumps	Pit or quarry location and access arrangements	Monitor implementation	All areas temporarily occupied during construction	Permits and agreements are valid and in place		work specs	N/A	Contractor/ Engineer	N/A
					A working plan giving an outline of the direction, phasing and depth of working			Working plan approved by Owner's Engineer	Before/ during construction works				
					A restoration plan giving details of final grading, drainage and sediment control, re-soiling and re-vegetation measures			Restoration plan approved by Owner's Engineer					
Socio-economic Environment													
Social structure and cultural values													
				Social disturbance by construction camps	Respect local regulations for construction of plants and camps	Monitor observation of rules	All construction areas	Permits are valid and in place	Before/ during construction works	work specs	N/A	Designer/ Contractor/ Engineer	N/A
				Impacts on cultural heritage sites	Specify rules and means regarding preservation and recovery of cultural remains	Monitor observation of rules	All new construction areas	Training on legal requirements	Before/ during construction works	work specs	N/A	Designer/ Contractor/ Engineer	N/A
Property values													

Phase*				Issue/ Impact	Mitigation measure	Super vision require ment	Locati on	Perform ance indicator	Comm ence momen t	Cost		Institutional Responsibility	
P	C	O	SD							Insta ll	Op era te	Install	Opera te
				Temp orary loss of land	Oblige contractor not to interfere unnecessarily or improperly with access to, use and occupation of properties	Monitor observati on of rules	All areas tempor arily occu pied during constru ction	Visual; No. of complaints	Before/ during constru ction works	wor k spe cs	N/ A	Designer/C ontractor/ Engineer	N/ A
					Oblige contractor to select, arrange for, and if necessary pay for storage sites and/or other temporary uses	Monitor implemen tation		No. of complaints; Legal contracts in place					
					Oblige contractor to clean up and restore areas used			No. of complaints					

Road safety													
				Accidents during road construction period due to construction traffic and machinery and due to interference with local roads	Determine safety measures for construction sites through contract obligations	Monitor implementation	All construction areas	Safety measures part of contract obligations	Before/ during construction works	work specs	N/A	Designer/ Contractor/ Engineer	N/A
					Post traffic signs and warning in advance			Visual; No of complaints	During construction works				
					Inform adjacent population in advance about scheduling of planned works			Visual; No of complaints					
					Speed limits on construction traffic			Visual; No of accidents					
					Fencing of quarries and borrow pits			Visual					
					Exclusion of the public where heavy machinery is working			Visual; No of incidents					
					Appropriate EHS training for workers			Visual; No of trainees					
					Regulation of storage and construction activities	Monitor observation of rules		Visual; No of incidents					

* P – Planning/Project Preparation; C – Construction; O – Operation; SD – Site Decommissioning

Annex 8: Resettlement Policy Framework

Description of the specific activities under the project that require land acquisition

1. The primary objective of the proposed Regional and Local Roads Program would *be to reduce the cost of access from municipalities throughout Macedonia to markets and services*, by improving the condition and quality of the network of Regional and Local roads. The Bank would support the Government in the preparation of such a Program, and then participate in its financing, together with one or several other IFIs and the Government's own funding. The following Program components have been identified that might require land acquisition:

Component 1: Rehabilitation and Periodic Maintenance of Regional Roads. This component would provide funding to cover about 265 km of paved roads in the 2008 – 2012 period (about 7% of all Regional roads) and would include (i) civil works, mostly for repair or replacement of structural layers and drainage structures, followed by full asphalt resurfacing; (ii) preparation of bidding documents for civil works; and (iii) works supervision and technical audits.

Component 2: Rehabilitation and Periodic Maintenance of Local Roads

This component would provide funding to cover about 420 km of paved and unpaved roads over the 2008 – 2012 period (about 5% of all Local roads) and would include (i) civil works, mostly for repair or replacement of structural layers and drainage structures, followed by full asphalt resurfacing or regravelling; (ii) preparation of bidding documents for civil works; and (iii) works supervision and technical audits. The allocation of project resources to municipalities will be based on a formula approach (as described earlier) with additional safeguards to ensure that poorer and more remote municipalities benefit most.

Under both components it is not excluded the small segments of new roads will be constructed and for what might be needed land acquisition.

Objectives of the Resettlement Policy Framework

2. This Resettlement Policy Framework (RPF) provides details on the likely impacts resulting from land acquisition for the above mentioned activities and the mitigatory measures that will be put in place to address these adverse impacts.

