Leaving no one behind in the roads sector

An SDG stocktake in Kenya

Cover photo: North Eastern Province, Kenya: A hand-painted sign reading 'road work ahead' is propped up by a rock at the edge of a dusty track, in a region which lacks basic infrastructure, 2006. © Dieter Telemans/Panos

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Abbreviations

AFD	Agence Française de Développement
AIDS	Acquired Immune Deficiency Syndrome
ASAL	Arid and Semi-Arid Lands
CBA	Cost-benefit analysis
CEA	Cost-Effectiveness Analysis
CIDP	County Integrated Development Plans
CIESIN	Center for International Earth Science Information Network
DHS	Demographic and Health Survey
EII	Energy, Infrastructure and ICT
EU	European Union
FY	Financial Year
GIS	Geographic Information Systems
GoK	Government of Kenya
HDM-4	Highway Development and Management Model 4
HIV	Human Immunodeficiency Virus
ICT	Information and Communications Technology
ITOS	Information Technology Outreach Services
JICA	Japan International Cooperation Agency
KeNHA	Kenya National Highways Authority
KeRRA	Kenya Rural Roads Authority
KISIP	Kenya Informal Settlement Improvement Programme
KRB	Kenya Roads Board
KURA	Kenya Urban Roads Authority
MCA	Member of County Assembly
MDG	Millennium Development Goal
MEMV	Microempresas de Mantenimiento Vial Rutinario
MP	Member of Parliament
MTEF	Medium Term Expenditure Framework
NGO	Non-government organisation
ODI	Overseas Development Institute
PCR	Peru Rural Roads Program
RED	Roads Economic Decision
RICS	Roads Inventory and Condition Surveys
RMLF	Road Maintenance Levy Fund
ROSNEK	Road Safety Network of Kenya
RSIP	Road Sub-Sector Investment Plan
SDG	Sustainable Development Goal
UN	United Nations
WHO	World Health Organization

Executive summary

Roads, 'leave no one behind' and the SDGs

In September 2015 the Sustainable Development Goals (SDGs) were approved by all 193 Member States of the United Nations. These set out 17 goals and 169 targets across a wide range of areas – people, planet, prosperity, peace and partnership – with the aim of achieving them by 2030. A fundamental tenet of the SDGs was the concept of 'leaving no one behind', understood as a commitment to tackling marginalisation and ensuring that the needs of the poorest are front and centre in the achievement of all the goals. The road sector is an important element of this agenda, with access to roads infrastructure being considered a good in itself and as contributing to the achievement of other SDG priorities. Access to roads features in both Goal 9 (9.1, 'develop quality, reliable, sustainable and resilient infrastructure') and Goal 11 (11.2, 'to provide access to safe, affordable, accessible and sustainable transport systems for all'). As a crucial enabling element in access to transport, roads are widely recognised as contributing to a wide range of other goals – improvements in agricultural productivity, growth, poverty levels and access to services – particularly in rural areas. The evidence on their impact on the poorest and most marginalised is more mixed, but suggests that roads are a necessary if not sufficient condition for improving the lives of 'left behind' groups.

The Kenyan road sector: a 'leave no one behind' overview

At the highest level, Kenya has demonstrated an ambition to expand roads access to all areas of the country. The Kenya Vision 2030 document states that 'by 2030, it will become impossible to refer to any region of our country as remote' (GoK, 2007:6). This broad ambition is operationalised in the priorities and plans of the roads sub-sector in a manner that aligns well with the 'leave no one behind' agenda. The roads ministry's 2006 Sessional Paper on *The Development and Management of the Roads Sub-Sector for Sustainable Economic Growth* (MoRPW, 2006), which outlined the key development priorities

pursued in subsequent Road Sub-Sector Investment Plans (RSIPs), contains two specific commitments related to the 'leave no one behind' agenda. These are:

- Bituminise [upgrade to tarmac] economically viable urban arterial roads, especially where these serve low-income neighbourhoods.
- In support of the Millennium Development Goals, work towards eventually providing all-season road access within two kilometres for all.[1]

Achieving these aims presents a significant challenge for Kenya. The existing road network is highly concentrated and its condition is mixed. Only 7% of the road network is paved and in 2010 over half of roads were classified as being in a 'poor' condition.

Strong progress has been made in expanding roads provision in recent years, but maintenance performance has lagged – particularly in rural regions. Meeting construction targets for the next five years, or achieving full coverage by 2030, will also require significant improvements in the pace of expansion.

A broader issue from a 'leave no one behind' perspective is the significant and persistent imbalance in the distribution of road transport infrastructure. The road network is highly concentrated along the Mombasa-Nairobi-Malaba transport corridor, while the northern, eastern and southern parts of the country are poorly served by roads and existing networks are in poor condition. This contributes to a situation where, as of 2014, 19.8% of households are 10 km or more from a paved road, and households in poorer counties are less well-connected than their wealthier counterparts.[2]

The overall picture, then, is mixed. Access to roads is improving in Kenya and commitments have been made to improve equity. However, there are continuing challenges to ensuring effective and efficient expansion that improves access in line with the 'leave no one behind' agenda. A range of drivers and barriers lie behind these trends, and offer potential clues to how to improve roads access for all.

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1   An 'all-season road' is a road that is motorable all year by the prevailing means of rural transport (often a pick-up or truck that does not have four-wheel-drive). Predictable interruptions of short duration during inclement weather (e.g. heavy rainfall) are accepted, particularly on low volume roads (World Bank, 2007).

