



ReCAP
Research for Community Access Partnership



Rural Access Index (RAI): Update and Next Steps

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Introduction to ReCAP

- Applied research to improve the evidence base on Low Volume Rural Roads (LVRRs) and the transport services that use them
- Funded by the UK government through DFID
- 6 year programme (2014-2020)
- £24m research budget
- Provision, preservation and access



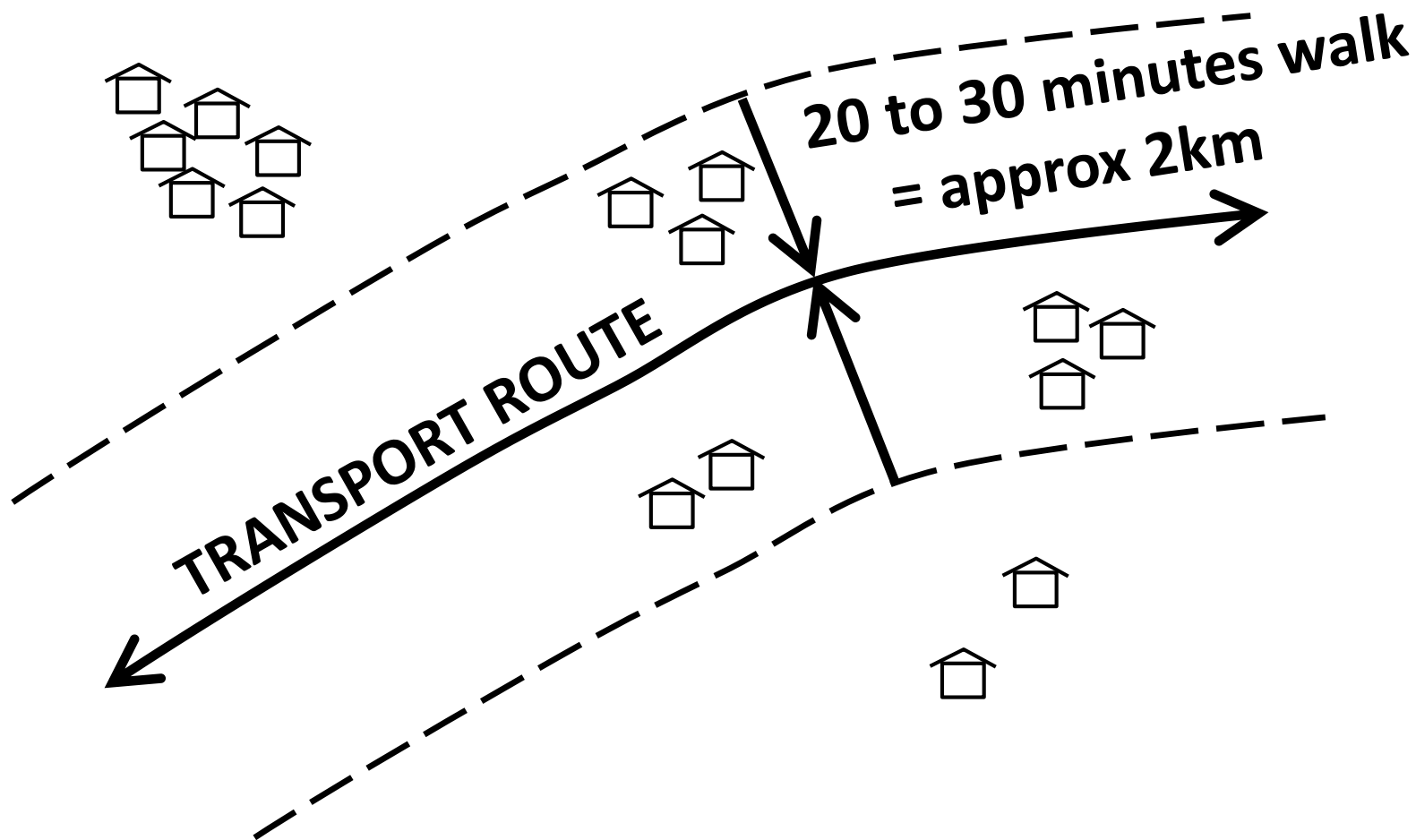
Establishment of the RAI in 2006

Definition of RAI

- **Rural Access Index (SDG 9.1.1)** = ‘the proportion of the rural population living within two kilometres of an all-season road’.