3. The main objectives of the RPF are to:

- Provide details on the policies governing land expropriation, the range of adverse impacts and entitlements;
- Present a strategy for achieving the objectives of the resettlement/ land acquisition policy;
- Provide a framework for implementation of the stated strategies to ensure timely acquisition of assets, payment of compensation and delivery of other benefits to project affected persons (PAP);

-
- Provide details on the public information, consultation and participation, and grievance redress mechanisms in project planning, design and implementation;
 - Provide identified sources and estimates of required resources for implementation of the RAP;
 - Provide a framework for supervision, monitoring and evaluation of resettlement implementation.

Legal framework for land expropriation in Macedonia and fit with World Bank Operational Policy [OP 4.12]

4. The Land Expropriation Act dated 1995 governs the expropriation process in Macedonia. This Law was slightly amended in 1998, 1999, 2003 and 2005. These together defines the procedures for expropriation of immovable property in Macedonia. The expropriation of private properties is done only for a public interest and with fair compensation. The Land Expropriation Act (1995) vests authority in the name of the State, Funds, Public Enterprises, and Municipalities to acquire land required by the Government for public purposes. The term “public purpose” is defined.

5. For land acquisition in road projects, the Roads Fund submits expropriation proposals to the Local/ Regional Offices of Property Administration (within the Ministry of Finance). The expropriation proposal shall contain information about the purpose of expropriation, details on the real estate to be expropriated, the names and addresses of the owners of the real estate, evidence of the ownership over the real estate that is offered as replacement for the expropriated real estate and evidence for the secured funds that shall be used as compensation for the expropriated real estate.

6. Eight days from the submission of the expropriation proposal, the Local/ Regional Offices of Property Administration shall invite the owner, the carriers of other property rights over the real estate and the user of the expropriation for negotiations. The purpose of the negotiations is to determine the existence of a public interest, the veracity of ownership/ property rights, the nature and amount of the compensation etc. The law provides scope for appeal against the decision for expropriation to be submitted to the Commission of the Government of the Republic of Macedonia. These consultations go on until agreement is reached on the amount of compensation – if the concerned parties cannot agree, appeals are made to the Supreme Court regarding the amount of compensation and date of expropriation. The Roads Fund shall acquire the tenure right over the expropriated real estate 15 days after the date of the settlement (agreement).

7. The compensation price is determined with the help of qualified property assessment experts. The offer price for land is calculated based on a situation-specific formula that takes into account the market value of the affected property. There is also a process of open and transparent negotiation before expropriation proceedings begin that ensure that the final agreed price corresponds to the World Bank’s requirement of “replacement value” enabling the project affected person to purchase land of similar quantity and quality. Owners also have the right to receive market-price based compensation for trees, seedlings, crops and forests etc.

8. Depreciation is used in calculating the offer price of structures. This is not consistent with the principle of replacement value as suggested by O.P 4.12. It is not expected that there will be major structures that will need to be acquired in the project site. In the event that there are structures (barns, kiosks, small commercial buildings etc.) that will need to be demolished, “depreciation” will not be used while calculating the compensation payable for affected structures, so that affected people will be able to replace their structures with the compensated amount.

9. The Roads Fund is obliged to make the compensation payments within 30 days from the date of signed agreement or court decision, if any. If compensation cannot be paid or deposited within the deadline, interest will be paid at market rate on the amount awarded from the date of award till the date of payment. Compensation for lost assets shall be provided before these are taken into possession.

10. While World Bank OP 4.12 embodies the principle that a lack of legal land title does not disqualify people from resettlement assistance, under relevant Macedonian legislation, discrepancies with this principle arise. However, within the scope of this project, the sites are not occupied by large illegal settlements; neither are there individuals that have multiple or competing or illegal claims to land in the project area. All project affected people in the area whose land have to be acquired have legal titles, according to the updated land ownership report prepared by the State Cadastre Office.

Valuation of assets

11. The valuation of land is established by a committee of valuation experts hired for the purpose. Comparable data on prices are gathered through consultation with Public Revenue Office whose data from recently concluded contracts on sale and purchase of land in the region are extracted. The market value which the Road Fund proposes to provide reflects adequate compensation for the asset to be expropriated. It must be noted that active markets for land and housing exist and not only people do use such markets, there is also sufficient supply of both land and housing. The Road Fund considers that the market values proposed are fair and reasonable and will be adequate for the affected people to purchase alternative land of the same size and quality within the region.

12. Buildings are valued based on the price of construction material with which they have been built. The market price remains the most reliable way to evaluate buildings also having a commercial use, i.e. kiosks, shops, workshops or commercial enterprises.

