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TITLE: Rural Access Index: A Key Development Indicator

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ABSTRACT

This paper describes the Rural Access Index (RAI), a headline transport indicator which highlights the critical role of access and mobility in reducing poverty in poor countries. The Index is part of the Results Measurement System for IDA 14. It is defined together with the official method of measurement which is on the basis of locally representative household surveys.

Current estimates indicate that some 900 million rural dwellers worldwide do not have adequate access to the formal transport system. Initial values for more than 30 IDA[1] countries show the overall level of access to be 57% for the rural population. Within this group, access is worst for the Sub-Saharan Africa countries for which the average RAI is 30%. For a selection of non-IDA countries the average value of access is nearly 90%.

The preferred measurement of RAI is from household survey results. A draft transport module is proposed for household surveys and the resources required to establish and update the measurement are estimated. Alternative methods of measurement and estimating techniques are outlined in case there is no ready prospect of undertaking a suitable household survey.

Three applications of the RAI are described: for the Africa Region, at the provincial level in Vietnam and to illustrate equity issues in Nepal.

The challenges for extending and updating the Index are summarised, together with the resources which have been developed to tackle these. Contacts are provided for those resources.

INTRODUCTION

Purpose of the Rural Access Index

The World Bank Infrastructure Action Plan (World Bank: July, 2003) emphasises the importance of helping borrowing countries to strengthen data in their infrastructure sectors. The Transport Sector has responded through the Transport Results Initiative[2]. This includes identifying a small number of key diagnostic measures which have particular significance for the sector in contributing to the wider development process. These are considered to be headline transport indicators .

[1] IDA: International Development Association, World Bank Group
[2] www.worldbank.org > topics in development > transport > transport results measurement

This paper describes the establishment of the Rural Access Index, one of several Transport Headline Indicators endorsed by the World Bank Transport Sector Board in 2003. The index has been adopted for the Results Measurement System (RMS)[3] of the 14th round of the International Development Association (IDA-14) which was launched on July 1, 2005. The Index was developed in response to the consensus led by borrowers that it identifies an important priority for poverty reduction strategies (PRSs) in view of the established links between physical isolation and poverty. This provides stronger linkage to the Millennium Development Goals (MDGs) and better assesses the contribution of IDA assistance to the sustainable development of the beneficiary countries.

The Rural Access Index provides a consistent basis for estimating the proportion of the rural population which has adequate access to the transport system. It can help to inform policies and strategies which ensure that the rewards of development are distributed more equitably to the rural population.

Poverty and Isolation

Physical isolation is a strong contributor to poverty. Populations without reliable access to social and economic services are poorer than those with reliable access. Problems of access are particularly severe in those rural areas which are distant from roads that carry motorized transport services on a regular basis. Roughly half of the world population, and 70% in the IDA countries, are rural dwellers (WB, 2005). On the basis of current values of RAI it is estimated that about 900 million rural dwellers in developing countries, the great majority of them living in IDA countries, are without reliable transport access. The large majority of these people are poor as defined for the MDGs. The lack of reliable transport systems in IDA countries, mainly in rural areas, has compelled households to spend significant time traveling in order to meet basic needs. Studies in two areas of Tanzania, for example, revealed that a major portion (on average 40 to 50 hours) of the total weekly time available to each household was spent on transport (WB, 2003). Usually this time burden is distributed inequitably within the household. In this case, women were particularly overburdened taking responsibility for about 80% of the time cost (WB, 2003).

Rural Access Index and MDG: Transport is not specifically identified in Millennium Development Goal targets, but it makes key contributions to achieving many of the Goals—underpinning pro-poor growth and improving social inclusion. Surveys show that poor people recognise isolation as a major contributor to their poverty and marginalisation. In practice, improving access to transport for rural men and women in low income countries is considered essential to promote rural development, to increase uptake of human development services (educational and health), to facilitate inclusion of different ethnic and other groups, to improve employment opportunities, and to stimulate growth for poverty reduction. Fan and Chan-Kang (2005) examined the factors which contributed to the exceptional growth and reduction of poverty in China during the past thirty years. They concluded that, whilst the rapid introduction of the expressway network did play a part, the much shorter lengths of low standard feeder roads played an important part in growth and poverty reduction, achieving about 4 times as much benefit/cost ratio as did the expressways. Similarly Gannon and Liu (1997:11) contend that improved transport contributes not only through enabling better access to services and opportunities, but also by lowering the transport costs incurred in delivering such services and opportunities.

Equity and Development: The Rural Access Index also helps to address the issue of equity which is an increasing focus of the international development community. The World Development Report (World Bank, 2005) explores the relationship between equity and development strategy and makes the issue of equity central to "poverty-reducing" development. A previous World Development Report points out that the affordable access to

[3] The RMS involves measuring a set of indicators which capture key aspects of the development of 81 countries which receive IDA concessional assistance (IDA, 2004).

services is low, especially in many of the poorest countries, with poor people needing to travel much further to reach basic services such as health and education, than richer people in the same country (World Bank:2003). As an example, the Report notes that in rural Nigeria, children from the poorest quintile of the population need to travel more than five times farther than the children in the richest quintile to reach the nearest primary school.