All-season = *“a road that is motorable all year round by the prevailing means of rural transport (often a pick-up or a truck which does not have four-wheel-drive), with some predictable interruptions of short duration during inclement weather (e.g., heavy rainfall) allowed.”*

The Rural Access Index (RAI)



2016 - SDG Indicator 9.1.1

SDG Target 9.1

Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.

SDG Indicator 9.1.1

Proportion of the rural population who live within 2 km of an all-season road.

World Bank is the “custodian” of SDG Indicator 9.1.1

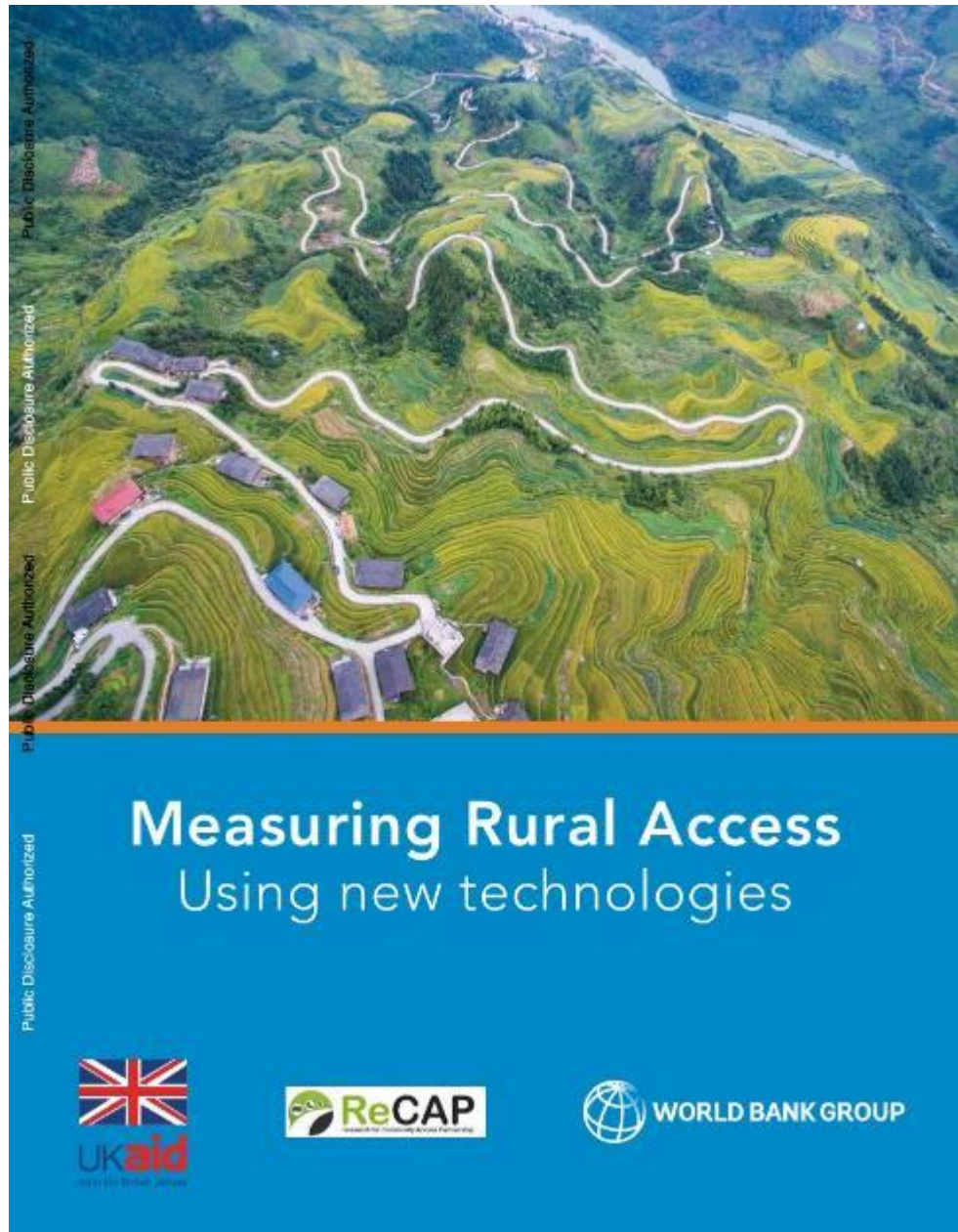
**2016 – World Bank
New technologies to
measure the RAI**