Consultations with affected/displaced persons

13. Information dissemination and consultation with the PPs reduces the potential for conflicts, minimises the risk of project delays, and enables the project to include resettlement and rehabilitation as a comprehensive development programme to suit the needs and priorities of the PAPs. Specific objectives of the public information campaign and public consultation are: (i) to fully share information about the proposed project, its components and its activities, with affected people; (ii) to obtain information about the needs of the affected people, and their reactions to proposed policies and activities; (iii) to ensure transparency in all activities related to land acquisition and compensation payments.

14. In the cases of Land acquisition the Fund for National and Regional Roads will organize meetings with the local population to discuss the process. At the meetings there should be presented the following issues: basic technical characteristics of the routes and of the structures; the expropriation line of the routes, associated with detailed geographical maps; access of the settlements with the motorway; amount of the compensation for the expropriated land; the manner and the procedures of the expropriation process, including the method for assessing value or payment of compensation.

The Entitlement Matrix and Eligibility of affected persons

15. The definitions used in this RPF are:

- A. “**Census**” means the head count of the persons affected by land acquisition in terms of asset loss, together with an inventory of the assets lost by these persons. The census also includes basic socio-economic data. The date of the census establishes the cut-off date to record the persons in a community project area, who can receive compensation for lost assets, and/or resettlement and rehabilitation assistance.
- B. “**Compensation**” means the reparation at market rates (which is equivalent to replacement cost) in exchange for assets acquired by the Project.
- C. “**Cut-Off Date**” means the date after which no person moving into the project area will be eligible to receive compensation related to land acquisition and resettlement. The cut-off date is the date of the census of the persons affected by land acquisition.
- D. “**Rehabilitation Assistance**” means assistance comprising job placement, job training, or other forms of support to enable displaced persons, who have lost their source of livelihood as a result of the displacement, to improve or at least restore their income levels and standard of living to pre-project levels.

16. The matrix below defines the proposed eligibility for compensation and/or rehabilitation assistance for impacts/losses for different types of assets for different categories of project affected persons.

ASSET ACQUIRED	TYPE OF IMPACT	ENTITLED PERSON	COMPENSATION ENTITLEMENT
AGRICULTURAL LAND	No displacement: <ul style="list-style-type: none"> Less than 70% of land holding affected, The remaining land remains economically viable 	Farmer/title holder	Cash compensation for affected land equivalent to market value
	Displacement: <ul style="list-style-type: none"> More than 70% of land holding lost 	Farmer/title holder	<ul style="list-style-type: none"> Cash compensation equivalent to replacement value of land Income restoration package (access to credit/ allowance until next first harvest/ alternative job training)
COMMERCIAL LAND	Not applicable		
RESIDENTIAL LAND	Not applicable		
STRUCTURES	Not applicable		
TREES	Trees lost	Title holder	Cash compensation based on type, age and productive value of affected trees.
TEMPORARY ACQUISITION	Temporary acquisition	PAP (whether owner, tenant, or squatter)	Cash compensation for any assets affected (e.g. boundary wall demolished, trees removed)

17. Project affected people (PAP) includes any household who at the cut-off date of the project (i.e. at the date of conducting the census and baseline survey) are residing or deriving an income from the project area, and because of the project, would lose land, or any other movable or fixed assets, in full or in part, temporarily or permanently, or have their business, occupation, place of work or residence adversely affected. Lack of legal rights will not bar affected people from entitlement to compensation for their lost assets (improvements including structures, houses, crops, trees and other fixed assets). The land ownership information prepared by the State Cadastre Office should clarified that there are no illegal encroachers on land, who occupy, reside and cultivate land that does not belong to them in the project area.

Procedures for grievance and institutional responsibility for implementation and redress

18. There might be two types of complaints. The first one is a complaint to the act of expropriation submitted to the second stage commission of the Government. If the owner is not satisfied with the decision of this commission, he/she can start an administrative court case at the Supreme Court. The second type of complaint is when the owner is satisfied with the decision for expropriation, but not with the offered price. In that case a complaint is submitted to the regular court in the municipality where the expropriation takes place.

19. The overall activity and responsibility for resettlement and expropriation policy on road infrastructure civil works remains under the authority of Fund for National and Regional Roads in cooperation with the Ministry of Finance - Local/ Regional Offices of Property Administration. Regardless of the source of financing for the contract civil works, the financial responsibility for resettlement and expropriation procedures is under the budget of the Fund for National and Regional Roads. The FNRR is responsible for the preparation and implementation of all the necessary steps concluding with the submission of the expropriation dossier required by Macedonian Expropriation Law.

