

XXIIth World Road Congress
Special Session of C20 Committee: Appropriate Development

**A PLANNING APPROACH TO RURAL ACCESSIBILITY
IN THE MOROCCAN CONTEXT**

Par : A. RMILI et A. IMZEL
Direction des Routes et de la Circulation Routière- MAROC
Tél : 037713258- 037713247
Fax : 037713259/61
e-mail : rmili@mtpnet.gov.ma
imzel@mtpnet.gov.ma

A planning approach to rural accessibility in the Moroccan context

MM. Rmili & Imzel

Summary

The des-enslavement of rural zones is the most efficient way to induce their 70% poor people to the national economy, and to allow them an access to social services. Further more, an area accessibility is an essential condition to edifies other basic infrastructures.

In order to deepen its knowledge on rural zones enslavement problem, and also to define adequately the needs on this subject, the Road Directorate of Morocco has realised a detailed inventory of rural roads dedicated to provide accessibility.

The principle retained to identify the target network of roads is to join each rural locality of more than 50 families to the connected network (featuring classified or non classified roads and paved or non paved roads). Then, each locality should have at least one itinerary « called strategic itinerary » for normal access to social and economic services and to necessary administrative services, since those services are themselves supposed to be served by the connected network.

The methodology used to define the target network, based on the principle described above, features the followings steps:

- Step 1 :** settle a numerical and cartographic data base for each province featuring the locality and theirs characteristics (populations, number of families, ...) ; the road network (classified and non classified) ;
- Step 2 :** first identification of the non classified unpaved roads.
- Step 3 :** Verifications, adjustments and validation of data thanks to a series of meetings (one meeting for each province) with the DRCR external services which led to fix definitely the target network of rural accessibility.
- Step 4 :** field enquiries on the target network in order :
 - to compile more information on physical characteristics on selected roads (location, type of relief, pavement, type of ground, ...),
 - to clarify the service level given to road users (in terms of annually cut offs, practicability, .),
 - to prove the social, economic and administrative interest of the road (traffic, social and administrative services and economic activity).

In order to valuate the current level of enslavement on national and on provincial scales, an indicator called « accessibility rate » has been defined to be the rural population well served by the road network related to the total rural population.

A specific rural population is considered to be well served when the network of roads dedicated to this population satisfies certain criteria related to its permanent practicability.

The application of « accessibility rate » definition led to an average accessibility of 40% on the national scale. The provincial rates showed a wide spread and a large dispersion which shows the big difference that currently exists between provinces in terms of rural accessibility.

Depending on the national objectives defined for the « accessibility rate », a number of rural roads will be identified and classified over the provinces. The classification key parameter will be the served population size.

1 - INTRODUCTION

The des-enslavement of the rural world is the most efficient means to integrate in the Moroccan economy the 70% of poor that live in the rural zones and to permit them to reach the social services. Besides, the accessibility of a zone conditions in a large measure the setting up of the other infrastructures of basis.

The survey on the improvement and the interview of roads non donned achieved by the DRCCR in 1991 counted 38000 km of roads non donned. These roads have been submitted to a preliminary analysis that permitted to select 13.000 potentially flexible track km.

In the setting of the law of finances of the year 1995 the Government decided to realize a program (PNRR) of 11.236km of rural road in 7 or 9 years for the des-enslavement of the rural population. To the end of March 2003, 67% of this program have been achieved.

The necessity to specify priorities concerning rural roads for des-enslavement obliged the DRCCR to achieve a survey having the following objectives:

- to update the inventory of rural des-enslavement roads.
- to identify needs of rural roads improvement and to hierarchize them

2 - METHODOLOGY FOR THE DEFINITION OF THE TRACK NETWORK

Before achieving the inventory of des-enslavement roads a network targets has been defined as follows:

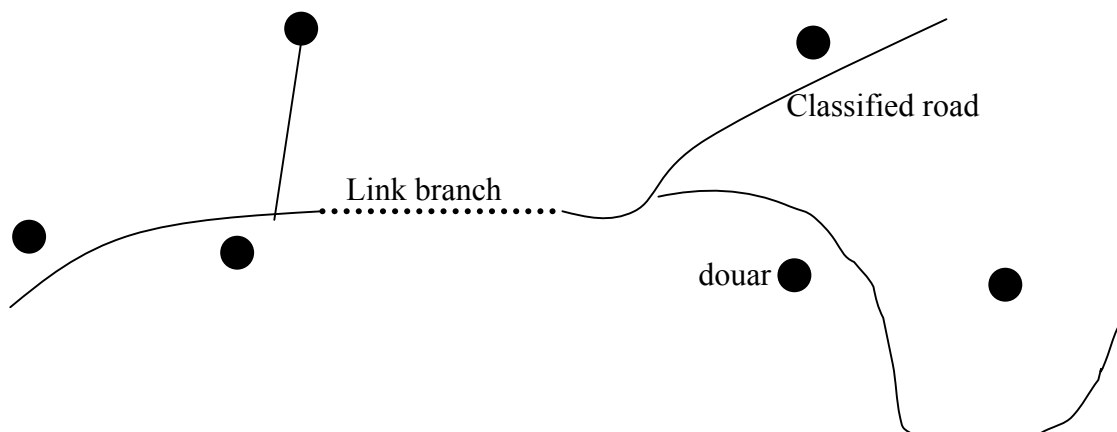
The principle consisted in joining every douar to a track of road network interconnected (including classified, unclassified, paved and unpaved). So every douar has at least an itinerary (strategic itinerary) driving to the necessary social, economic and administrative services since themselves situated in localities were disserved by the interconnected network.