2   Analysis demonstrates that the proportion of households in the bottom wealth quintile is strongly and negatively correlated with measures of roads access.

Drivers of progress

Roads as a priority area for the government of Kenya:
Attempts to improve roads access for left behind groups benefit from the fact that road transport is a priority area for the Government of Kenya. It is considered to be one of the key enablers for sustained economic growth, development and poverty reduction and accordingly, the road transport programme is ranked as one of the highest priorities within the broader Energy, Infrastructure and ICT (EII) sector.

New constitutional arrangements: The agreement and implementation of the 2010 Constitution of Kenya has created an institutional and political context that is favourable to improving roads access in marginalised regions. The devolution process, implemented in 2013, gave county governments responsibility for the development and maintenance of certain road categories within their boundaries, and was accompanied by fiscal empowerment allowing them to formulate, finance and implement their own infrastructure development plans. This has allowed marginalised regions to invest more in their road network and to respond to local political incentives to expand access. The constitution also introduced a requirement for presidential candidates to secure at least 25% of the vote in at least 24 counties, generating increased political competition in areas of Kenya that were historically neglected and marginalised, accompanied by a greater willingness from national politicians to channel resources to them.

Strong budget priority and pro-poor county allocations:
The expansion of the road network has been enabled by considerable financial resources being directed to this end. National government expenditure on the road sector has increased almost three-fold over the last 10 years and funding for the Road Transport programme is rising by the highest absolute amount of any government programme. This prioritisation is replicated at the county level: out of the 46 counties with expenditure data on roads specifically for FY2014/15, roads accounted for 25% of the counties' total development expenditure on average.

Analysis of county road expenditure also finds that though weak, there is a positive and statistically significant[3] relationship between this expenditure and the level of poverty in a county,[4] and that counties that are less accessible[5] also tend to spend more on roads. This is partly explained by the considerable discretion that county governments have in their financing of different sectors and priorities, and partly by the pro-poor nature

of national government transfers to county governments.[6] The 14 most marginalised counties should also benefit from the creation of the Equalisation Fund, which channels annually a set proportion of government revenue to boost funding for basic services in these counties. Road infrastructure projects have been given a high priority – accounting for 58% of the resources allocated to the Equalisation Fund in the 2016/17 budget. Funds therefore flow disproportionately to more marginalised regions, although it is unclear whether expenditure is pro-poor *within* counties or if counties are more likely to target left behind groups.

Persistent barriers and challenges

Economic and political priorities – policy in practice:
While there are specific road sector commitments that focus on 'leave no one behind' issues, the formal criteria for selecting roads projects emphasise economic considerations, meaning that roads access for left behind groups is not accorded a high priority. Strong political involvement in actual project selection creates incentives for expanding the road network, particularly at the county level. However, this also contributes to policy incoherence and inefficiency in the roads sector due to a combination of rent-seeking and poor alignment between political priorities and effective allocation of funding for road construction and maintenance. 'Left behind' groups generally lack political influence and so the impact of roads projects on these groups is usually secondary to the main purpose of the project in question.

Constitutional teething troubles: Despite the benefits of the devolution process, there are a number of issues yet to be resolved in terms of overlapping mandates and coordination that are undermining the effectiveness of the road sector. These include disputes over control of certain roads categories between national government and county governments, and poor demarcation of responsibilities between national roads agencies and country governments at the county level. This results in confusion, poor coordination and a lack of co-operation between different actors – undermining the efficiency of the sector.

Geographic barriers and historical legacies: The concentration of the existing road network – itself the result of a combination of geography, colonial legacies and ethnic politics in post-Independence Kenya – creates challenges for expanding the road network elsewhere. The fact that left behind groups are found in regions

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3   Both relationships are statistically significant at the 1% level.

4   Poverty is measured by the proportion of the county population that are in the bottom income quintile, and the correlation coefficient is 0.403 based on data for FY2014/15.

5   Accessibility is measured by average travel time to nearest city and share of surface area outside time distance of six hours, with a correlation coefficient of 0.328 and 0.374 respectively.

6   The majority of county revenues comes from a large unconditional grant from national government – the equitable share – which is allocated according to a progressive formula that gives a greater share of revenue to poorer counties.

characterised by tougher terrain and harsher weather conditions also raises the cost of expanding and maintaining the road network to improve their access. Nomadic peoples – a particularly important left behind group – also have an ambiguous relationship with the national government, which creates challenges for implementation. These factors contribute to a degree of self-reinforcing concentration of road infrastructure.

Inadequate finance and inefficient spending: Despite the significant funds being directed to road infrastructure, there is general agreement that current financial resources are insufficient relative to the resource requirements of sector. This is particularly the case for rural roads and routine road maintenance, which is related to the political prioritisation of major roads and construction/rehabilitation. The high unit costs of road interventions and inefficiencies in the sector also lead to poor utilisation of existing resources.

Delayed implementation of Equalisation Fund: The Equalisation Fund has not yet been disbursed due to a combination of technical issues and political disputes over national versus local control. There are also concerns related to a lack of transparency, decisions being made at the national government level and the focusing of funds on marginalised (geographical) areas, as represented by counties, rather than marginalised groups within counties or Kenya as a whole.