20. The FNRR is responsible for following up and concluding the compensation procedures for the people to be compensated.

21. The institutions and responsible agencies for the co-ordination of all the activities, policy of compensation rights, and execution of compensation are as follows:

- ③ Ministry of Finance - Local/ Regional Offices of Property Administration.
- ③ FNRR: Commission for Expropriation Procedures, Juridical Department, Economic Department, Technical Department;
- ③ Regional Cadastral Department.

Annex 9: Summary of the public consultation meeting

Location	Objective	Invitees	Participants	Summary conclusions and Comments	Responsibility
The Public consultation was held on 15.02.2008 at premises of the Fund for National and Regional Roads (FNRR), at Dame Gruev no.14, 1000 Skopje, from 12.00 a.m. to 13.30 p.m.	The consultation meeting was aimed at presenting to the relevant interested stakeholders and concerned public (NGOs) the main SEA, EMP, EAMF and Environmental Guidelines, conclusions and recommendations, as well as to give them the opportunity to state their comments, opinions and remarks on the matter.	All interested stakeholders have been invited: Ministry of Transport and Communications (MTC), Ministry of Environment and Physical Planning (MoEPP), AE (MoEPP) - Administration regarding Environment within MoEPP, FNRR, NGOs, local self government units and the city of Skopje, consultant companies and other concerned institutions.	Copy of The List of Participants is enclosed.	<p>DISTRIBUTED MATERIALS</p> <p>Hard copy of presentation regarding SEA document was distributed to the participants.</p> <p>CONCLUSIONS AND COMMENTS</p> <p>The Meeting was carried out according to the planned Agenda. The Environmental expert, Magdalena Trajkovska Trpevska (MTT), carried out the short introduction, and welcomed the participants. Furthermore, the environmental expert, Magdalena Trajkovska Trpevska presented the main SEA, EMP, EAMF and Environmental Guidelines, conclusions and recommendations concerning the SEA document. MTT noted the importance of environmental assessment of the project components and subcomponents, potential environmental risks, impacts and potential mitigation measures. First remarks, comments and suggestions were given by Ana Cholovich - AC (NGO – Center for environmental research and information "Eco-sense"). First remarks were regarding compliments for the presentation, and as well detailed and professionally prepared SEA document, and suggestion that it is more appropriate to have SEA document translated on Macedonian.</p>	<p>Environmental expert, Magdalena Trajkovska Trpevska (MTT) will prepare Summary of the public consultation meeting and incorporate in the final version of the SEA document.</p> <p>Final SEA document will be delivered to FNRR, and MTC and furthermore they will deliver the document to the MoEPP for formal approval.</p> <p>After the approval, FNRR and MTC will post the final SEA document on their web pages, and they will send it officially to the WB.</p>