Seuils¹ defining the douar and its servicing " that has been adopted are:

- Doorstep douar = 50 households
- Doorstep servicing = 1 Km

The network of tracks target is constituted then of:

- Tracks classified but non dressed (all);
- Tracks non sequenced belonging to an itinerary of link of a douar to the classified network. These tracks are completed by the " non necessary link " branches to the primary " des-enslavement " of douars but useful to the continuity of the network or for other particular reasons.
- Non-existent " links currently, necessary to the tie of douars to the present network (classified and unclassified) and whose length passes the above-stated admissible doorstep (1 km).



(1): doorstep douar = minimal households considered to be disserved by the network

doorstep servicing = maximal distance between the douar and the nearest road or piste which disserves the douar.

The gait that has been used for the definition of the track network, based on the principle, describes here before, included the following stages:

A - Establishment of a digital data base and cartographic (SIG) by province, showing,:

- Douars with their features:
 - Number of inhabitants;
 - Number of households;
- The road infrastructures, while distinguishing:
 - " Level: donned or no;
 - " Ordering: RN, RR, RP, NC,;
 - " Length

B - Pre-Identification of the NC tracks. This work has been done while respecting following stages:

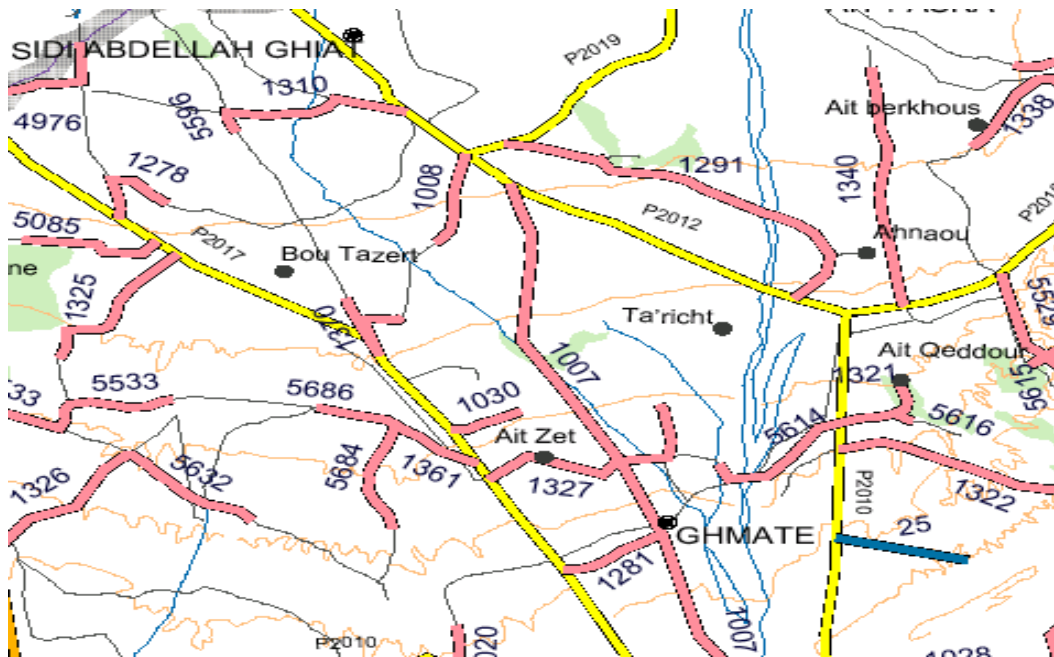
- a) Census of douars judged gone against by network classified (it is kept the principle according to which all douars being to less than 1 km from a road or a track classified and disserved by the network);
- b) Identification for every remaining douar of an itinerary (constituted of existing tracks or tracks to create) connecting it to the classified network, the principle of this identification being founded on some criteria:
 - Optimisation of the linear global of tracks to keep,
 - Predilection for the existing tracks (to the detriment of those to create),
 - Choice of tracks having made the object of requests formulated at the level by representatives of populations local,
 - Favorisation of the displacement toward chiefs - places,
 - Selection of roads donned non classified to character of des-enslavement.
- c) Verification, adjustment and constituted data validation. This operation has been done by the slant of a set of meetings (1 meeting by DPE) at the DRCR. After each meeting the network targets concerning the province (classified network + unclassified network + tracks to create) is adopted definitely.