Impacts of improved Rural Access: Change in rural access has differing impacts on various sections of the population. In particular, the socioeconomic impact of increased access differs by gender, by age groups, by different caste/ethnic groups, and by income. For example, improved access potentially increases men's migration, and may result to increased workload on women in the farm and household. Similarly improved motor access brings consumption goods nearer to households, but affects rural artisans and those residents whose livelihoods depend upon portering. For policy makers, this underlines that transport interventions often need to be coupled with complementary policies if all socially and economically disadvantaged households are also to reap the benefits of improved access.

Conceptual Shifts

The Rural Access Index helps to address the issues mentioned above by changing the way the outputs of investment in the rural transport sector are measured. The shift in the form of measurement is threefold - what to measure, where to measure and how to define what is being measured. The indicators which have been generally used to report progress in the transport sector have been based on characteristics of the road network such as the length or density of different categories of roads (paved and gravel roads, urban, feeder roads and national highways, etc). Such measures do not give a clear picture of the transport access level available to the rural population since they do not relate the provision of transport facilities to the location of the target population. Thus the first important conceptual shift has been to measure the accessibility of the target population to the road network, rather than simply some aspect of network size.

Corresponding to this has been the second conceptual shift, which is in the measurement units used to study the impacts of changes in transport infrastructure. Thus, rather than focusing on an administrative unit and assuming that all households within the unit have the same level of access to the transport network, the definition of RAI enables more detailed measurement - that is, at the household level. This approach can capture how access to transport services relates to household characteristics.

The third shift is that the definition of the index provides a common international basis for understanding rural access as it relates to transport. However, detailed interpretation of the RAI for any country must be set in the local context.

Further, by providing information on rural residents' differential access to the all-season road network, the RAI helps planners to devise policies and projects to meet specific rural access objectives. RAI thus provides an objective basis for governments to set transport sector goals, and to establish investment priorities for improving rural access.

RAI and Integrated Rural Access Planning: The conceptual shifts noted above are also consistent with the objectives of Integrated Rural Accessibility Planning (IRAP). Rather than measuring accessibility to and from villages, RAI focuses on the level of access from the perspective of each household or settlement within the villages. The goal of IRAP is to identify the needs and priorities of rural communities, and it does so by collecting data at the local level. The approach is designed to assist existing planning procedures. Specifically IRAP provides the inputs to prepare District Transport Plans and other integrated plans at the sub-national level. The RAI is being used for similar purposes (allocation of resources) at the provincial level in Vietnam. In this context, the service oriented IRAP process can be complemented and informed by the household-based RAI - so that the combined approach can significantly enhance the quality of accessibility planning.

Definition of RAI

In practice the RAI measures the number of rural people who live within two kilometers (typically equivalent to a walk of 20-25 minutes) of an all-season road as a proportion of the total rural population. An "all-season road" is a road that is motorable all year round by the prevailing means of rural transport (typically a pick-up or a truck which does not have four-wheel-drive). Occasional interruptions of short duration during inclement weather (e.g. heavy rainfall) are accepted, particularly on lightly trafficked roads.

Some sections of the population (the elderly, the disabled or those carrying heavy burdens) may find that even distances of less than one kilometer present a significant barrier to access, particularly under extreme conditions of terrain or climate. On the other hand, in many remote situations (such as the hills of Nepal or remote areas of rural Africa) people may be accustomed to walking many kilometers in order to reach formal transport services. Alternatively they may manage without using such transport at all. The choice of two kilometers as the defining distance for 'adequate access' is a compromise between these extremes. This establishes a consistent definition of the Index, enabling aggregation (on the basis of population weight) of the values for target populations.

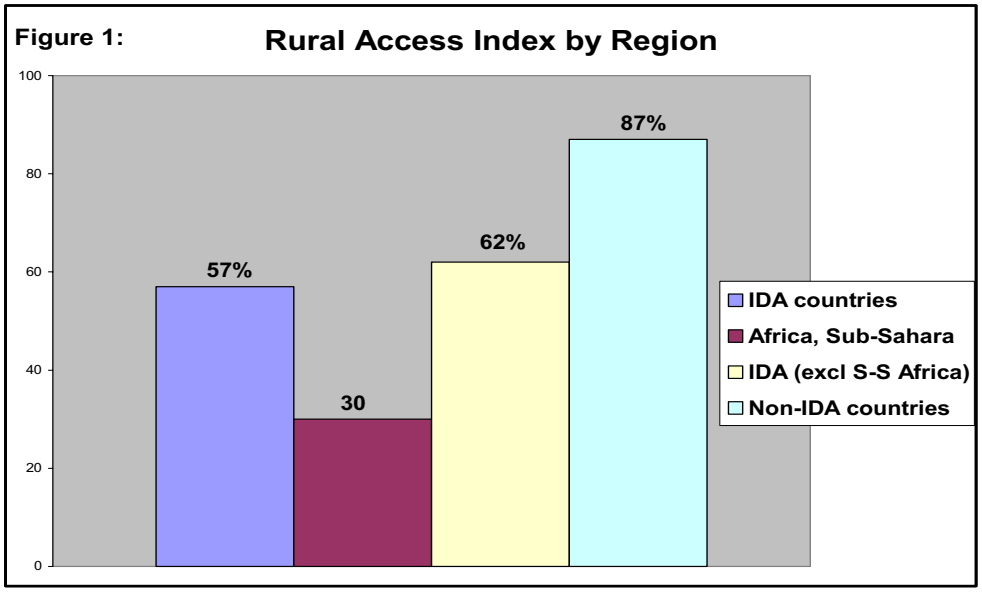
The specific emphasis given to roads in the definition of the index reflects the importance of road transport for improving rural access for the great majority of rural people in most low income countries. In those situations where another mode, such as water transport is dominant the definition can be modified to reflect that. If this is done, then the fact should be explicitly recorded against the resulting RAI value.

