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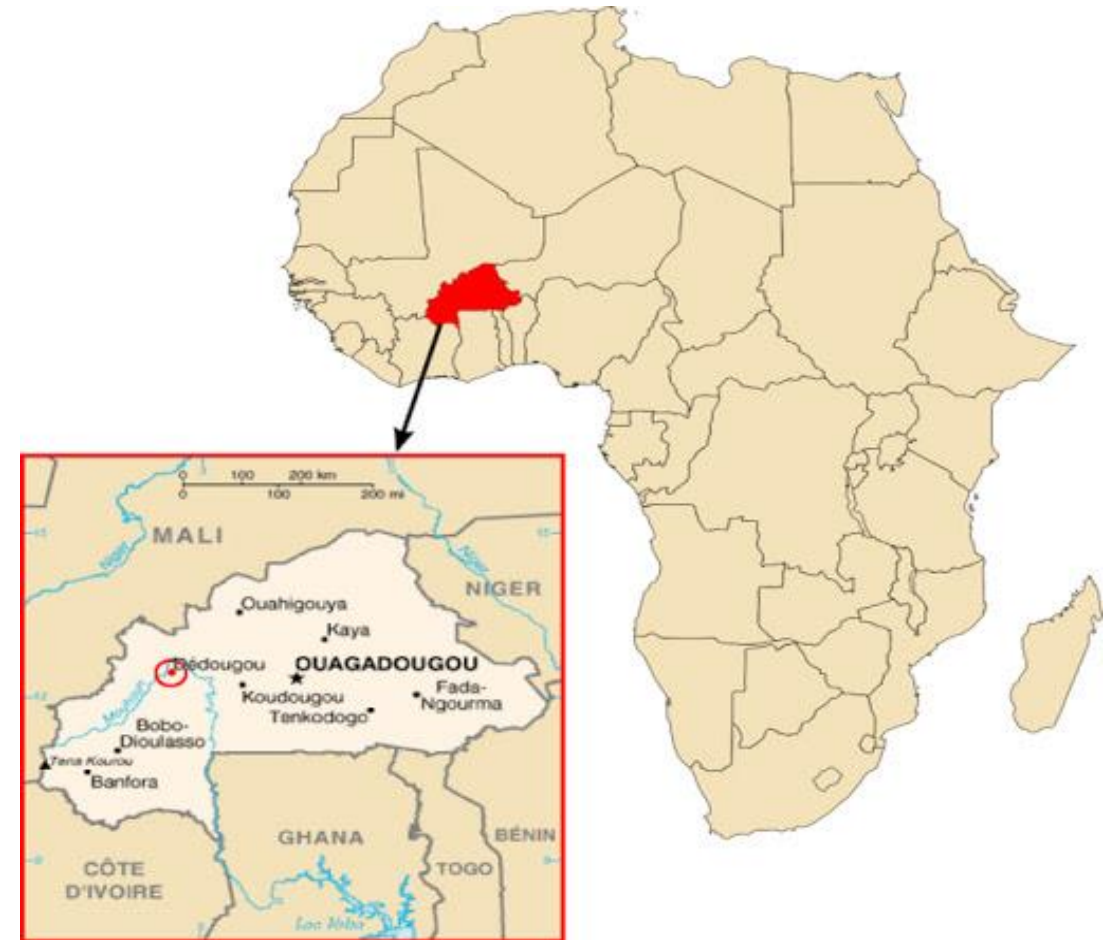
Rural road construction by Employment intensive method, case of Burkina Faso

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GEOGRAPHICAL SITUATION OF BURKINA FASO