2015/2016

UKAid funding,
through ReCAP, to
update method of
measuring the RAI

Pilot measurements
in 8 ReCAP countries

Support moving
SDG Indicator 9.1.1
to Tier II



Geospatial Approach to the RAI

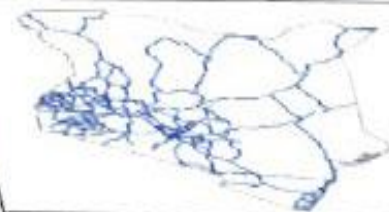
Population
distribution

- Where do people live?



Road network

- Where do roads exist?



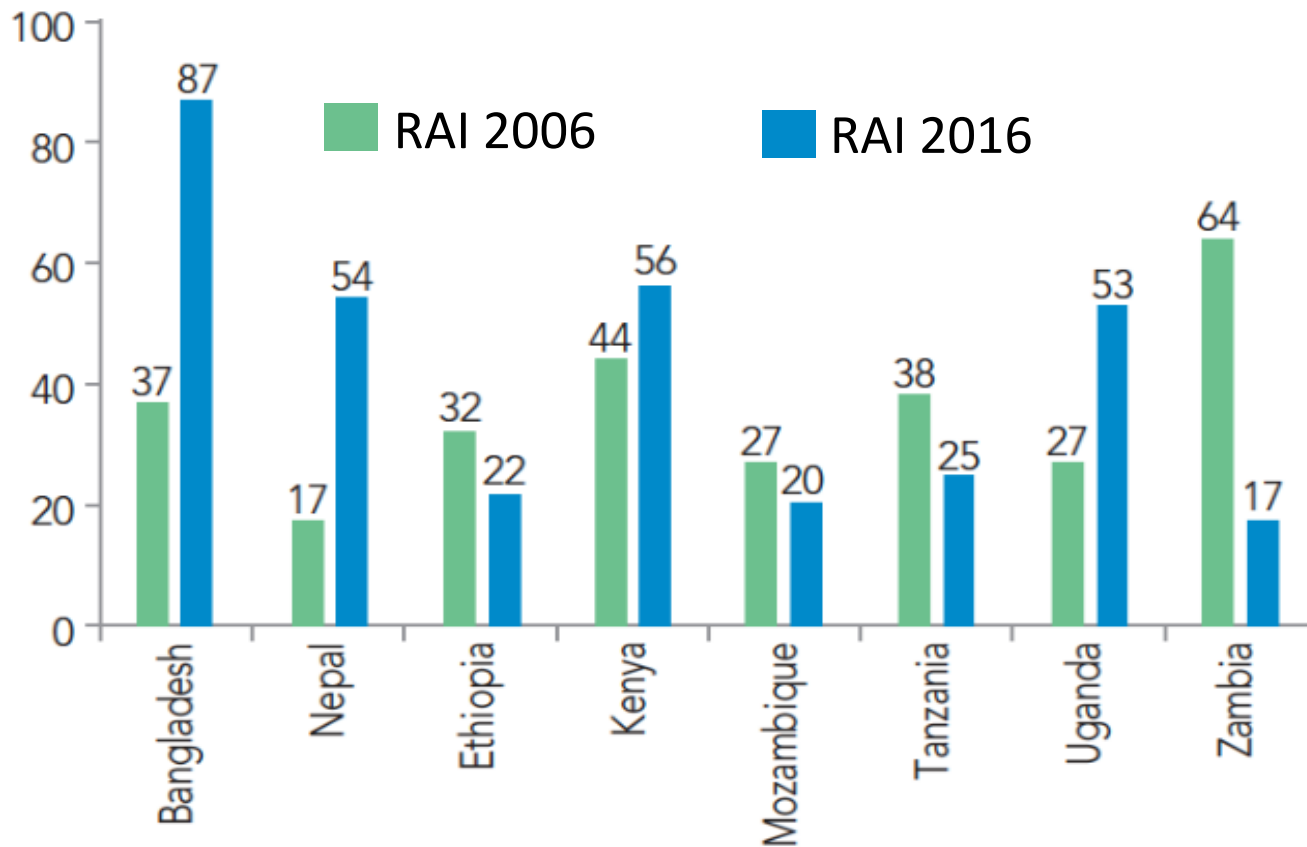
Road condition

- All-season roads?