3 - INVENTORY OF TRACKS

Once the network targets decree, this network has been presented on maps by province.

Information presented on these maps are:

- The administrative limits of the province concerned;
- The different douars having more than 50 households, materialized by a number,;
- The classified tracks;
- Tracks to create,
- Some reference marks: paved roads, forests, oueds.



Face 1: extract of an example of map presenting the network targets

Tracks in pink correspond to tracks them non classified of the network targets

Tracks in blue correspond to tracks to create

The classified tracks are those whose number is preceded by a letter (N or R or P)

For the purpose of the investigation of land a form of investigations has been established and has been included the applicable deals permitting to characterize the piste (localisation, relief, physically width, coating, type of soil at a time...) to give an idea on the level of service offered users (number of month of cuts, and conditions of circulation) and in short to show the socioeconomic interest of the track (present traffic, socio - administrative services went against and economic activity in the zone gone against by the track investigated).

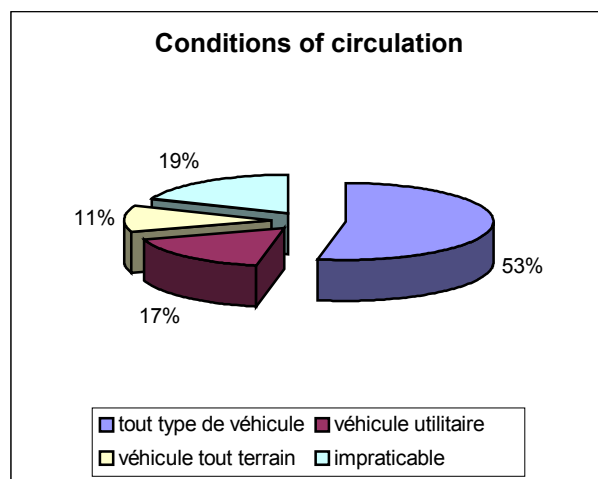
The global length of the network inventoried rises to 48210 km of des-enslavement tracks of which 23910Km of tracks classified and 24300 Km of tracks non classified.

On the recorded network:

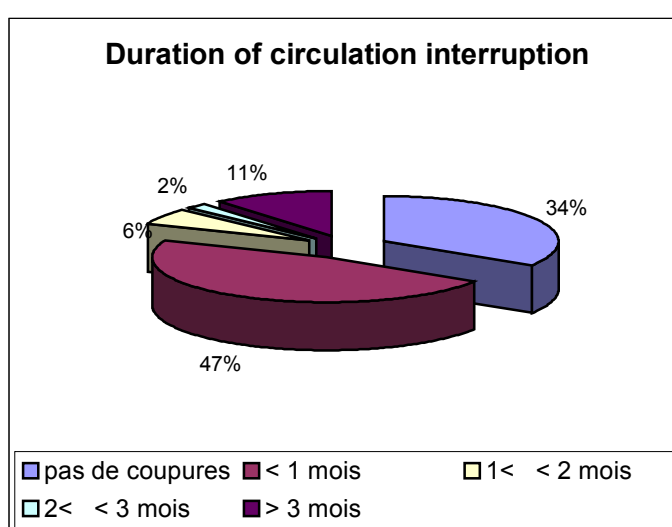
- 39654 km has been visited and has been characterized by a set of technical parameters (width, relief, type of coating, type of soil, traffic, conditions of circulation...etc) and socioeconomic (social and administrative services disserved, agricultural activity, other activities);
- 8556 km was inaccessible at the time of the realization of investigations of land and this fact, they don't have cannot be visited.

Results of investigations show that:

- 19% of tracks inventoried are impassable, 28% are circled by a commercial vehicle or by a vehicle all land and 53% are throughout circled by all vehicles.
- 19% of tracks visited are interrupted for more than 30 days per year.



Face 2 - Distribution in length of tracks inventoried according to conditions of circulation



Face 3 - Distribution in number of tracks visited according to duration of circulation interruption

4 - IDENTIFICATION OF NEEDS OF TRACK IMPROVEMENT

The methodology of identification of needs of track improvement took the applicable parameter use that is the population and the accessibility as a basis. The term accessibility regroups conditions of circulation bound directly to the state of the platform at a time (type of vehicles can circulate there) and the everlastingness of the circulation.