RURAL ACCESS INDEX

Values and Aggregates

Results for thirty two IDA countries[4], representing 88% of the total rural population in all IDA countries, show that on average 61% of rural dwellers have access to the transport network. The graph also shows a significant difference between 'IDA' and 'IBRD' countries[5]. For thirty one non-IDA countries (representing 81% of the total rural population of all IBRD countries) the RAI value is much higher at 87%.

Figure 1:



[4] Albania, Azerbaijan, Bangladesh, Benin, Burkina Faso, Burundi, Cambodia, Cameroon, Chad, Ethiopia, Gambia, Ghana, India, Indonesia, Kenya, Lao PDR, Madagascar, Malawi, Mali, Mongolia, Nepal, Nicaragua, Niger, Nigeria, Pakistan, Papua New Guinea, Tajikistan, Tanzania, Uzbekistan, Vietnam, Yemen, Zambia.

For twenty four IDA countries in the African region, representing 76 % of the total rural population of the region, the aggregate RAI is 30%. For four IDA countries in the South Asia region, representing 96 % of the total rural population of the region, access is 58%.

The Rural Access Index is designed to respond to borrowers' priorities and to be measurable for a 'critical mass' of IDA countries. In establishing this indicator, therefore, priority has been given to the countries with the highest populations. Priority has also been given to those countries with the larger land areas for which rural access is likely to be particularly relevant. The current values of Rural Access Index summarised by region are given in Annex A.

Sensitivity to Change

To date there are only a few countries for which we have for more than one set of household data results to determine in detail how the RAI changes over time.

An analysis of preliminary measures for Vietnam with time-series data (during the period of 1997-2002) indicates how the indicator can change over time. In Vietnam, RAI has increased from 73% in 1997 to 76% in 2002. Both figures are based upon similar LSMS-style[6] surveys. We can see a clear increase in rural access equivalent to an average rate of improvement of about half a percent per year. This reflects the development activity which responded to the government's priority. Limited time series data from two other countries show slower rates of change.

Measurement and Reporting

The preferred approach to measuring this indicator is by analysis of household surveys that include appropriate questions about access to transport. The aim is to integrate this with the measurement of household characteristics including income and access to other services such as clean water supply. All of the surveys completed to date which include a suitable question on access to rural transport have been analyzed to calculate the initial values of RAI. The design and conduct of such surveys is costly and time consuming. Thus, although this is actively encouraged as an important requirement for all borrowing countries to monitor their progress in poverty reduction, it will take at least two or three years before the results of any new survey will be available. However, there are a number of surveys already established in which a question or short module on access to transport could be incorporated at a modest marginal cost.

Where suitable surveys of households and individuals exist, these are the most cost-effective way of obtaining information on rural access (IDA, 2004). The Index has been established using this approach for the majority of the 32 IDA countries for which it is available. Data from LSMS and similar household surveys which were carried out between 1994 and 2003 has been used for the calculation. Apart from the LSMS these surveys are Income/Expenditure Household Survey (IES), Poverty Survey (PS) and Core Welfare Indicators Questionnaires (CWIQ). The surveys are designed to produce high-quality data and be representative for the main segments of population (thus, the main subgroup 'rural population' is adequately covered).

With the establishment of this headline indicator, there are several key challenges for extending and maintaining the Rural Access Index over the coming two to three years:

- Establishing a current value for those countries for which the index has not yet been derived;
- Updating the value of the index in each country at intervals of not more than three years or so;
- Complementing the index with related information which enhances understanding of its significance

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5 International Bank for Reconstruction and Development, World Bank Group

6 LSMS: Living Standard Measurement Surveys

Updating

Updates of the indicator will largely depend on the frequency of household surveys. However, only a few of the surveys are carried out on a regular basis. Of the 30 countries where LSMS surveys had been carried out by 2003, for example, 19 countries had only one survey completed until then (World Bank 2003). Even with the emphasis which the IDA RMS and other initiatives place on strengthening data collection in low income countries it will be a slow process initially to increase the number of countries for which Rural Access Indices can be based on household surveys.