2018 – RAI Status Review

Comparison of 2006 and 2016 results



2019 – RAI Consolidation & Revision

RAI – Consolidation and Revision

- Objective: Scale-up implementation of the RAI across UN member countries and advance SDG 9.1.1 from Tier III to Tier II
- Aim: Refine, propose, and agree on harmonised approach to data collection and measurement of RAI
- Approach: Refine the measurement framework to:
 - Meet international standards
 - Provide a clear framework for data validation
 - Ensure consistent and rigorous data collection
- Trial proposed measurement framework in 4 ReCAP countries



ReCAP Country Trial

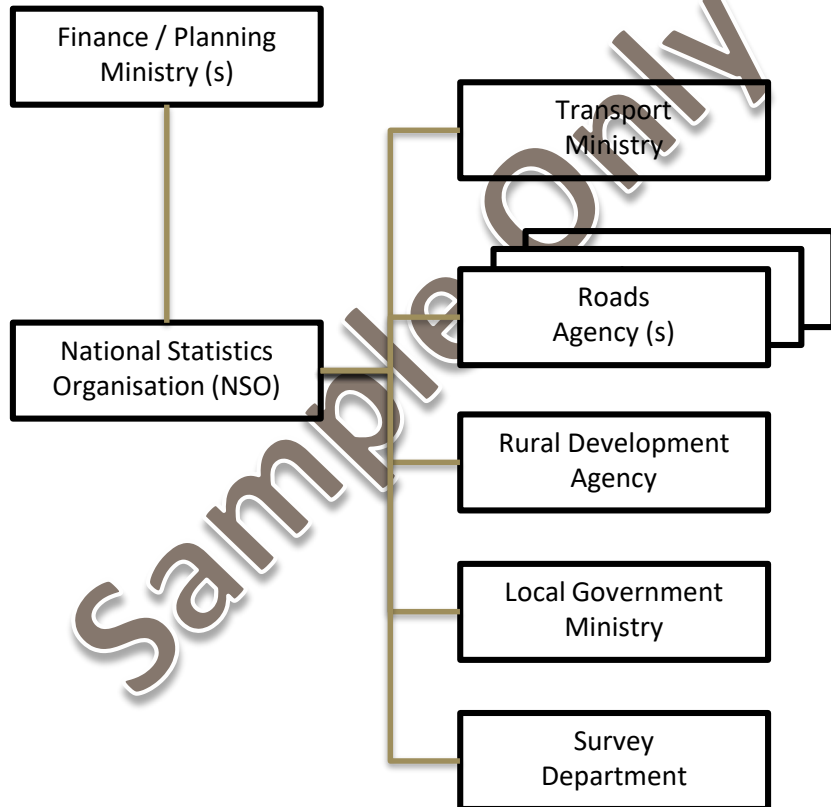
Country	RAI history			Data			Other		
	2006	2016	2018	<u>Cov'ge</u>	Mgmt.	Quality	Issues	<u>Envir'mnt</u>	Mapping
Ghana	✓			G	G/F	G/F	Y	Tropical	G/F
Malawi	✓		✓	G	G/F	G	Y	<u>Savanna</u>	G
Nepal	✓	✓		G/F	G/F	G/F	Y	Mountain	G/F
Myanmar				U	U	U	Y	Monsoon	U

- Engage with NSO and roads organisations
- Review data for completeness and quality
- Analyse data in GIS format
- Support local partners to measure RAI

Key Aspects of the Refined Methodology

- Improved National Agency Coordination
- Improved International Agency Coordination
- Clearer Roles and Responsibilities
- Identification of primary and other data
- Endorsement of data sources by the National Agencies
- Better documentation of data sources used
- Alternative methods to assess if roads are “all-season”
- Quality Assurance by the Custodian
- Coordinated Publication of the RAI and metadata