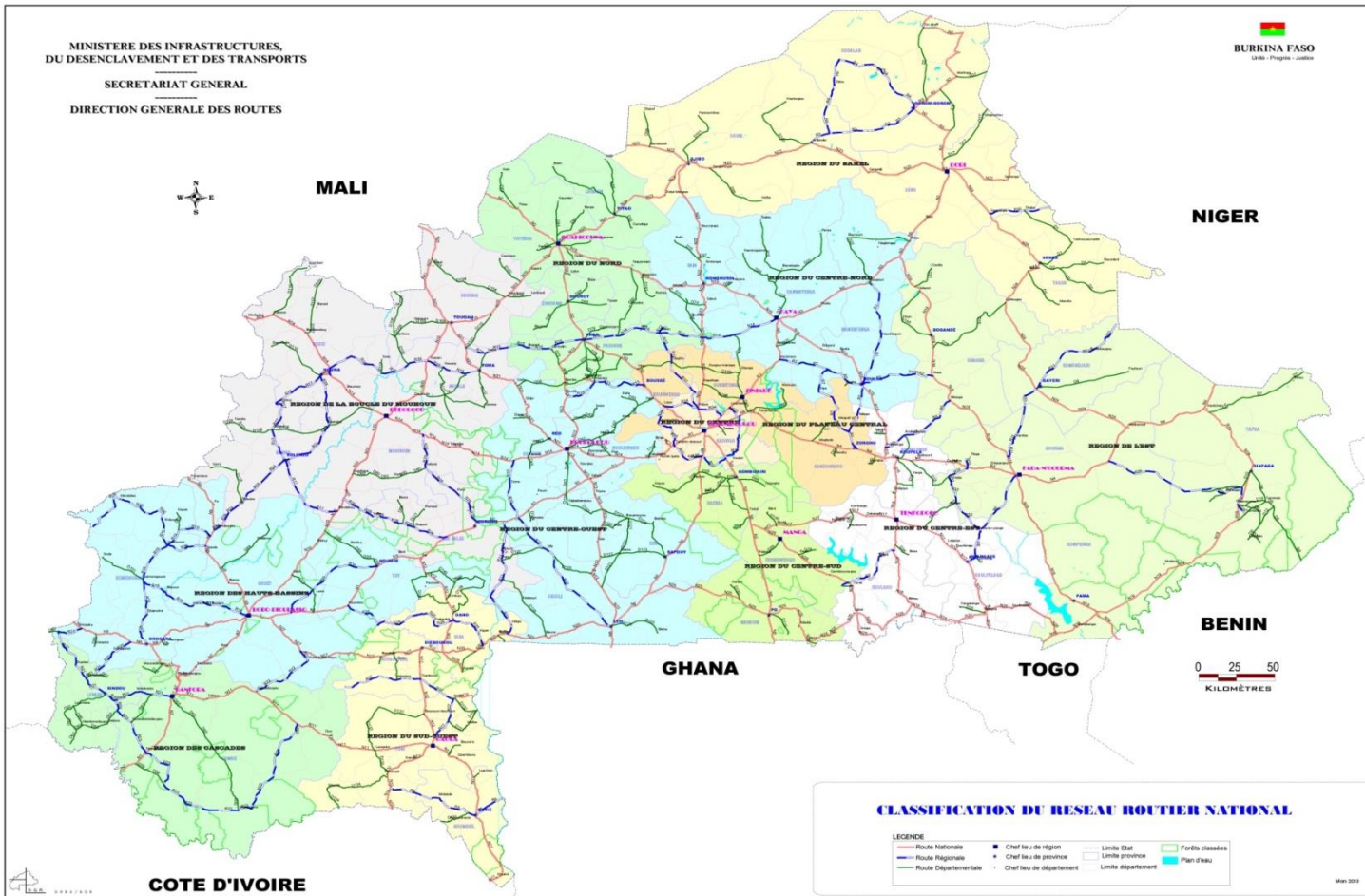
Burkina Faso is located in the heart of West Africa. Its area is 274,000 square kilometers. It shares its borders with six countries, namely Mali to the north and west, Niger to the north and east, Benin to the south-east, Ghana and Togo to the south, Côte-d' Ivory in the west and south. The country is subdivided into thirteen (13) regions, forty-five (45) provinces and three hundred and fifty-one (351) departments.