For this to be done on a sustainable basis, national institutions must be involved and encouraged to take ownership of the processes to measure RAI. In this regard, the Bank is raising awareness of the significance of the index for capturing differences in performance between countries. The central Transport Unit is contributing guidance on relevant rural access questions for household surveys to strengthen the effectiveness of the responses. Three consultation workshops on Transport Results held in Nairobi (2004), Washington DC (2004) and Colombo (2005) were able to draw valuable participation from a wide range of governmental and bilateral organizations. These workshops reviewed current experience in collecting and applying core measures and exchanged interim findings in collecting data and formulating indicators. The overall approach was endorsed in these workshops, including the value of headline transport indicators in general and of the RAI in particular.

Along with involving stakeholders, there is the need to "intensify support within Country Assistance Strategies (CASs) and IDA projects for improving the statistical capacity of member countries and to work in partnership with other agencies to strengthen the international statistics system" (IDA, 2004). This includes helping beneficiary countries to develop the capacity to conduct, analyze and report such surveys on a regular basis. It is planned that the Rural Access Index will be reported in the 2006 edition of World Development Indicators.

Costs to establish and maintain the RAI

For countries with national household surveys which include questions that permit the RAI to be estimated, the marginal cost of producing the indicator is generally up to one day of experienced statistical input. Where there is a suitable survey which does not include a relevant question, there will be a one-off cost to negotiate, design, test and incorporate such a question. This cost is estimated to be up to a week of technical input (which will probably be spread over a much longer period of elapsed time) in addition to the cost of analysis. Where there is not yet a suitable household survey it will be necessary to estimate the RAI in the first instance by a sample mapping technique as described below. The input for this is estimated to be about one month of analysis for each estimate of the indicator, provided that the necessary data on the location of roads and of the rural population is available.

Alternate Procedures to Estimate RAI

As the Rural Access Index is incorporated in the IDA 14 Results Measurement System it is important to establish initial values of the RAI for all IDA countries for which no relevant household survey based data are yet available. Where the necessary geographic information system (GIS) or other map data is available this can provide a good estimate of the RAI.

The values of RAI estimated from national household survey results have been supplemented by estimates for some other countries which have been derived by different methods. These essentially involve working with representative sample area data with layers of the road network map and the population map to determine how many people live within the specified catchment of the road network. Sometimes the data is available within a GIS

and may be processed electronically. In other cases all or some of the data (usually the location of the roads) may only be available from graphic maps or aerial photographs.

Estimating Models

In the absence of such data a 'best estimate' of the Index can be made in consultation with specialists having the necessary country experience. In this regard, two methods, namely Quick Accessibility Mapping and Network Models, are proposed to arrive at some broad estimates of the Rural Access Index for a given rural population, land area and length of road network. These estimates are provisional and must be replaced once measures are calculated based on household survey (or GIS data).

Two network models - namely the Random Road Network Model (Hine, 1984) and the Square-Grid Model - are proposed to arrive at broad estimates for Rural Access Index. For those countries where we do not know precisely how roads are located in relation to the people, we need to make assumptions about the road network and population distribution patterns. Both models calculate access as a function of the length of road network, habitable land area, distribution pattern of roads and the distribution of population as follows:

Access= f [(length of road network) * (habitable land area) * (distribution of roads) * (distribution of population]

The models utilize two of the variables which are most readily available in time series for many countries - the road length and the arable land area. Some assumptions are made about the habitable areas of a country and distribution of roads within the habitable and non-habitable areas. The results of calculations based on these models are given in Annex C.

Quick Accessibility Mapping

This is a simplified version of a full GIS-based measure. The "quick map" is prepared by overlaying the road map on the topographical country map. The RAI is determined on the basis of an informed approximation for the population distribution of the country in question. One example of such an exercise was carried out in Nepal by overlaying, the all-weather Road Map and Village Development Committee[7] (VDC) map on the Topographical Map of Nepal (Shah, 2004). The population of a whole VDC was assumed to be concentrated at its center on the basis that more than 50% of the population is concentrated at the VDC center. Obstacles in the form of hills and rivers, necessary relief for contour and detour distance for river crossings were taken into consideration.

Thus was calculated the percentage of population having accessibility to nearest all-weather road in terms of walking time. Based on this procedure, it was estimated for 2004 that on average 41 % of the overall population had access to the nearest all-season road within 30 minutes. This compares reasonably with LSMS (2003/2004) estimates of 37% of the overall population having access within 30 minutes of paved roads. The quick mapping procedure also showed variation between the access level in the Mountains/Hilly and Terai (flat) regions where this ratio was found to be 28 % and 56% respectively.

HOUSEHOLD SURVEY OF ACCESS TO TRANSPORT

Proposed Transport Survey Module

While some information on household accessibility is available, review of existing multi-topic household surveys reveals the lack of a consistent transportation questionnaire module in

[7] The VDC is the lowest political unit in Nepal with a population numbering about 4000.

these surveys. Often any questions related to rural access are included under the community module. Such inquiries treat the community being surveyed as a single unit, which does not allow measurements of variations among households. This generally results in an overestimation of access. There is also a lack of uniformity in rural access questions across various surveys.