Incompatibility between donor behaviour and the 'leave no one behind' agenda: Donor priorities in the Kenyan road sector do not appear to be well-aligned with the aim of improving road access for left behind groups for three main reasons. Firstly, donors' main focus is on financing projects in the RSIP based on economic considerations rather than on improving broader access. Secondly, donor financing mainly takes the form of concessional loans, which must be repaid. The Government of Kenya (GoK) is therefore less likely to prioritise investments that are likely to have high social returns but low economic returns. Thirdly, donors generally do not finance roads in areas where other donors are active. This may benefit the 'leave no one behind' agenda to some extent, but does not mesh well with the focus of the GoK on the 14 most marginalised counties.

Data gaps and challenges: There are a number of challenges to data contributing to the 'leave no one behind' agenda in the roads sector, although it should be noted that the primacy of political priorities means this is largely a secondary issue. While Kenya has been complimented on its census series, this data almost certainly undercounts the populations of pastoralists and nomadic left behind groups, particularly in the more remote north-eastern parts of the county. This results in under-allocation of funds to these regions, despite progressive funding formulas. The effectiveness of the road sector is also undermined by infrequent collection of data on the road network at the national level, as well as poor data collection and sharing

at the county level, related to low capacity and a lack of guidance. Current data does not easily allow analysis through a 'leave no one behind' lens and data does not appear to be being collected on key targets, such as the commitment to all season road access within 2km for all Kenyans, undermining progress towards the 'leave no one behind' agenda.

Conclusion and recommendations

The overall picture as regards improved road access in Kenya and the achievement of 'leave no one behind' goals in the sector is mixed. Access to roads is improving and there are steps towards greater equity – particularly in historically marginalised areas. However, there are continuing challenges arising from a range of factors. Resolving many of these issues will be challenging due to the highly political nature of the road sector and the presence of a range of vested interests that will be unwilling to cede power if it means losing the potential to capture rents and secure political advantage.

Despite this, there are a range of areas where improvements could be made through relatively uncontroversial technical changes and improvements in coordination – often building on existing initiatives and trends; and others where it may be possible to use the range of new political spaces and momentum created by the devolution process to achieve change and create improvements in line with the 'leave no one behind' agenda. The following 12 recommendations take this as their starting point and provide some first steps that could be taken to improve the effectiveness of roads provision in Kenya and begin to ensure that no one is left behind in the roads sector.

Improved coordination at the national level

1. Clarification and rationalisation of the roles and responsibilities of the different agencies and levels of government in the road sector.
2. Clear guidance for county governments and national roads agencies on the collection and sharing of roads data, particularly at the county level.
3. Support from the Kenyan National Bureau of Statistics to improve capacity for data collection at the county level, potentially supported by funding from international donors.

Improved coordination at the county level

4. Stronger guidance for national roads agencies on joint planning and consultation at the county level, or mandated directly as part of the roads prioritisation process.
5. County Governors could be encouraged, or mandated, to act as a focal point and convening agent for the different road sector agencies operating within the county.

6. The creation of an institution to encourage counties to coordinate their planning on rural transport and develop spaces for coordination among stakeholders (e.g. County Governors, Members of County Assemblies, national road agencies, NGOs, local businesses etc.).

Improving access for left behind groups

7. Improved transparency at the county level by regular publication of budgets and actual expenditures, as well as the incorporation of road sector indicators into the Controller of Budget reports.

8. The national government should mandate a specific road agency or other body to pilot data collection approaches for tracking progress towards the 2km target for all-season roads access, with data at the constituency, county, ward and sub-ward level.

9. National and county government development plans should incorporate performance targets for road projects based on travel times – linking them across sectors and to the SDGs where possible (e.g. average time to the nearest markets/hospital/school). This will require co-operation across both national and county governments, as well as civil society (see Annex 2 for potential indicators).

10. International donors and government should adopt a more holistic approach to financing service provision, incorporating analysis of transport needs when financing education or health programmes in rural areas, and having the flexibility of funding to channel resources to support counties or national road agencies in road construction and rehabilitation projects.

11. Trends towards integrating social indicators into cost-benefit analyses for roads projects should be encouraged for both the Government of Kenya and international donors, with stronger weights for left behind groups. Greater transparency on these process, and donor funding criteria, would also improve prioritisation.

12. The criteria for sharing the conditional Road Maintenance Levy Fund should be re-assessed to determine whether it is an optimal method for reallocation of these types of funding.

The effort to ensure that no one is left behind in Kenya will be a highly political and challenging task. However, as we set out in this report, there are many reasons for optimism regarding the general direction of progress over the last ten years. Focusing on tangible and tractable measures to improve coordination and efficiency in the roads, as well measures to shape the incentives for channelling resources to left behind groups, should allow further and more rapid gains to be made.

Realism is also necessary. Actors will need to work with Kenya's political dynamics as they are, and access to roads is only one element of ensuring viable transport for all Kenyans. Alongside road infrastructure there needs to be a focus on many issues beyond the remit of this report, such as how best to develop convenient and affordable transport options, and balancing different 'leave no one behind' strategies – whether to bring development to the population, or the population closer to development. This report does not provide answers to these questions, but demonstrates how Kenya can continue to make progress towards ensuring no one is left behind in terms of road access.

1. Introduction and motivation for study

This report contains one of three case studies conducted by the Overseas Development Institute (ODI) in 2016 that examine how the challenge of 'leaving no one behind' can be understood and achieved in different service sectors and contexts. This particular case study focuses on access to the road network in Kenya, while the other two case studies focus on the health sector in Kenya and Nepal.

The approach and findings of these case studies, alongside a broader methodology and synthesis document, are intended to inform how progress towards the new 'leave no one behind' agenda can be benchmarked, tracked and achieved.

