



ROADEX

Implementing Accessibility

Environmental Considerations

Annele Matintupa

MSc. in Civil Engineering
Roadscanners Oy, Finland



Environmental Considerations eLearning Package

- Environmental related issues and practices in road condition management on low volume roads
- Guidance for the ROADEX partners in their everyday work
- Based on the ROADEX II reports “Environmental Guidelines” and “Environmental Guidelines – Pocket Book”
- Supplemented with up-to-date information gathered by the authors during discussions with roads administrations and experts across



Environmental Considerations

- Lately a fairly minor consideration
- A clean environment like a foregone conclusion
- Lately more and more aware of changes in environment
- What could be done to reduce the negative influences?



Environmental Codes and Assessment In ROADEx countries

Greenland

- At present no environmental codes related to road construction
- Guidelines, including environmental issues, are being prepared

Finland

- The Finnish Road Administration has its own environmental policy
- The policy defines that the Road Administration should act and develop its activities in accordance with the principles of sustainable development
- The Administration is responsible for road management and its environmental impact, and for its share of the environmental impact of road transport
- The environment policy consists of five main strategies



Environmental Codes and Assessment

In ROADDEX countries

Iceland

- Icelandic Road Administration (ICERA) has defined the main environmental factors in its operations
- Environmental policy together with goals
- The main goal is to promote a harmonious relationship of roads and traffic with the environment and community
- Based on Environmental standard ISO 14001:2004

Ireland

- The Irish National Roads Authority (NRA) is responsible of environmental guidelines related to road design, construction and operation
- Guidelines are based on the Environmental Impact Assessment (EIA) legal framework and the National Roads Project Management Guidelines (NRPMG)
- The NRA has defined a four-stage environmental integration model (EIM)



Environmental Codes and Assessment In ROADEX countries

Norway

- Norwegian Public Roads Administration (NPRA) has environmental vision
- Requires that transportation should not cause serious human or environmental damage



Scotland

- The Scottish Government is responsible of environmental policy
- The goal of policy is to reduce the impact on the environment
- Reduction through the effective management of operations.
- The environment policy generally follows the UK's framework for sustainable development



Environmental Codes and Assessment In ROADEX countries

Sweden

- The environmental aspects of road building are regulated by the Environmental Code.
- The aspects include several “consideration rules” for construction work
- Implemented practically in roads operations
- Environmental impact description is drawn up for all road objects
- The environmental impact description is required to be part of the final decision process to that the environmental work is integrated with the work planning



Protected Nature

- Areas should be taken into account in design rehabilitation and maintenance operations in low volume road networks
- Different types of protected nature and their effects to road design and maintenance projects



National Natural Parks

- Protected areas of natural or semi-natural lands
- Human recreation and enjoyment
- Animal and environmental protection
- Restricted from most development
- Usually owned by the State
- The first one established in 1872
- 7000 national parks across the world
- Northeast Greenland National Park is the largest
- Several parks in ROADEX countries



Nature Reserves

- Small, more or less, virgin areas
- Purpose to save special biotopes
- Protect different features
 - ✓ such as eskers
 - ✓ groves with rich
 - ✓ biological varieties
 - ✓ virgin forests
 - ✓ natural monuments
 - ✓ Shores
 - ✓ etc
- On each ROADEX country several parks
- Access is normally unrestricted
- Restrictions on hunting and fishing



Bird Reserves

- Area, which is designed to protect bird species
- A wildlife refuge for birds
- Prevent species from becoming endangered or extinct against threats like hunting and habitat destruction
- Good areas for bird watching
- There are many bird reserves in the ROADEX countries, each having its own typical birdlife
 - ✓Mainly in Scotland