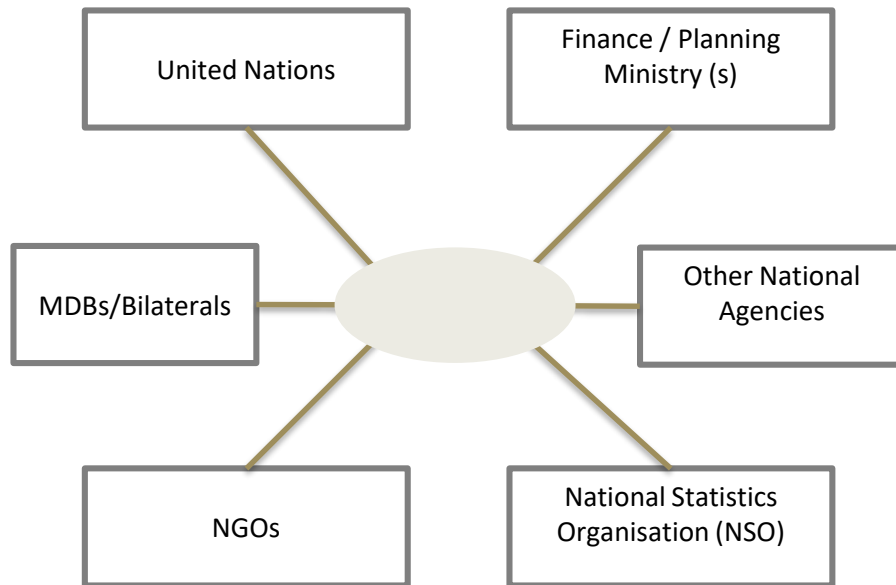
National Agency Coordination



National Agencies (NSOs, Roads Authorities, Survey Departments etc.) must:

- Agree and document the definitions (urban/rural, road network, all-season etc.)
- Document the RAI as part of their **National Statistical System (NSS)**
- Integrate the RAI as part of their SDG and other development indicator reporting with the Finance / Planning Ministry
- Coordinate better internally on their activities to reduce duplication of effort