A Transport and Access Module has been prepared for field testing to be included in multi-topic household surveys of the LSMS type. This module builds on substantial background work by Baker and Denning (2005), as well as on the community transport module developed by Frankenberg (2000), and on some specific transport modules such as those included in the Guatemala Living Standard Survey (2002). The proposed module is based on an accessibility framework adopted by ILO (ILO/HMGN:2003). It brings transport and access related questions into a single module (3 sections and 3 pages), as is presented in Annex B.

Measuring Time and Distance

In household surveys, data on travel time and distance is usually collected through face-to-face interviews of randomly selected households (or individual members of households). This data is influenced by a variety of factors, such as travel purpose, transport mode used, trip route, characteristics of terrain, etc. Moreover, the data collected is susceptible to subjective variation, as it is based on reports of perceptions rather than on observations of events.

Furthermore the accuracy of these surveys depends on the memory of the respondents. There are various considerations such as deterioration of recall over time, the tendency to 'round up' responses and variation in recall with personal characteristics of respondents. Additionally, estimates of time and distance and the relationship between these are likely to be influenced by individual and cultural factors. This may be particularly significant in those areas of developing countries where time measurement devices and the metric unit of distance (i.e. kilometers) are not commonly used and comprehended by rural dwellers.

A field survey exercise has been designed to improve the understanding of people's responses to questions about the time or distance of their travel. This compares subjective reports by individuals of their travel time and distance with the corresponding objective measures. Initial surveys for this exercise have been carried out in rural Albania (in cooperation with the government survey department INSTAT) and Tanzania. Similar surveys are planned for other countries (including in Vietnam, Laos and Cambodia with the financial support of DFID).

The results from Albania showed quite close correlation between the reports of time and distance as well as between the reports and objective measurements of both. The expected variations in relation to age and terrain were confirmed to a limited extent.

The survey in Tanzania indicated a fair correlation between estimated and measured time but a very weak correlation for distance. In addition, a high degree of over-estimating was observed for both time and distance, with over 60% of the estimates being more than twice the actual distance.

Initial indications from these surveys are that questions about 'time' rather than 'distance' may generally be more reliable and informative in respect of physical access. However, preference should be given to established local practice where this is proven to be working well.

APPLICATIONS OF THE INDEX

Some countries and regions have started to extend use of the RAI beyond being a headline indicator which focuses on a key development issue and it being incorporated in the IDA-14 RMS. Three cases are described below.

Regional Rural Access Targets

The Rural Access Index has been used, together with other headline transport indicators to strengthen the relationship between the Millennium Development Goals and the broad response of the Transport Sector in Africa. This is set out in a report prepared for a meeting of the Africa Transport Ministers (Africa Union, April 2005) and is summarized in a Table in Annex C. The headline indicators constitute high level targets for the transport sector which link the direct interventions of the sector to their significant impacts on the MDGs.

The Table shows that, for Africa, improvement in rural access is a key requirement for achieving a number of the Goals – in particular to halve poverty and hunger, increase access to education (especially for girls), reduce maternal mortality and improve child health.

Sub National Analysis

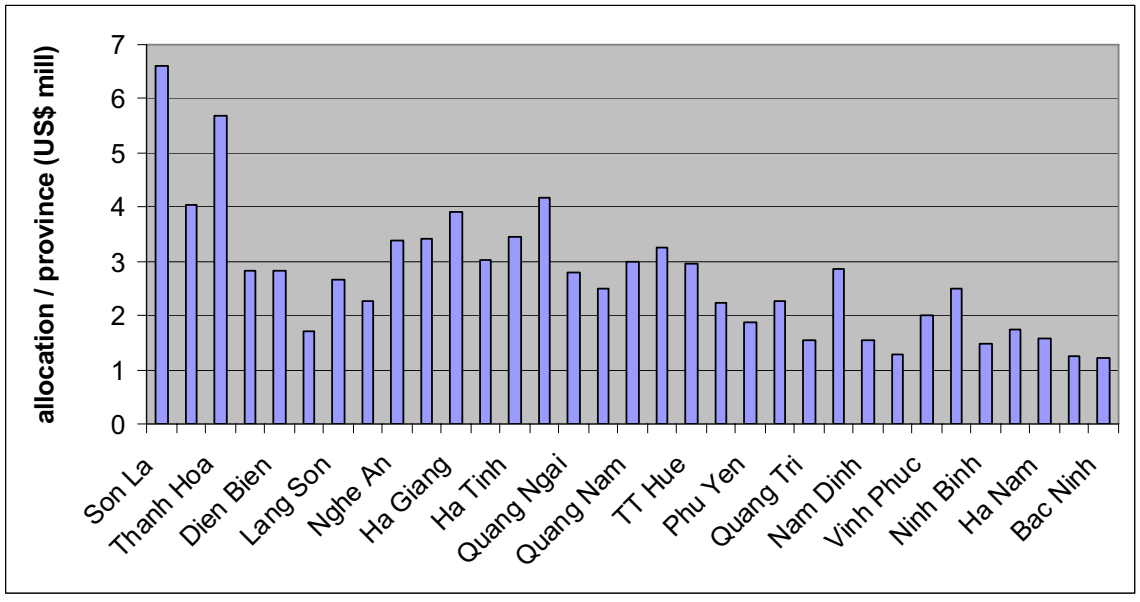
The Vietnam Living Standards Survey was carried out in 1998 and repeated in 2002. The General Office of Statistics is now required to repeat the VLSS every two years to monitor progress in implementing the national Comprehensive Poverty Reduction and Growth Strategy. The VLSS was conducted again in 2004 with the results being due to be published by mid 2005. The survey is designed to be representative at the Provincial level – there are 67 provinces in Vietnam. On the basis of the 2002 survey the Rural Access Index has been estimated for each Province. These estimates show a close correlation between the lack of rural access and the level of poverty in each province.