SITUATION OF THE COUNTRY IN AFRICA



The country has placed the improvement of transport in rural areas as a privileged tool for socio-economic development and the fight against poverty

GENERAL INFORMATION ON THE ROAD NETWORK OF THE COUNTRY



BURKINA FASO'S CLASSIFIED ROAD NETWORK: 15,304 KM, WITH 3,642 KM PAVED (23.79% OF THE NETWORK)

6,728 KM OF NATIONAL ROADS (43.96%)

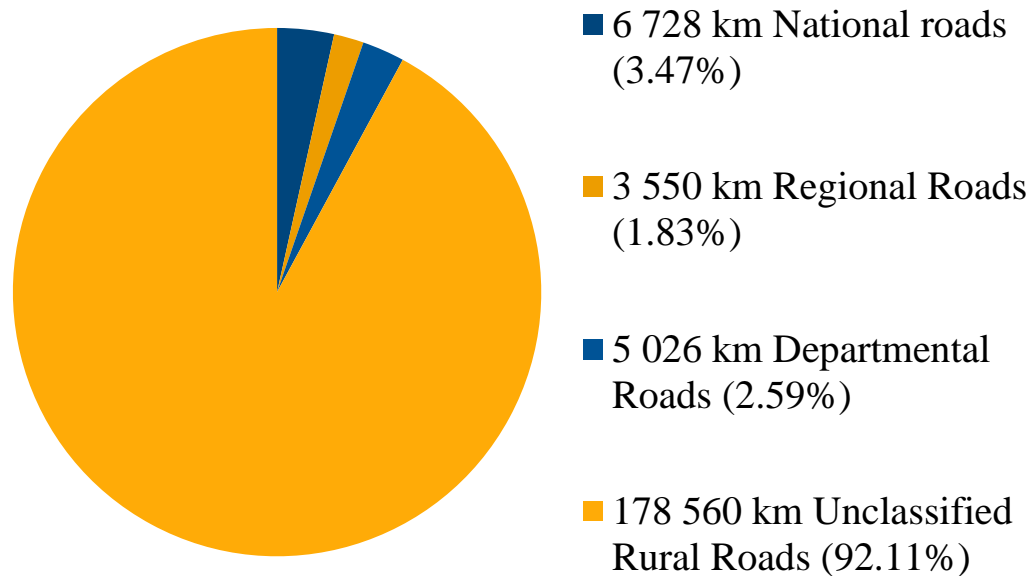
3,550 KM OF REGIONAL ROADS (23.20%)

5,026 KM OF DEPARTMENTAL ROADS (32.84%)

GENERAL INFORMATION ON THE ROAD NETWORK

The density of the classified road network is 5.6 km per 100 km² compared to 4.7 km per 100 km² for all WAEMU (West African Economic and Monetary Union) countries. Earth roads dominating with 76.2% of the road network. Outside the classified network, approximately 178,560 km of rural road exist and are unclassified.

ADMINISTRATIVE CLASSIFICATION OF THE ROAD NETWORK/ BURKINA FASO



This classification reveals a very low coverage of the road network in rural roads leading to a high cost of vehicle operation, higher travel time and above all poor accessibility to economic and society infrastructure. All this constitutes an obstacle to the economic development of the country.

Considering the importance of rural roads for the development of the country, an implementation manual for the National Rural Transport Strategy was drawn up for its application.

The National Road Network comprises three categories:

Primary network	Secondary network	Tertiary network
<p>Consisting of national roads in dirt or paved connecting the capital to the capitals of regions and/or provinces then to the borders with neighboring countries. It allows all the traffic that is grafted to it to be able to reach the major centers of Burkina Faso, to carry out transit and to connect to the international network without difficulty.</p>	<p>Made up of regional roads and departmental roads . This network is attached to the primary network to ensure collection and distribution. It allows the large centers of human concentration to radiate towards the small centers and the small centers to evacuate their surplus production to the large centers of consumption. In general, it ensures exchanges at the regional level</p>	<p>Includes rural road which are essentially composed of tracks in the technical class of ordinary tracks of types I and II. This network is not classified in Burkina Faso. It is the responsibility of local authorities according to the National Rural Transport Strategy and according to the General Code of Territorial Communities</p>

METHODS OF CONSTRUCTING RURAL ROADS

For the construction of rural roads necessary for rural transport, Burkina Faso generally uses two (02) construction methods. The mechanized method (the most used) and the Employment Intensive method.