International Agency Coordination

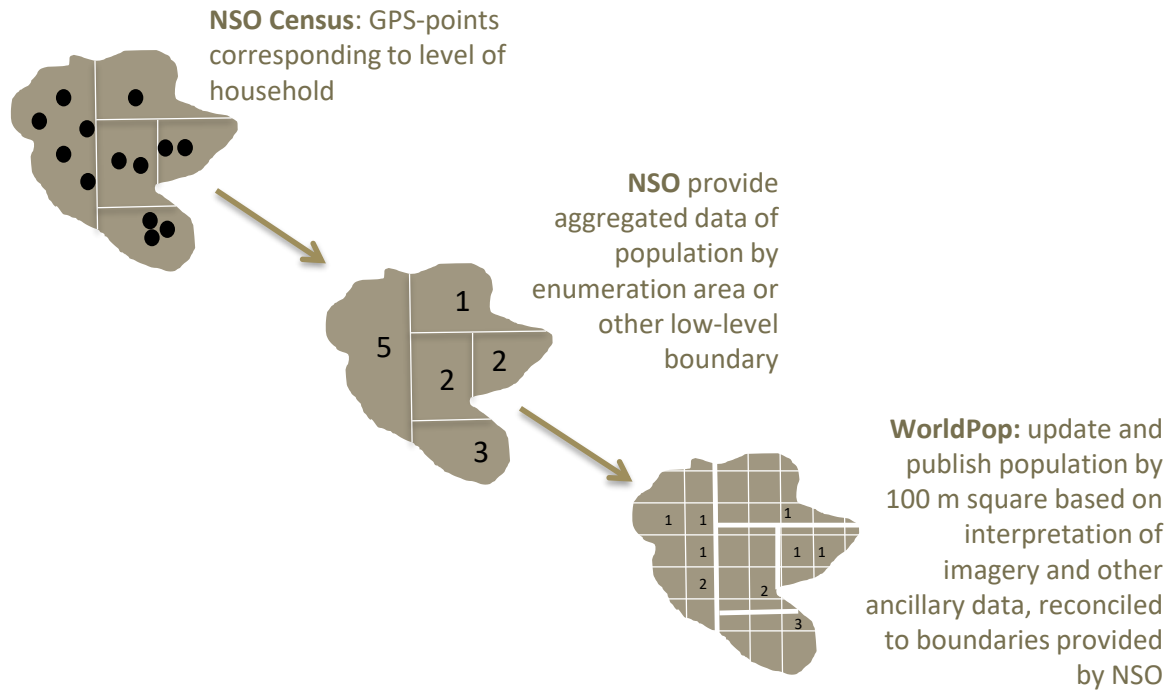


- Any international agencies involved in any SDG / other **indicator-related or mapping** work (World Bank, UN, DFID, NGOs etc.) should coordinate through the National Agencies
- International calculation of RAI or any other indicator without prior consultation and reference to national agencies can cause confusion and significant wastage, and undermines the national statistical systems
- In all trial countries, there is evidence of significant duplication of effort, inconsistency in data and methods, and major studies & reports that are not widely shared

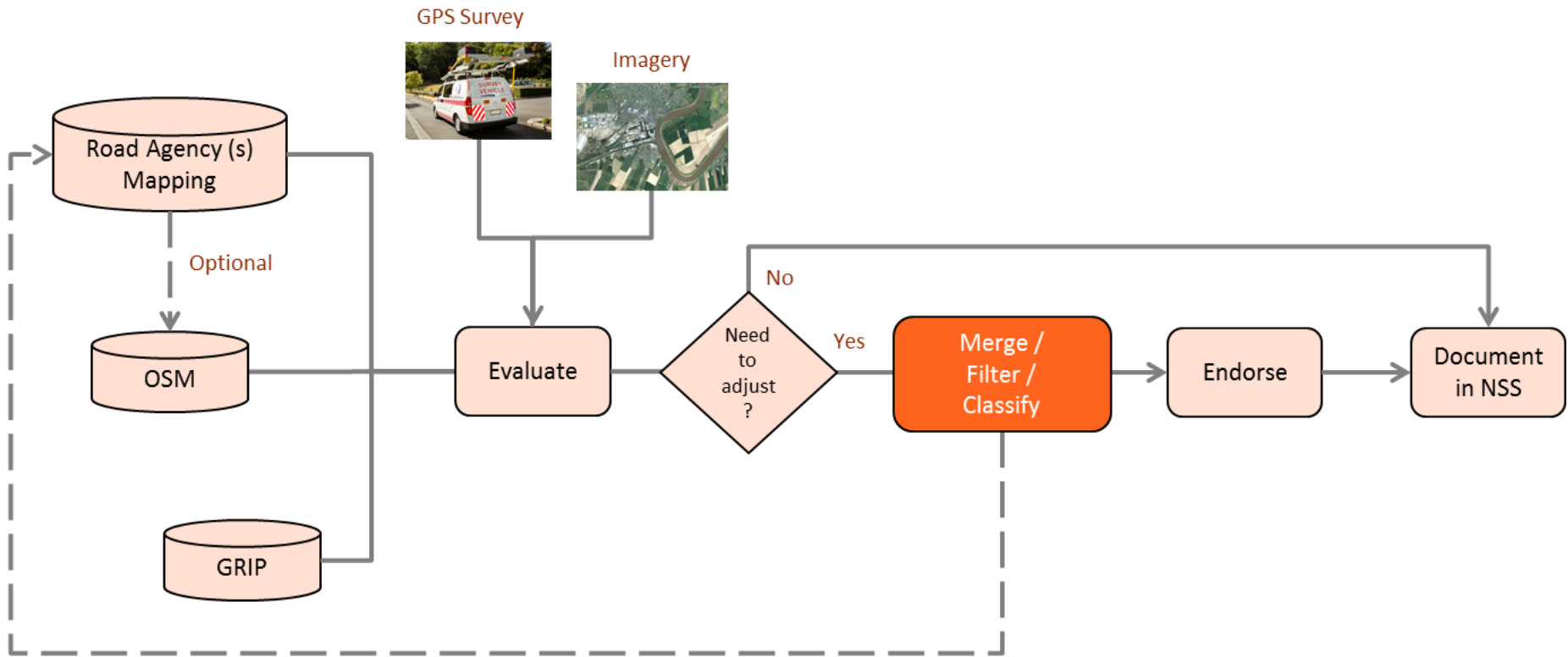


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Population Data



Road Network Data



Road Network Condition

An all-season road is one that is motorable all year, but may be temporarily unavailable during inclement weather (Roberts et al, 2006).