Two levels of analysis have been considered:

- The 1st level considers the network of tracks globally (and not the individual track) and intend to improve the accessibility to the scale of the province. This provincial analysis is made by the slant of an accessibility rate taking in account the population and the servicing of this population. The rate of accessibility permits to sequence provinces between them and can also act as system of ponderation for distribution between the different provinces of the effort to agree to improve the present situation concerning des-enslavement of the rural population.
- The 2nd level of analysis permits to sequence tracks of a province data, in order to select most important while taking account of the part coming back to this province in the global effort to agree.

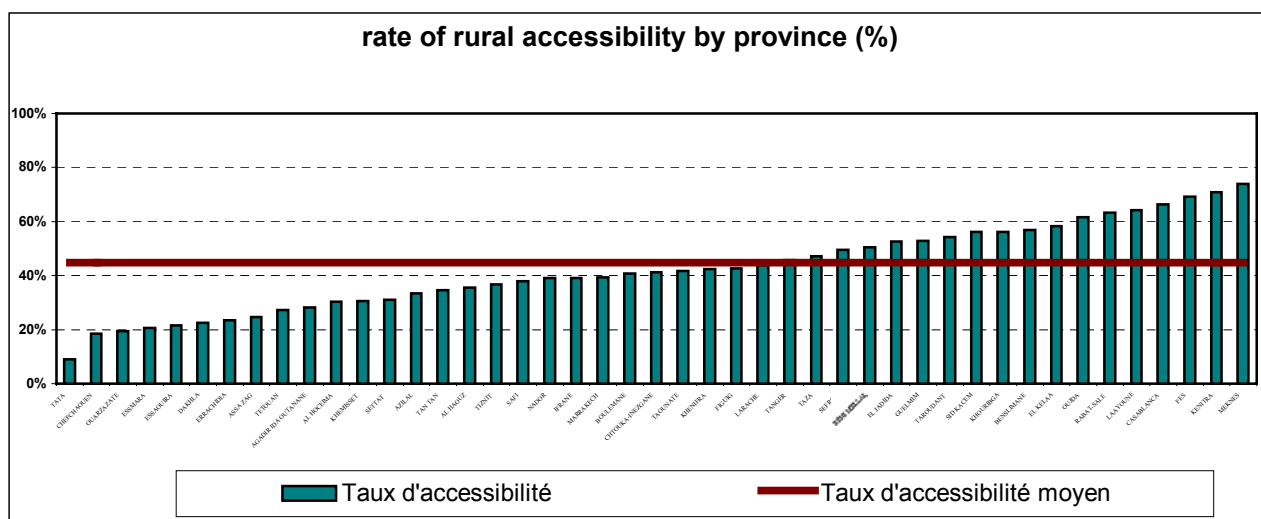
The rate of accessibility of a province Pi has been defined as:

$$TA(Pi) = \frac{\text{rural population disserved by paved roads} \oplus \text{rural population well disserved by unpaved roads}}{\text{rural population (Prd)}}$$

A population is considered well disserved by a track when this road respect the following conditions:

- No interruption of circulation
- track circled throughout type of vehicle or solely by a commercial vehicle
- no clay in support soil

The application of this definition of the accessibility rate to the set of roads succeeded to a middle accessibility rate to the national scale that has been valued in 2001 to 44,7%. rates of accessibility gotten by province are very disparate and vary between 8,9% and 74%. They put currently in evidence the existing important gap between provinces concerning rural accessibility.



Face 4 - Rate of rural accessibility by province(en%)

According to the objective that is fixed for the level of the accessibility rate to the national echelon it will be thus, possible to identify a hierarchized set of tracks and distributed between provinces whose planning will be necessary to reach this objective. In a first stage one proceeds to a balance between provinces concerning accessibility while permitting to showing a deficit among them to reach at least the national middle rate either 44,7%. once this done work, one acts then on the set of provinces to reach the objective fixed to the national echelon.

The hierarchization of tracks takes place by province as taking the criteria mainly as a basis carves the gone against population.

Results of this hierarchization will serve to elaborate a national program of des-enslavement of the rural world that should start from the year 2005. The objective of the realization of this program of which the linear adjoins 11000 km is to reach a rate of national accessibility of 71,4% on the horizon 2010.

5 - CONCLUSION

The gait described previously for the scheduling of the rural accessibility in the Moroccan context is based mainly on an objective to assure a comfortable access to the essential rural household services contributing to the improvement of their well-being thus. She/it permits to reinforce the social role of the road that was therefore during considered a long time like a public service.

Results of the application of this gait permitted to value the level of present enclavement of the rural populations on the one hand and on the other hand to define and to hierarchize needs to reach the wished objective accessibility rate.

REFERENCES

Actualization of the improvement survey and maintenance of no paved roads (2002) by CID - Morocco.