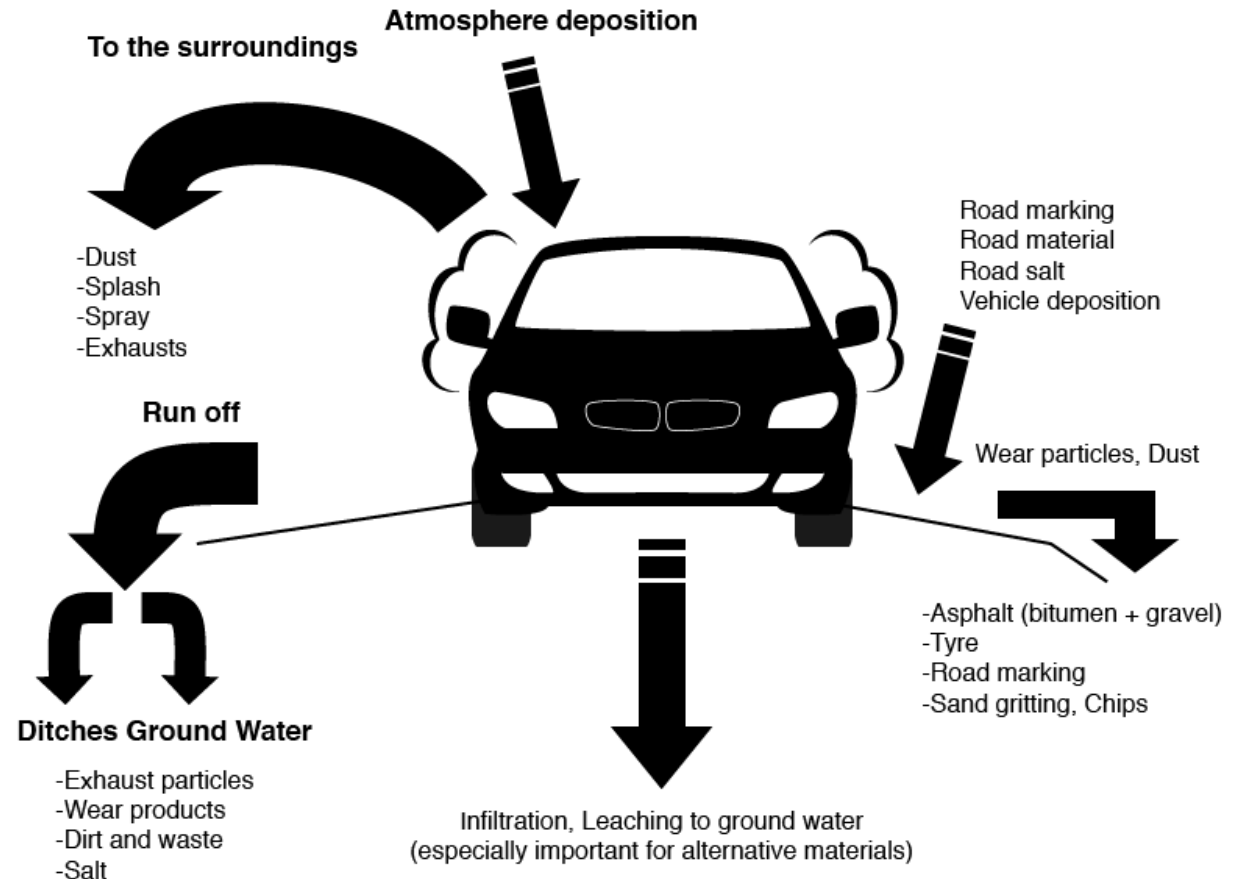
Plant Reserves

- Area, which is designed to protect plant species
- Especially should be noticed in forest roads!
- Endangered plant species can restrict the road alignment
- Registers and databases of plant reserves usually restricted
- Information able to get from the appropriate environment ministry.



Environmental Issues Related to Road Management

- Roads can have both positive and negative influences on people and the environment
- The three most damaging effects of road construction and management
 - ✓ noise,
 - ✓ dust and
 - ✓ vibrations



Sources of environmental pollutants

Noise

- Noise is defined as a sound that is undesirable to the listener
 - Roads near the population
 - Roadworks
-
- Methods to unwanted consequences
 - ✓Notify the persons likely to be affected that work
 - ✓Use modern equipment wherever possible
 - ✓Keeping roads in good condition



Vibrations

- Vibrations disturb people close to roads
- Cause also damages to buildings and sensitive equipment
- Affects to local fauna
- Vibrations, and also noise, can affect local fauna
- Also health problems to truck drivers
- Main sources
 - ✓ uneven roads with potholes and differential frost heave
 - ✓ Roadworks
- Same “remedies” than with noise



Dust

- Almost inevitable consequence of roadwork
- Aggregates always contain a proportion of fines
 - > if the material is dry
 - > a fairly heavy dust cloud can be raised when it is mobilized
- Disturb both the population and the local environment
- Dust incidences can be treated by
 - ✓either watering
 - ✓alternative material choices
 - ✓using dust binders near houses
 - > carefulness in ground water areas!



Waste

- Defined as “any substance or object which the holder discards, intends to discard, or is required to discard”
- Waste may arise in different ways:
 - ✓ Packaging material
 - ✓ Residual road structure material
 - ✓ Dangerous waste, oil from machines, etc.
- Dangerous wastes
- Note that in some countries the materials removed from roadworks are always classified as “waste” and have to be properly stored in landfill areas



Road Materials and Furniture

- Can also be source of pollutants
- The environmental impacts and amount of pollutants created depend on the type of materials involved
- Recycled materials and industrial by-products
- Pavements
- Natural aggregates
- Road furniture



Exhaust Gases, Carbon Emissions and Climate Change

- The greatest source of carbon emissions is traffic
- Methods to reduce carbon emissions
 - ✓ Good planning and design
 - ✓ Material and technique selection
 - ✓ Maintenance operations
 - ✓ Rehabilitation
 - ✓ Timing of road use



Environmental Aspects in Road Design

- Should be taken into account in design process
- In the design process should be noticed animals and plants, geology and landscape, and the natural processes that affect them
- Both road owner and contractor have a legal responsibility for any damage that may occur to the environment, and the consequential costs

- The main goals should be
 - ✓ Identification of any species or special areas in the project before construction or rehabilitation work is started
 - ✓ Protection of these species and areas during the construction process



Roads and Water

- Ditches
- Culverts
- Slope stability



Thank you!