While the agenda has been much lauded, what it means to leave no one behind remains elusive. In spite of the multiple references to the concept, the Sustainable Development Goals (SDGs) outcome document remains open to interpretation on what precisely is meant by leaving no one behind. Because it is a cross-cutting concept rather than a concrete goal, there is a danger that while its achievement is pivotal to the success of Agenda 2030, it will not be implemented or monitored in the same way as other aspects of the SDGs.

For this reason, we sought to take a granular approach to leaving no one behind, looking at the specific circumstances and needs of those left behind in two countries, as well as the national pictures in each case, to examine in depth two variables – health and access to roads.[7] We hope that this detailed examination of the drivers of marginalisation in these dimensions will allow for a more comprehensive understanding of what it means to be left behind and suggest some very context-specific solutions to its correction, as well as complementing the work of others who are looking at analogous aspects of 'leave no one behind'.[8]

Building on ODI's work on data, our expertise in institutions, political economy and understanding the delivery of reforms, and our research on financing needs for the SDGs, the aim of this research is to deliver a **'leave no one behind' stocktake** in Kenya and Nepal. These two countries were chosen because of the relatively high quality of data available in both, the existing knowledge of the countries within ODI, ODI's partners in each country, and the countries' contrasting circumstances: one lower middle-income country,[9] and one fragile state recovering from a significant exogenous shock – the Nepal earthquake in 2015, which affected 5.6 million people.[10]

The purpose of these case studies is twofold. Firstly, to take stock of the current situation and thus enable us to map out a quasi-baseline, which then can be built upon to allow on-going detailed monitoring. This includes analysing data on who is marginalised according to the variables of health and access to roads, as well as budget and expenditure data. We would hope that this will be useful to the respective governments, as well as civil society, academics and others wanting to review progress. Secondly, to establish a multi-faceted methodology bringing together assessment of 'data ecosystems', the capacity and capability of institutions, and allocations and impacts of public financing, which can be replicated in other countries and over time. These case studies will therefore both assess what a country needs to implement to deliver on commitment to leave no one behind, and what is likely to be politically feasible or possible.

Looking at the sub-national level also allows us to examine in as granular a fashion as possible, using a mixture of data analysis, key informant interviews and focus groups, both the current reality and what marginalised people themselves say they want and need. The maps that will accompany the stocktake also attempt to show in an integrated fashion both official and unofficial sources of data, where they are available.

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7   In the case of Nepal, we look only at health. See the overview and methodology paper – Overseas Development Institute (2016) – for an explanation as to why.

8   This includes the civil society group Civicus and the think tank Development Initiatives.

9   As classified by the World Bank. See www.worldbank.org/en/news/press-release/2015/07/01/new-world-bank-update-shows-bangladesh-kenya-myanmar-and-tajikistan-as-middle-income-while-south-sudan-falls-back-to-low-income.

10 See www.undispatch.com/nepal-earthquake-facts-and-figures. Nepal was also considered to be an interesting case study as it is a UK Department for International Development 'leave no one behind' trailblazer country: that is, the agency's Nepal office is highly engaged with this agenda and committed to supporting it in-country.

The following sections outline the purpose and conceptual framing of the overall project, including analyses of the SDGs, the 'leave no one behind' agenda, and how these ideas are related to issues in the health and road sectors. Readers interested mainly in the Kenya roads stocktake and case study would be advised to examine section 2 – which outlines the research methodology and case study selection – and then read from section 3 onwards.

1.1 What are the SDGs and the 'leave no one behind' agenda?

The SDGs, approved by all 193 Member States of the United Nations, paint an inspiring vision of what the world could look like in 2030. Consisting of 17 goals and 169 targets to spur action in areas of critical importance to humanity – people, planet, prosperity, peace and partnership – this ambitious agenda will significantly shape development efforts for the next 15 years.

A fundamental tenet of the SDGs – also known as Agenda 2030 – is the concept of 'leaving no one behind'. This entails tackling marginalisation and ensuring that the needs of the poorest are front and centre in the achievement all the goals. Indeed, the SDG outcome document explicitly specifies that the goals should be met for all segments of society, with an endeavour to reach those furthest behind first (UN, 2015). Goal 10 – the inequality goal – includes the specific target to: 'By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status' (Target 10.2).

In this report we examine who is being left behind in Kenya and Nepal, how far behind they are, and what is being done about it.

The SDG Declaration (UN, 2015) is clear that 'the left behind' refers to particular people whose identity – their membership of one or more groups – means that they face specific discrimination, and lack both voice and power. It states: 'Those whose needs are reflected in the Agenda include all children, youth, persons with disabilities (of whom more than 80% live in poverty), people living with HIV and AIDS, older persons, indigenous peoples, refugees and internally displaced persons and migrants' (para 23). Elsewhere it states: 'We emphasize the responsibilities of all States…to respect, protect and promote human rights and fundamental freedoms for all, without distinction of any kind as to race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth, disability or other status.' It does not define what 'other status' could mean (this depends on national context), but it is clear that many minorities and other groups are considered to be excluded.

It also emphasises that the left behind includes poor people, and extends to the concept of multi-dimensional poverty. Paragraph 24 reads: 'We are committed to ending poverty in all its forms and dimensions, including by eradicating extreme poverty by 2030.' This includes with respect to resource allocation. The paragraph on partnerships in the document's preamble stresses that it focuses in particular on the needs of the 'poorest' as well as the most vulnerable. It also stresses the importance of everyone being able to live their lives in dignity (UN, 2015).