		<p>Also, public announcement was published in daily national newspaper, and posted on FNRR web side.</p> <p>Copy of Public announcements is enclosed.</p>	<p>Macedonian.</p> <p>Ana Cholovich also gave the following suggestions:</p> <ul style="list-style-type: none"> - Adjustment of Macedonian terminology with WB terminology, regarding Sectoral Assessment (in Macedonian Law on Environment as terminology exist only Strategic Assessment). <p>MTT has answered this question, explaining that Strategic assessment is relevant (equal) to Sectoral assessment (in WB terminology).</p> <p>Next suggestion by AC was that within the Environmental Road Handbook that is planed to be prepared by the project, it is necessary to include requirements of EU Directives regarding the relevant matter.</p> <p>AC has asked the following questions: Who will conduct the Environmental Management Plan? Is the Fund for National and Regional Roads main responsible authority? Who will be responsible for conducting the monitoring after road rehabilitation and road constructions?</p> <p>Natasha Valkanovska (NV) from the Fund for National and Regional Roads has answered that the Fund is main responsible regarding maintenance of national roads, while regarding local roads municipality is main responsible. Certainly municipalities will follow the directions given by the Fund. In case of some possible problems within the municipality, concerning relevant matter, municipalities will be supported by the Fund</p>	
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				<p>conducting program of support.</p> <p>MTT has added, and noted that the Project includes support and capacity building of institutions (Ministry of Transport and Communications, FNRR), as well as in order to increase FNRR capacities in the field of environmental management, a full-time environmental specialist will be recruited to oversee the environmental aspects of project development and implementation.</p> <p>Next question, asked by AC was whether this is WB loan or not.</p> <p>Furthermore, NV has reply on this question explaining that discussions (negotiations) with WB are ongoing, and they are mainly oriented concerning budget arrangements. Around 33 millions EUR will be allocated separately for the two project components (national and regional roads). It is planned this Project to be organized by phases. Currently the Project is in first phase. Discussions are ongoing regarding second phase and depend of the progress of the Project.</p> <p>Also, AC has asked regarding the list of project and its availability on web side.</p> <p>NV has explained that financial funds will be allocated for all municipalities, and from the municipalities it is expected to submit projects. In the period of May-June first list of projects is expected to be prepared. Projects will be implemented in groups. The lists of project will be available on web side.</p> <p>Additionally, the comments of Zoran Zarinski – ZZ (NGO – Rainbow , Shtip) were mainly regarding compliments for the presentation, and as well detailed and professionally prepared SEA document.</p>	
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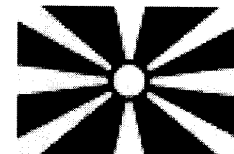
				<p>Questions asked by ZZ were concerning development of Eastern region of Macedonia, is this matter included within this project, and about NGOs involvement in the phases of the project.</p> <p>NV noted again that financial funds will be allocated for development of all municipalities in Macedonia including the Eastern region as well.</p> <p>MTT has reply regarding NGOs involvement and concerned public, explaining that this public consultation and announcement of the document on relevant web pages are ways of involving the public (NGOs) in the project activities. Generally, the involvement of the NGOs depends of the interests of the relevant NGO. MTT has expressed her pleasure because many representatives from environmental NGOs are present on this public consultation, and this presence confirms NGOs interests regarding relevant problematic.</p> <p>Vlado Veleviski – VV, representative from municipality Dolneni was interested whether EIA or Ecological elaborate is necessary document for the project application.</p> <p>MTT have answered that EIA or simplified EIA requirement depends from the type of project. Thus, regarding EIA procedure, MTT suggested that the AE (MoEPP) should be consulted for any EIA procedure.</p> <p>NV has added that within next 2 months, municipalities will be informed regarding the necessary project documentation. Final comment of NV was that it is necessarily to strengthen the capacity of the Fund regarding the concerned matter (EIA),</p>	
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				<p>because of the lack of employees.</p> <p>Other participants did not have any additional remarks and the public consultation meeting was closed.</p> <p>CLOSING REMARKS</p> <p>The meeting was closed and closing remarks were given by MTT, expressing gratitude for the presence and interest concerning this project. MTT noted that all suggestions and remarks regarding this Project, participants can send it by an e-mail, to the Font or on her (MTT) e-mail till 20 of February, in order to be incorporated in the final version of SEA document.</p>	
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List of Participants



Презентација на НАЦРТ СЕКТОРСКА ПРОЦЕНКА НА ЖИВОТНАТА
СРЕДИНА за Проект за Програмска Поддршка на Македонските
Регионални и Локални Патишта

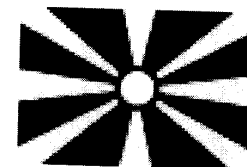


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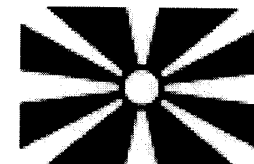
Презентација на НАЦРТ СЕКТОРСКА ПРОЦЕНКА НА ЖИВОТНАТА
СРЕДИНА за Проект за Програмска Поддршка на Македонските
Регионални и Локални Патишта



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Презентација на НАЦРТ СЕКТОРСКА ПРОЦЕНКА НА ЖИВОТНАТА
СРЕДИНА за Проект за Програмска Поддршка на Македонските
Регионални и Локални Патишта



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Public announcements concerning public consultation

ЈАВЕН ПОВИК

**ПРЕЗЕНТАЦИЈА НА НАЦРТ СЕКТОРСКА ПРОЦЕНКА НА
ЖИВОТНАТА СРЕДИНА ЗА ПРОЕКТ ЗА ПРОГРАМСКА
ПОДДРШКА НА РЕГИОНАЛНИ И ЛОКАЛНИ ПАТИШТА
ВО РЕПУБЛИКА МАКЕДОНИЈА**