There has been some ambiguity surrounding the definition and measurement of an ‘all-season’ road:

- Countries do not typically collect data on which roads were impassable and for how long
- Any attempt to collect it retrospectively per road would be subjective and very time-consuming
- Even if a given road flooded once in, say, 2015, does that mean that it is still “not all-season” in 2019?

All-season definition update:

A road that it is likely to be impassable to the prevailing means of rural transport for a total of 7 days or more per year is not regarded as all-season.

Accessibility factor as a proxy for ‘all-season’

Proposing an alternative approach based on “accessibility factors” defined by each country, to be used where road condition is unavailable or unreliable

Accessibility factors could be defined easily in terms of Surface Type, Terrain, and Climate

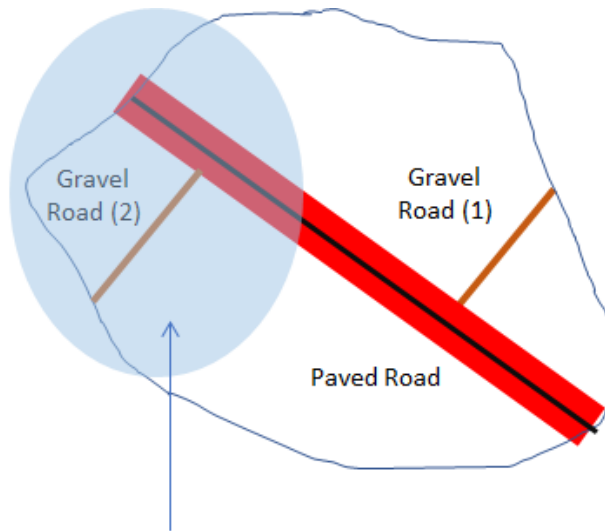
		Terrain	
		Low Risk (e.g. Flat, Rolling)	High Risk (e.g. Mountainous)
Climate	Low Risk (e.g. Dry Season)	1	1
	High Risk (e.g. Wet Season)	1	0.9

Fig 1 - Factors for Paved Network

		Terrain	
		Low Risk (e.g. Flat, Rolling)	High Risk (e.g. Mountainous)
Climate	Low Risk (e.g. Dry Season)	1	0.9
	High Risk (e.g. Wet Season)	0.9	0.8

Fig 2 - Factors for Unpaved Network

Application of Accessibility factors



Area with pronounced wet season and/or mountainous terrain

Rural Population: 18 million

RAI calculation:

Paved Road pop (dry area) within 2 km: 3 million * 1.0 = 3.0 million

Paved Road pop (wet area) within 2km: 2 million * 0.9 = 1.8 million

Gravel Road (1) pop within 2 km: 2 million * 1.0 = 2.0 million

Gravel Road (2) pop within 2 km: 1 million * 0.8 = 0.8 million

Total Rural Pop within 2 km = 7.6 million

RAI = 7.6 million / 18 million = 42.2%

(If Accessibility Factors not applied, then RAI = 44.4%)

Accessibility Factor approach

- Simple and easy to understand for non-engineers
- Provides a broad-based assessment that does not require onerous data collection
- Links well with original intention of RAI – “*may be temporarily unavailable*”, and takes into consideration the purpose and function of the road
- Could be correlated with actual records of impassability and/or road condition if they exist. Can also be tested against anecdotal evidence
- Potential to conduct testing in the trial countries and produce guidelines for defining these factors, as well as circumstances in which the factors might change (e.g. climate change, institutional strengthening, improved maintenance practices etc)

SDG Indicator “Tier” system (Note: Abbreviated)

Tier I: Regularly produced for at least 50% of countries.

Tier II: Conceptually clear, established methodology, but not regularly produced.

Tier III: No internationally established methodology or standards, but they are being developed.

Current rating of SDG Indicator 9.1.1, the RAI

2020 – Next Steps for RAI



Financing the Rural Access Index

- Who should pay the long term cost of maintaining and publishing RAI datasets?
- How will regular data collection be paid for?
- How will the cost of processing data to calculate RAI be paid in the future?

Thank you for your attention

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www.research4cap.org/SitePages/RAI.aspx

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