The 'leave no one behind' concept is, therefore, about whether a person's characteristics (inherent or perceived) exclude them from the opportunities enjoyed by others. These characteristics may fuel each other. A woman with disabilities who lives in a rural area, for example, may well suffer from intersecting forms of inequality.

If this vision of leaving no one behind becomes a reality by 2030 as planned, it will course-correct the current trajectory of international development, which has been one of extraordinary progress but deepening inequality. During the period of the Millennium Development Goals (MDGs), too great a focus on average progress at national level masked major disparities within countries: between urban and rural areas, men and women, and ethnic, language and caste groups (UN ESCAP, 2013), among others.

Although there are specific references to the imperative of leaving no one behind in only a few of the 17 SDGs themselves, the principle is imbued in all of them. Leaving no one behind is a genuinely integrated agenda that will be achieved only if there is progress on a wide range of policy fronts.

1.2 How does the road sector support the SDGs and the 'leave no one behind' agenda?

The road sector, and transport systems more broadly, are referenced by the Sustainable Development Goals in Goals 9 and 11,[11] specifically:

Goal 9.1: 'Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all'

Goal 11.2: 'By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons'

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11 Goal 9 is entitled 'Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation'. Goal 11 is entitled 'Make cities and human settlements inclusive, safe, resilient and sustainable'.

These goals highlight the fact that roads are primarily important, both to the SDGs and the 'leave no one behind' agenda, because of their contribution to other outcomes – specifically economic development and human well-being. Having a road within a certain distance will impact on poverty by supporting incomes and by enabling poor and marginalised people to access public services more easily. As these goals highlight, most of these outcomes will require both roads and accessible and affordable transport. Roads are therefore a necessary but not sufficient condition for progress.

Rural roads, for example, are important to improve agricultural productivity and marketing. Numerous studies have demonstrated that improving rural access has led to increased agricultural production, lower costs for farm inputs, and lower transport costs for marketed outputs (Starkey and Hine, 2014; DFID, 2013). In Nepal, for example, the expansion of roads, including secondary and feeder roads, has helped to improve poverty reduction and agricultural income growth (CPAN, 2014). Similarly, in rural Ethiopia improving access to all-weather roads was shown to increase consumption by 16% in the short term and reduce the incidence of poverty by 6.7% (Dercon et al., 2009), while in rural Bangladesh, the upgrading and expansion of the road network increased the labour supply and incomes for women (Dercon et al., 2009; Elborgh-Woytek et al., 2013). Roads can also help to enable internal migration, which can also help to reduce poverty (CPAN, 2014).

Roads also play an important role in ensuring access to health and education services. Rural transport infrastructure can be crucial to overcoming the 'three delays' in health care: the decision to seek care, the travel to reach it, and treatment within the health care system. Good access to infrastructure and transport services is needed to ensure medical staff and supplies are available in health centres (Starkey and Hine, 2014). In Nepal, for example, the rapid expansion in the road network between 1999 and 2008 reduced transport delays, and was a key explanatory factor in the reduction in maternal mortality in the country over the same period (Engel et al., 2013). Evidence from a number of countries also suggest that investment in rural roads, particularly to connect settlements for the first time, leads to greater school enrolment and completion rates (Starkey and Hine, 2014; DFID, 2013).

Lack of roads can particularly impact on vulnerable and marginalised groups, although this will depend on context. Women tend to have greater constraints on their time due to the gendered division of labour and women's additional child care and household responsibilities. This means time lost through additional travelling has a disproportionate impact on them. In Delhi, when 700,000 squatters resettled on the periphery of the city, female employment fell by 27% because travel time increased threefold, whereas male employment in the same location decreased by only 5% (DFID, 2013). Girls also tend to be

disproportionately impacted by long travel time to schools, where parents may be concerned about their safety (Porter et al., 2010). Children, people with disabilities and older people are also disproportionately impacted by lack of roads, given mobility constraints and the requirement for children to transport goods to market when there are no roads or vehicles (DFID, 2013). There can, however, also be specific risks to vulnerable and marginalised groups through road provision, including risks of displacement, road safety and the spread of diseases including HIV and AIDS (DFID, 2013).

The evidence on extent to which roads are pro-poor, in the sense of benefitting the poorest disproportionately, is mixed. Some evidence suggests that even when transport investments have stimulated economic growth, the poor have often benefitted only marginally, implying that good transport infrastructure is a necessary but not sufficient condition for leaving no one behind (Starkey and Hine, 2014). Other studies have however shown the opposite, with poorer areas and households benefitting more (Khandker et al., 2009; Jacoby, 2000; both cited in DFID, 2013). At the same time, there is clear evidence that access to roads is viewed as a priority by marginalised communities in many contexts. It emerges both from a series of focus group discussions conducted by ODI in marginalised communities in Ghana, Pakistan and South Africa (see Stuart et al., 2016), as well as the analysis of Bryceson et al. (2006), who use comparative data from Ethiopia, Viet Nam and Zambia to conclude that people in rural areas have a strong preference for improved accessibility to services and economic markets.

1.3 Data and leaving no one behind

Improved data will be essential to achieving the SDGs (UN IEAG, 2014). This is not only for the purposes of monitoring implementation, but also for designing and delivering the relevant policies. There are several discriminated against populations about whom we know too little (UN IEAG, 2014). These include women (Buvinic, et al., 2014), persons with disabilities and those who are mentally ill (Samman and Rodriguez-Takeuchi, 2013). Few of the MDG indicators were able to shed light on the particular situations of migrants, refugees, older persons, minorities and indigenous peoples (UN, 2016). Without access to these data, it is extremely challenging for governments and others to assess the specific scale and locus of need, and allocate budgets efficiently for poor and marginalised people. In effect, it means that the populations that most need policy interventions are the least visible to policy-makers.