Employment intensive method

Through a employment intensive method, we opt for maximum use of local resources in order to create jobs, stimulate the participation of populations and promote the use of local materials, small equipment and tools. The employment intensive method uses light equipment for optimal execution of rural road with local resources and materials.

Main conditions to justify the use of the employment intensive method

Population density	The minimum remuneration of the workforce	The economic level	The cost of investment per inhabitant opened up
<ul style="list-style-type: none"> ▪ A minimum population density equal to or greater than 25 inhabitants per km² is optimal for using the employment intensive method; ▪ A density of 15 – 25 inhabitants per km² is still possible for employment intensive method <p>Below these values, the method is difficult to apply</p>	<ul style="list-style-type: none"> ▪ A minimum remuneration ≤ 4 dollars per day still justifies the use of the method; ▪ In Burkina Faso, the minimum daily remuneration is 2 dollars. 	<ul style="list-style-type: none"> ▪ A Gross National Product per inhabitant below 805 dollars (per inhabitant per year) still justifies the use of the method; ▪ The Gross National Product per inhabitant in Burkina Faso is around 322 dollars. 	<p>The cost of the investment for the development of a rural road according to the method must be ≤ 32 dollars</p>

According to experiences in West Africa, the employment intensive method for the development of rural roads brings direct income to the villages in the order of 10% - 20% of the kilometer cost of the project.

Elements of planning for a employment intensive method

The planning process remains a very important factor in the implementation of the activities of a feeder road project using the method. All actors must be involved throughout the process. Planning is made up of the following main elements: project identification, joint diagnosis, implementation and monitoring/evaluation. In the case of rural roads by employment intensive method, for real ownership by the beneficiaries, **this planning consists of several stages, the major stages of which are defined as follows:**

PROJECT IDENTIFICATION

ACTIVITIES	GOALS TO REACH	IMPLEMENTERS	ELIGIBILITY CRITERIA
Identification of needs with local intermediaries (Projects, partner NGOs, etc.)	Know the promising and supported development activities	Project manager Supported by the social intermediation teams for the search for primary data and possibly contacts with the population concerned	- Belong to the community- Have promising development activities supported by development partners- Have a population whose investment per inhabitant opened up is less than or equal to 33 dollars- Technical and economic feasibility in the standards of the SNTR (10 000 dollars / km maximum including works)- Availability of local materials- Access to important economic society centers- Leads to a road of the classified network
Field visit to identify the needs expressed	Assess the technical feasibility and possibly list the other access or opening up		
Data search for summary analysis	Highlight the economic society relevance of the project with additional data		

DEVELOPMENT OF THE RURAL ROAD PROJECT

ACTIVITIES	GOALS TO REACH	IMPLEMENTERS	ELIGIBILITY CRITERIA
Summary Pre-Project Study (technical aspects)	Itinerary diagram, nature of work and summary evaluation of costs	Project manager	Can be entrusted to a design office
Development of the economic society file (project sheet)	Highlight the economic society elements justifying the project	Environmental and social impact study	Compilation of the elements of the joint diagnosis and those of the technical studies
Presentation of the project to the Provincial Commission for Regional Planning and/or to the Provincial Technical Consultation	Decide (validate) the realization and integrate it into the provincial sector program	Book of Particular Technical Clauses	Technical opinion on the realization

Organization of a employment intensive method based worksite

The organization remains a very important aspect in the implementation of a rural roads construction project using the method. It consists of the organization of human resources, the preparation of logistics (availability of appropriate equipment, availability of good tools, identification of storage locations for tools and equipment and materials, etc.).