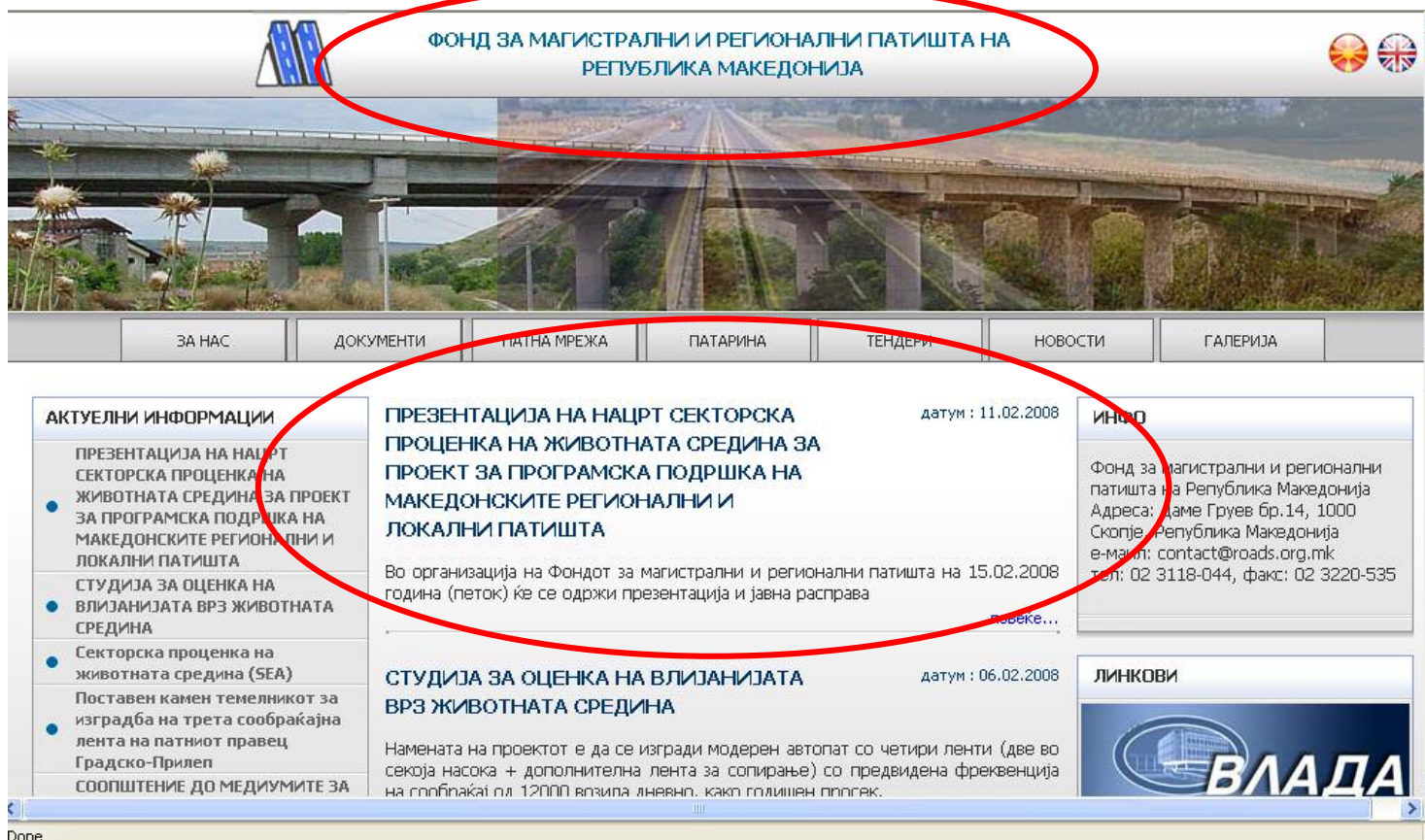
Во организација на Фондот за магистрални и регионални патишта на 15.02.2008 година (петок) ќе се одржи презентација и јавна расправа на Нацрт секторската проценка на животната средина за проект за програмска поддршка на регионални и локални патишта во Република Македонија.

Презентацијата ќе се одржи во просториите на Фондот за магистрални и регионални патишта-Скопје, во големата сала на 6-ти кат, со почеток во 12,00 часот.

Фондот за магистрални и регионални патишта ги повикува сите заинтересирани институции и поединци да присуствуваат на јавната расправа.

**Фонд за магистрални и
регионални патишта**

**Daily newspaper:
DNEVNIK, 13.02.2008**



Web page of:

FUND FOR NATIONAL AND REGIONAL ROADS OF THE REPUBLIC OF MACEDONIA

Announced: 11.02.2008