SDG target 17.18 calls for efforts to build capacity to enable data disaggregation by factors, including income, sex, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant to specific national contexts (WHO, 2016).

With specific reference to tracking universal health coverage outcomes, there are three challenges as set out by the first joint World Health Organisation and World Bank monitoring report on the issue: first, sourcing reliable data on a broad set of health service coverage and financial protection indicators;[12] second, disaggregating data to expose coverage inequities; and third, measuring effective coverage, which not only includes whether people receive the services they need but also takes into account the quality of services provided and the ultimate impact on health (WHO/World Bank, 2015).

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12 Note that the financial protection indicator was changed in late 2016 to 'Proportion of population with large household expenditures on heath as a share of total household expenditure or income' as opposed to 'number of people covered by health insurance or a public health system per 1000 population'. See www.internationalhealthpartnership.net/en/news-videos/article/sdg-indicator-3-8-2-refinement-agreed-370524.

2. Definitions, conceptual framework, methodology and case selection

2.1 Definitions

Defining 'those left behind' is a crucial element in determining how to achieve the 'leave no one behind' agenda and in allowing us to map the current state of progress towards those aims.

The key variable used to assess who is being left behind in roads is the distance to the nearest road by household. We would ideally like to have broken this down by type of household, for example according to income, ethnicity or gender of the household head. Unfortunately, unlike in the health sector, this level of granularity was not available in the roads sector. Instead, average distance to a road (by type of road) was identified for each county.

2.2 The centrality of politics

Knowing who is being left behind in a country is one thing, actually doing something about it is another. Insofar as politics is about 'who gets what, when and how' (Laswell, 1936), creating policies to improve the lives of the marginalised is an inherently political process.

For example, as we have seen, one of the goals of leaving no one behind in the field of health is universal health coverage. However, no country has ever succeeded in making affordable health care available to all without either employing progressive rates of taxation or pooling resources for health insurance. In the first scenario, the rich subsidise the poor and in the second the healthy subsidise the sick (and sometimes the poor as well) (Bump, 2010; Savedoff et al., 2011). To get to this situation usually requires an arduous political process of building an imagined community and confronting the self-interest of certain – often more privileged – groups.

Further, to provide a health care system capable of reaching all, hard choices have to be made about the package of services on offer. Are sophisticated forms of curative care affordable? If not, resources have to be diverted from these kinds of care, often beloved of doctors and the middle classes, and into more mundane forms

of preventative and primary care for the masses. And if the percentage of national resources spent on health is to increase, money must be taken away from something else, for example defence, or consumption. These are political choices.

Even if an increased level of resources can be allocated to the right forms of health care, there is no guarantee that these resources will be well spent. Different branches of the administration, and different types of health providers need to be effectively coordinated to ensure that resources are used efficiently. Money has to be managed effectively so that it does not leak into private hands. Health care professionals need to be incentivised to do their jobs well. In remote areas, health workers need to be recruited, retained and incentivised to do their job effectively, which can be a challenge in many countries: a cross country study of absenteeism found an average of 35% of health workers absent across six countries, with higher absenteeism rates in poorer areas (Chaudhury et al., 2006). In some cases, communities have to be motivated to seek modern health care, or to allow vulnerable sub-groups to receive treatment. Health services are also sometimes improved when ordinary people are consulted about their health care needs and about how they experience the health care system. Monitoring, motivating, supervising, consulting – activities inextricably bound up with health governance – are all inherently political.

All of this implies that any study of a country's readiness to achieve the 'leave no one behind' agenda must take political factors into account. Indeed, even the generation of data that allows us to identify those left behind and monitor their progress has a political dimension, insofar as resources have to be found for data collection, data agencies need to be managed, choices must be made about what categories of person to collect data on, and so forth. In asking, 'Who in Kenya is being left behind, why, and what can be done about it?', this study thus takes an explicitly political focus.

2.3 Conceptual framework

In order to frame our inquiries, we adopted a working causal model based on the assumption that in an ideal world, data about the most marginalised would inform policy decisions about SDG implementation. These policy decisions would in turn generate a sufficient level and type of finance to fund the services that are needed to ensure that no one is left behind. For each link in this chain to function effectively, however, a number of political and technical requirements need to be in place. For example, there needs to be political will to generate accurate data about 'those left behind', as well as the technical capacity to do it. There needs to be a balance of power or political dynamic that is favourable to translating this data into meaningful policies, and the policies need to be technically sound, or at least formulated in such a way as to allow experimentation and course correction when things go wrong. Likewise, a set of both technical and political questions surrounds the ability to translate pro-poor policy into actual financial flows that are able to reach service-providing departments or agents, and finally, additional technical and political factors impact on whether funding for services actually translates into frontline providers doing their jobs in ways that are conducive to ensuring that no one is left behind. At every link in the chain there is a danger that processes will be captured by groups with interests opposed to the realisation of the 'leave no one behind' agenda.

Our research was designed to assess the extent to which this causal chain was functioning in the requisite way, and if not, why not.