STUDY OF EMPLOYMENT INTENSIVE METHOD RURAL ROADS

a) Main points to consider

The main points to study and possibly to deal with generally concern:

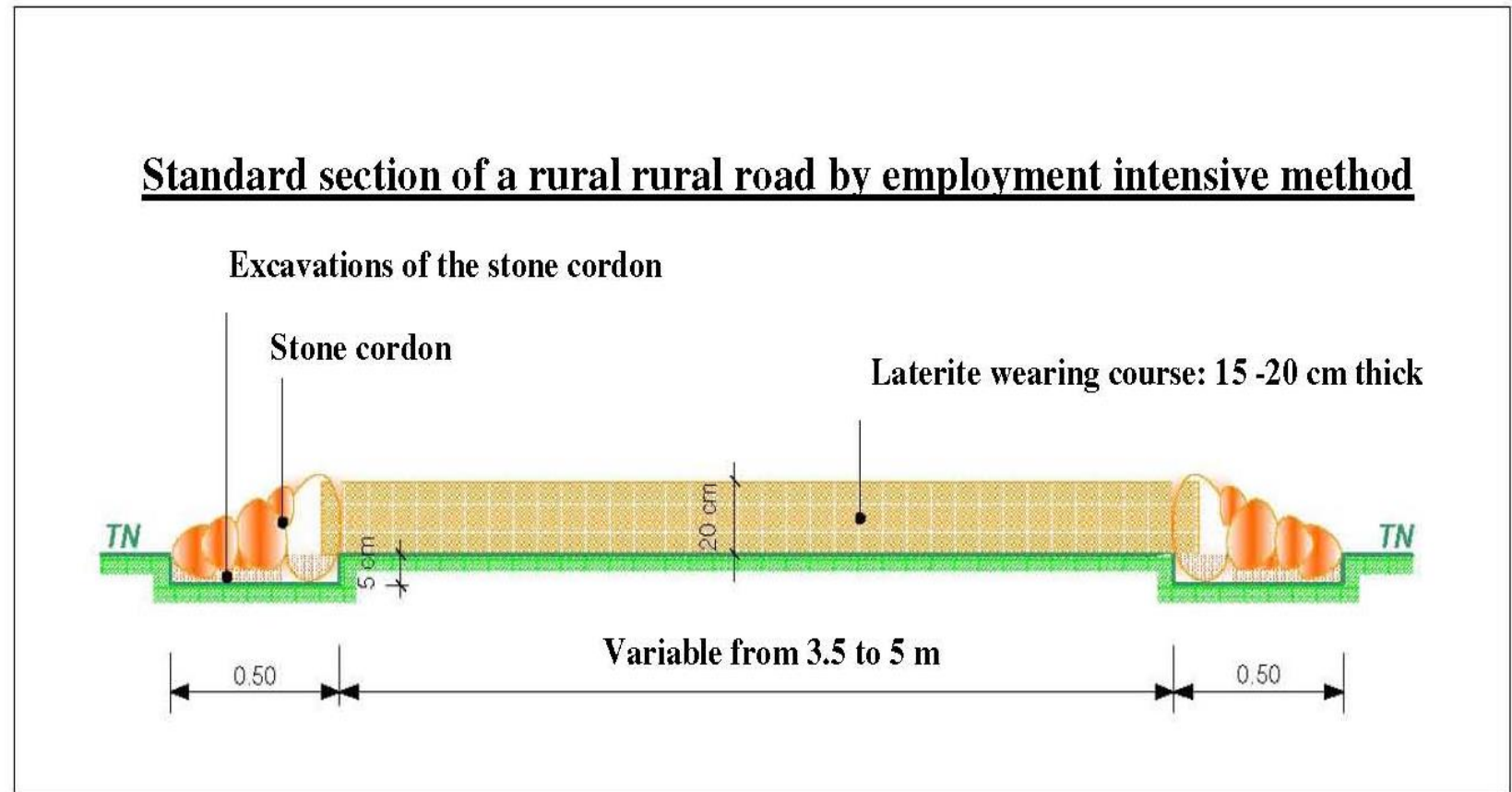
- Water crossings
- Low lift areas
- Areas subject to erosion
- The parts of the road lower than the natural ground
- Definition of the layout

b) Topographic study and dimensioning

The topographical study is limited to places of water stagnation and parts of the road that are submerged by water (depressions, plains, shallows). Topographical surveys must be materialized on the ground by markers and/or staking of the road.