The Government is working with the World Bank and DFID to establish a protocol for allocating national resources amongst the provinces with the poorest basic access in support of the CPRGS (full form). The algorithm for this is shown below:

allocation = ***base*** + *f* (***poverty rate***) * (***population***) * (***lack of access***)

Figure 2, illustrates the application of this algorithm to 33 provinces in Vietnam with poor levels of basic access. Lower allocations for some of the higher priority provinces reflect the smaller populations of those provinces.

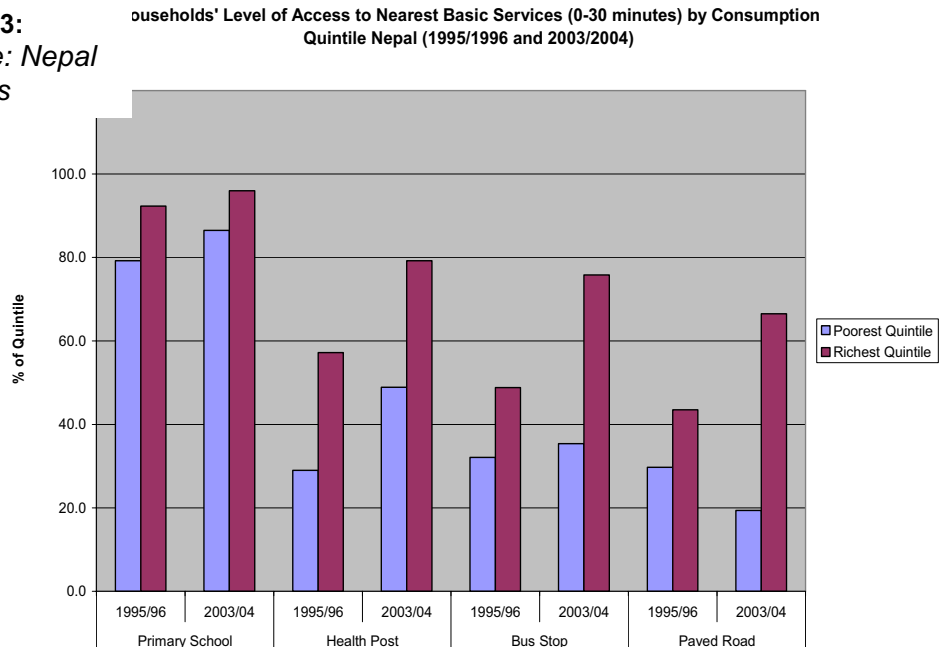
Figure 2: Indicative allocation of resources between Provinces with poor basic road access (the provinces are shown approximately in order of increasing need – from right to left). *Source: Presentation by Peter Roberts*



Equity in Change of Access

An example from Nepal clearly demonstrates where improvement in access to basic facilities over the past decade was less favorable for the poor. Although households' overall access to basic services in terms of time required to reach the service-points has improved for all services between 1996 and 2003, the proportion of households in the richest quintile with access to key facilities within 30 minutes exceeded those in the poorest quintile by from 11% to 28% in 1996, and from 10% to 47% in 2003 (Fig. 3, Nepal CBS: 2005).

Figure 3: *Source: Nepal Census*



Similarly, urban dwellers have a far better access to basic services than do rural households, with the difference ranging from 10% to 60% (Fig.4). It is evident from these observations that there is considerable inequality in the level of access to the transport system amongst different groups of people, and that a large portion of the world's population is still excluded from such services and opportunities. In this context, the Rural Access Index shows the very low levels of effective access to the transport system for rural residents in the poorest countries and regions. By doing so, it points to the need to ensure that the rewards of development are more equitably accessible to the rural population.