Figure 1: A working causal model
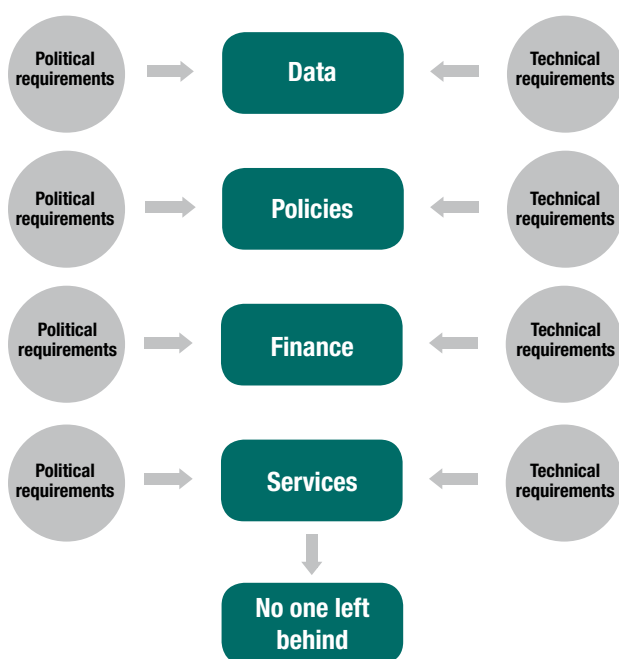
Source: Overseas Development Institute (2016)

2.4 Research methods

In addition to the quantitative approach to determining who is being left behind in our study countries, we used a combination of desk-based literature review, key informant interviews, and focus group discussions to illuminate the political and technical dimensions of our conceptual framework. For each level of inquiry, we asked questions about the combination of structures, institutions, and actor interests that underpinned the situations we found. We also used financial data to trace financial flows and reveal to what extent declared policies were translated into actual expenditure. We conducted fieldwork at national level and in two counties (see below).

At every stage, efforts were made to try and triangulate information using different informants and data sources. However, on some topics we were only able to get the opinions or experience of one or two interviewees. This will be apparent to the reader from the references, and our findings in such cases are appropriately circumspect. Codes for interviewee types and a list of interviewees who agreed to share their names is included in Annex 4. The quotes included in the report are not attributed to specific interviewees to maintain confidentiality.

Fieldwork was conducted in July and September 2016.

2.5 County case selection

The original intention of the case selection was to facilitate a comparison between two broadly similar poor counties, with differential outcomes in terms of health and access to roads. By this method we hoped to gain potentially generalisable insights into how to get better performance in challenging conditions. Unfortunately, challenges in accessing data on average distance to a road by county meant that, at the time of the case selection, we were not able to factor roads into the county selection process. As a result, the county selection was done purely based on health outcomes.

After eliminating several counties on security and ease of access grounds, we settled on Narok and West Pokot as the basis for our comparison. Both counties are overwhelmingly rural, being in the bottom three counties nationally in terms of urbanisation. Both also have international borders: West Pokot borders Uganda while Narok neighbours Tanzania. Demographically, both have large numbers of pastoralists and both have a very young population. Economically, both are considerably poorer than the national average, and financially, both are very close in terms of per capita expenditure. However, Narok performs consistently better on health indicators than West Pokot, providing the possibility of learning something about the conditions in which the plight of the marginalised is ameliorated. Key indicators are compared in Table 1.

Table 1. Key indicators in Narok and West Pokot

	Narok	West Pokot
Population[13]		
Overall population	850,920	512,690
Urban population	11%	8%
Rural population	89%	92%
Poverty profile[14]		
% of population in the bottom quintile	48%	68%
% of population in the bottom 40%	68%	86%
Access to roads[15]		
% of households within 5 km of a paved road	41%	25%
% of households within 5 km of a paved and gravel road	66%	80%
Average distance to roads in the county (in metres)	1444.854	2520.6
WASH indicators[16]		
Share of population with improved drinking water sources	30%	31%
Share of population accessing improved sanitation	32%	26%
Health indicators[17]		
Percent of 12–23-month children fully immunised	58.5	31.2
Percent of live births delivered in a health facility in the last 5 years	38.6	25.8

Box 1. Local fieldwork in Kenya: Narok and West Pokot

Narok lies in the Great Rift Valley in southern Kenya and makes up part of the international border with Tanzania. Classified as Arid and Semi-Arid Lands (ASAL), the highland Mau escarpments provide substantial areas of fertile agricultural land, producing wheat and barley, while the lowlands are home to the Maasai Mara Game Reserve. The population of Narok is predominantly Maasai. Traditionally they have been semi-nomadic, and while there is a decline in their nomadic movements, they are still characterised by pastoralism. 38% of residents have no formal education, and 51% are only educated to primary level, and in some constituencies this level is much higher. Narok county ranks worst nationwide in access to improved water, and quite poorly in a range of health and poverty indicators. Reliable data on those vulnerable to being left behind is difficult to attain, but interview respondents suggest that the most vulnerable are women, orphans, and people in remote areas.

West Pokot, also in the Rift Valley, lies further to the north and borders Uganda. Harsh in both terrain and climate, West Pokot is also classified as an ASAL county. The main livelihoods are pastoralism, agro-pastoralism and mixed farming. The Pokot people who reside in East Kenya and West Uganda have a traditional and male-dominated governance system and practise polygamy in order to maximise the productive and reproductive capacity of society. West Pokot ranks very poorly in a range of indicators, 38th out of 47 counties in the poverty index, 46th in the proportion of people with secondary education, and 44th and 45th in access to electricity and improved water, respectively (CRA, 2013).