Width of the roadway: The width of the roadway is variable from 3.50 m to 5.00 m
Reference speed on rural road by the method: 40 km/h

**ALL RURAL ROADS
IN RURAL AREAS
ARE UNPAVED IN
BURKINA FASO**



c) Geotechnical study

Borrowing deposits are identified during the Preliminary Draft Summary. Soils are classified according to the In Situ Soil Classification. In case of doubt, some characteristic samples can be analyzed in the laboratory

Search for lateritic material for wearing course



d) Hydrological/Hydraulic study

The hydrological and hydraulic study is essentially based on the effects of flows and water levels over several years. It is essential for the dimensioning of crossing structures.

Identification and sizing of crossing structures in the field



e) Environmental studies

In a classic road study, an environmental impact study is required. Depending on the result, protective measures should be taken. For employment intensive method rural roads, a classic environmental study is not very necessary. However, the natural environment influences the behavior of the track, with regard to its durability (erosion) and therefore its maintenance. This is the reason why, for intensive method rural roads, the approach is the opposite: in order to reduce damage and maintenance measures, rehabilitation of degraded and eroded areas along the road is necessary. They are part of the design of the track.

MONITORING AND CONTROL ELEMENTS

It is expected that the control will be done by the same design office that has already carried out the study.

This is justified by:

- The innovative approach and construction standards in HIMO;
- Implementation work by the design office (direct studies on the ground);
- Business support;
- Support for the organization of maintenance.

Some images of the construction of rural road by the employment intensive method



Images of construction of crossing structures on a rural road

Some images of the construction of rural road by the employment intensive method



Implementation of the wearing course in lateritic materials on a rural road



Implementation of the wearing course in lateritic materials on a rural road

MAINTENANCE OF RURAL ROADS BY THE EMPLOYMENT INTENVE METHOD

Importance of maintenance

The maintenance of a rural road is of paramount importance given the service provided by the road and the high cost of its rehabilitation or reconstruction following a very advanced degradation.

- A maintained road ensures:
- Extended life;
- Ease of access to socio-educational, health and market infrastructure;
- Low rehabilitation costs due to its good performance.

Without regular maintenance, the road deteriorates rapidly until it leads to the following consequences:

- **Difficulties in accessing the localities or centers served;**
- **High transport costs due to increased vehicle operating costs;**
- **High cost of road rehabilitation works;**

In the case of the rural road by employment intensive method, maintenance is carried out by the population through a maintenance committee set up and trained after construction of the road. This committee includes people who participated in the construction of the rural road as employees.

The activities of the maintenance committee are the responsibility of the community concerned.

Types of maintenance

There are three types of maintenance on rural roads:

Routine maintenance is the type of maintenance that consists of carrying out minor repairs and road maintenance activities on a regular basis. Some of these activities are carried out several times during the year.

Periodic maintenance consists of operations to restore the road following normal wear and tear and can be done once a year or every two or three years depending on the behavior of the road.

Emergency maintenance is carried out following a sudden and unpredictable deterioration of the road (erosion, landslide, cutting of a bridge, etc.).

Priorities for maintenance activities

This table describes the actions to be carried out in terms of maintenance by priority and by type of maintenance:

DESCRIPTION	PRIORITY	SEASON
Before the rains	1	- Cleaning of hydraulic structures
	2	- Cleaning of ditches and bleedings
	3	- Repair of ditches and anti - erosion thresholds
During the rains	1	- Inspection and removal of obstacles
	2	- Cleaning nozzles
	3	- Cleaning of ditches and bleeding
	4	- Repair of ditches and thresholds
	5	- Repair of erosions on the shoulders
End of rainy season	1	- Closing of holes in the roadway
	2	- Pavement reshaping
	3	- Repair of erosions on shoulders and drains
	4	- Reinstallation of thresholds
	5	- Clearing.
Dry season	1	- Vegetation control
	2	- Repair of hydraulic structures
	3	- Pavement reshaping

Somes pictures of rural road maintain by employment intensive method