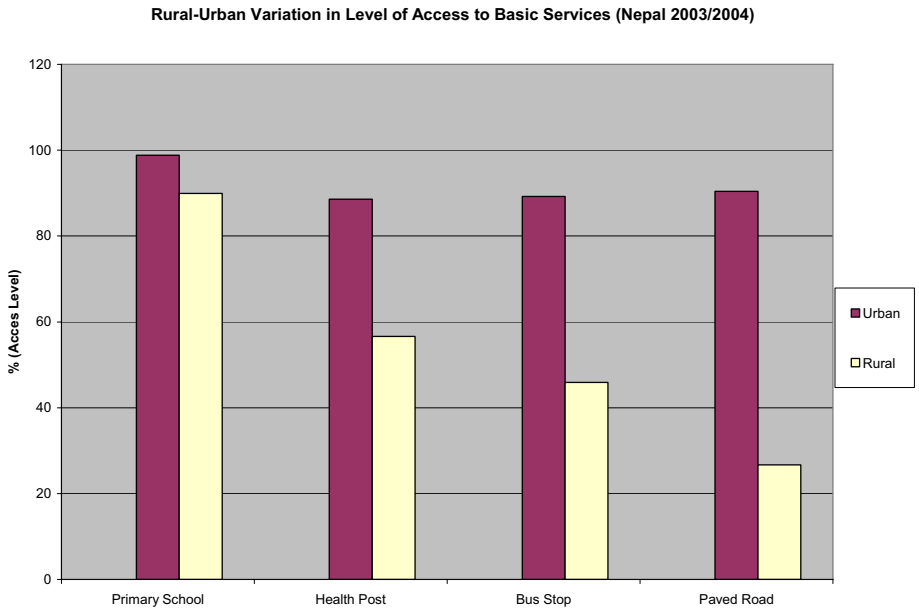


Figure 4: *Source: Nepal Census Bureau*

PRIORITIES FOR ACTION

The essential challenge now is for countries to mainstream and sustain the Rural Access Index in routine monitoring at the national and sub-national levels. Some priorities are summarised below. The World Bank is ready to assist such activity. Members of the PIARC Technical Committee or their colleagues may make contact through members of the Bank's country team or directly with Peter Roberts, leader of the Transport Results Initiative (proberts@worldbank.org).

Ensure that the RAI is monitored

Countries which receive IDA assistance will be required to report change in the value of the Rural Access Index as part of the IDA-14 Results Measurement System. The responsibility for this will fall to the National Bureau of Statistics which has to ensure that there is an up to date value of the Index by including the appropriate question in a LSMS-type survey. Where it is impractical for this to be done before the end of 2006, a 'current value' should be estimated on the basis of available data for the all-season road network and the location of the rural population.

The RAI value or estimate should be determined in consultation with the relevant sections of the Ministry of Transport and of Agriculture and/or Rural Development to ensure that it is integrated with the planning of those ministries. The aim should be to establish a data framework which is sufficiently detailed to determine the Index for different income categories and for sub-national planning units of the country.

Measurement of the current RAI value should be updated at least every three years, together with the other indices which are based on household survey data.

Extend ownership of RAI.

Those non-IDA countries which recognise that improving physical access and mobility is an important priority for the rural population can use the RAI as a tool for informing policy and guiding resource allocation. The Index offers the advantages of an internationally established definition, supported by a standard measurement process, related protocols and benchmark values.

Implement applications and studies for RAI

International reporting of the Index needs to be complemented locally by established applications for analysis with related measures to set it in the context of prevailing priorities and constraints. Studies of time and distance perceptions for household travel will also contribute to better understanding of local priorities for access and mobility.

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ANNEXES

Annex A: Summary of Rural Access Indices

Annex B: Transport and Access Module

Annex C: AFRICA: Transport Targets and Indicators related to the Millennium Development Goals (MDG)

Summary of Rural Access Indices

Annex A

Region	total rural population	sampled rural population				
		total		with access		without access
	million	%	million	%	million	million
Africa, Sub-Sahara	450	76	342	**30**	104	238
Asia and Pacific	1,118	92	1,024	**94**	967	57
Europe and Central Asia	172	67	115	**75**	86	29
Latin America & Caribbean	125	41	52	**54**	28	24
Middle East & North Africa	125	31	39	**34**	13	26
South Asia	1,025	96	983	**58**	574	410
All regions	3,015	85	2,555	**69**	1,772	783
IDA countries	1705	88	1501	**57**	850	651
Non-IDA countries	1309	81	1054	**87**	922	132

IDA estimated rural population without adequate access	**740**	**million**

Non-IDA estimated rural population without adequate access	**164**	**million**

Total estimated rural population without adequate access	**904**	**million**

HOUSEHOLD LEVEL TRANSPORT AND ACCESS MODULE

DRAFT

TRANSPORT AND ACCESS MODULE : ROADS

	Q. No. >>>	1.			2.		3.		4.	5.	6.						7.	8.	9.					10.					
	We would like to ask you about the roads nearest to your home.	How far is nearest [---] from your home?			How long does it take you to reach the nearest [---] from your home?		Of the total travel time to the nearest [---], how much do you spend on walking?		Apart from walking, which is the main common mode of transport for members of your household to reach the nearest [---]?	If you pay for the transport to reach this facility, how much do you pay for a one way trip?	Have you or members of your household faced any of the difficulties listed below in reaching to the nearest [----] in the past one year?						What kind of road is it?	How many months was the road closed in the last one year?	What was the main reason for closure?					Which of the activites of your household were most adversely affected due to the closure?					
	Complete asking questions on row A before proceeding to Row B.	**Units:** **Kilometers ...1** **Others ...2** **specify unit/conversion factor here** _____ _____					**If the answer is same as for that of Q. 2 (that is, if walking is the only mode) >> 6.**		**Animals (horse, etc.) ...1** **Boat, canoe ...2** **Bicycle /rickshaw ...3** **Others, specify ...4** _____		**Yes=1; No=2** **Lack of footbridge ...1** **No proper trail ...2** **Need to stay overnight ...3** **Facility too far to walk ...4** **Weakness /disability ...5** **Others, specify ...6** _____			**Paved ...1** **Gravel ...2** **Earth ...3**	**For less than 2 weeks, enter 0** **if 0, >> next page**	**Yes=1; No=2** **Landslide ...1** **Flood ...2** **Snow ...3** **Road conditions (pothole, gaps) ...4** **Others, specify ...5** _____					**Yes=1; No=2** **Work ...1** **Access to markets ...2** **Going to school ...3** **Access to health centre ...4** **Others, specify ...5** _____				
		Distance		Unit	Hrs	Min	Hrs	Min	CODE	[currency]	1	2	3	4	5	6	CODE	Months	1	2	3	4	5	1	2	3	4	5
A.	Motorable road		.																									
B.	All-season motorable road		.																									

Please enter 9 for don't know responses

(First page of Module only)

AFRICA; TRANSPORT TARGETS AND INDICATORS RELATED TO THE MILLENNIUM DEVELOPMENT GOALS (MDGS)

MDG	Targets	Indicators
MDG 1 Eradication of extreme poverty and hunger	**Access** to inputs and markets, and generation of employment opportunities, improved by **halving the proportion of rural population living beyond 2 km of an all-season road**	Proportion of rural population within 2 km of an all season road % Reduction of travel and vehicle turnaround time % Increased productivity in agriculture and economic activities % Increase in employment opportunities and income generation from transport related activities
	The difference in average **transport cost** between Africa and Asia narrowed down by 50%	% Reduction in passenger fares (passenger kilometer) % Reduction in unit goods transport cost (ton kilometer) Level of affordability of transport cost by the urban and rural poor % Increase in the use of intermediate means of transport (IMT) Existence of sustainable financing mechanisms like Road Funds… % Increase in the proportion of roads in good and fair condition
MDG 2 + 3 Universal primary education and gender equality	**Rural access** and **urban mobility** improved to eliminate constraints on the time which all children have to participate in education and to enable effective education to be delivered and reached safely	% of schools which have reliable access % of households which report constraints on education due to: Lack of girls time for school Difficulty (cost) of access Poor quality of education service Lack of safe access to school
MDG 4 + 5 Child Health and Maternal Mortality	**Rural access** and **urban mobility** improved for reliable supply of inputs to health facilities, to provide affordable access for all households and to enable cost effective outreach health activities	% Health centers, clinics etc with reliable rural access. % of households reporting constraints on access to health services because of: Distance Cost / difficulty of travel Poor quality health service Unit cost immunization / capita Unit cost / coverage of outreach services / capita
	Emergency transport response for medical crisis in rural communities improved through community communications facilities linked to improved transport services	% Emergency patients unable to reach health care in time: Expectant or postnatal mothers Children under 5 years

MDG	Targets	Indicators
MDG 6 HIV/AIDS, malaria and other diseases	Ensure **transport sector ceases to be an agent for spreading HIV/AIDS**	HIV/AIDS Prevalence among transport sector workers (public and private) HIV/AIDS prevalence rate in transport affected communities Inter-country coordination of actions relating to AIDS in transport sector
	Rate **of road accident fatalities** reduced by half by 2015	Rate of fatality (per million vehicles-km) Number of countries adopting road safety strategies
MDG 7 Environmental sustainability	Share of urban residents for whom **mobility** problems severely constrain access to employment and essential services halved	% of households (in the various urban living environments) which report transport costs and time as major obstacles to employment
		% of households which report access as a major obstacle for essential services
	Environmental sustainability promoted in all transport operations and development programs	Environmental impact identified by audits of programs undertaken
	Production of **leaded petrol** ceased by 2010	Number of countries banning sale of leaded petrol
MDG 8 Global partnership for development	**Transport cost** for landlocked countries reduced by half and their access to global markets improved, all TAH missing links completed and existing portions of regional transport corridors maintained by 2015	Percentage reduction of missing links of the Trans-African Highways (TAH) network and transit corridors. % reduction in transport cost for landlocked countries
	All non-physical transport barriers that increase **journey time**, customs clearance, border delay and impede the flow of goods and services dismantled by 2015	Proportion of countries that have reduced checkpoints along their main transit corridors to a maximum of 3 (between port and border of land-locked country). Proportion of countries that have reduced their border crossing time to OECD average. Proportion of countries that have reduced their port clearing time to OECD average.
	Axle load limits, vehicle and **road technical standards** harmonized between RECs by 2015	Proportion of RECs with harmonized axle load limits Proportion of RECs with harmonized standards for vehicles Proportion of RECs that have harmonized road design standards
	Air transport services improved **fares reduced**, and **movement of goods and services** facilitated in all African countries by 2015	Number of new connections between African countries established. Number of products and volume of traffic of products transported by air. Percentage reduction in air transport fares.

Source: AU / AfDB / UNECA / ECOWAS / WB. April 2005