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13 KNBS (2009).

14 KNBS (2015) and KNBS (2009).

15 CIESIN and ITOS (2013).

16 KNBS (2015).

17 KNBS (2015).

3. Leaving no one behind in the Kenya roads sector: a stocktake

3.1 Introduction to Kenya

Since before independence, Kenya has had an unenviable reputation as one of Africa's most unequal countries. Its uneven pattern of political economic development, in which certain communities felt more or less permanently excluded from the fruits of power (see Box 2), was one of the underlying causes of the serious political violence that followed the 2007 general elections. During this violence several thousand people died and the country teetered on the brink of civil war. In response, Kenya embarked on a peace process which produced, among other things, a new political settlement embodied in a Constitution which provided a remarkable opportunity to address the inequalities of the past.

Demands by smaller ethnic groups for a greater degree of devolution have been a common feature of Kenyan politics since Independence, and had been reflected, to a greater or lesser degree in three previous draft constitutions – none of which, however, had successfully passed into law. After the violence of 2007, attributed among other things to a top-heavy, winner-takes-all political system, constitutional reform gained new impetus. In 2008 a Committee of Experts was tasked with creating a new Constitution, building on previous (rejected) drafts, and taking into account the views of the public. When promulgated, the 2010 Constitution contained ground-breaking provisions to devolve power to 47 newly created local counties and to provide incentives for the President to rule in a more inclusionary manner (see Box 3). The measures were intended, among other things, to reduce the stakes of the Presidential and national elections by allowing groups aligned with failed candidates to retain power locally (Willis et al., 2014; Kramon and Posner, 2011; Cheeseman et al., 2016).[18] This appears to have been borne out in the 2013 elections, in which Uhuru Kenyatta, son of Kenya's first president and leader of the Jubilee Alliance, was elected without major incident. As we will see in more detail in the next section, the reforms coincidentally aligned Kenya with the 'leave no one behind' agenda.

Box 2. Historical origins of inequality in Kenya

Between 1895 and 1963 Kenya was governed as a Protectorate and then as a Crown Colony of Great Britain. During this time many Europeans and Asians settled, developing large farms in the cooler climes of what became known as the White Highlands, together with supporting industries around Nairobi and other towns. The Kikuyu, the traditional inhabitants of this part of Kenya, experienced the greatest benefits of colonialism, such as missionary education, but also its harshest depredations. The anti-colonial Mau Mau insurgency in the 1950s was an uprising of Kikuyu against colonial rule, but also a civil war that pitted the Kikuyu victims and beneficiaries of colonialism against one another.

Kenya's first president, Jomo Kenyatta, was a Kikuyu, and his tribe dominated the largest political party. He used the power of the state to redistribute land and business opportunities from settlers to his kinsmen and allied groups (Lynch, 2006; Willis and Chome, 2014; Bedasso, 2015; Carrier and Kochore, 2014). Agricultural extension, health, and education services, meanwhile, were concentrated on the areas of high economic potential, reinforcing existing patterns of inequality.

In 1978, power passed from Kenyatta to Daniel Arap Moi, an ethnic Kalenjin, before being won back, in 2002, by Mwai Kibaki, another Kikuyu. Throughout the entire period, politics revolved around competition for economic resources by ethnic 'big men' and their followers, with smaller groups consistently marginalised.

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18   The Constitution also created a Council of Governors and a Senate, both of which were intended to further bolster local interests.

Box 3. Some key articles of the Kenyan constitution

Article 138 (4): A candidate shall be declared elected as President if the candidate receives:
a. more than half of all the votes cast in the election; and
b. at least twenty-five per cent of the votes cast in each of more than half of the counties.

Article 174: The objects of the devolution of government are:
e. to protect and promote the interests and rights of minorities and marginalised communities;
f. to promote social and economic development and the provision of proximate, easily accessible services throughout Kenya;
g. to ensure equitable sharing of national and local resources throughout Kenya;

Box 4. Kenya Constitution, Article 260

'Marginalised community' means (a) a community that, because of its relatively small population or for any other reason, has been unable to fully participate in the integrated social and economic life of Kenya as a whole; (b) a traditional community that, out of a need or desire to preserve its unique culture and identity from assimilation, has remained outside the integrated social and economic life of Kenya as a whole; (c) an indigenous community that has retained and maintained a traditional lifestyle and livelihood based on a hunter or gatherer economy; or (d) pastoral persons and communities, whether they are—(i) nomadic; or (ii) a settled community that, because of its relative geographic isolation, has experienced only marginal participation in the integrated social and economic life of Kenya as a whole;

'Marginalised group' means a group of people who, because of laws or practices before, on, or after the effective date, were or are disadvantaged by discrimination on one or more of the grounds in Article 27 (4).

The Constitution also made explicit reference to minority or marginalised communities and groups (see Box 4) and, at Article 56, enjoined the state to enact 'affirmative action programmes' to ensure, among other things, that these groups, 'are provided special opportunities in educational and economic fields', 'are provided special opportunities for access to Employment' and 'have reasonable access to water, health services and infrastructure'. Article 21, meanwhile, enjoins public officials to address the needs of 'vulnerable groups within society, including women, older members of society, persons with disabilities, children, youth, members of minority or marginalised communities, and members of particular ethnic, religious or cultural communities'.

Consistent with this, the Constitution provided for a number of financial provisions to improve resource allocation to counties, including a guarantee that 15% of revenues would be allocated to counties through the 'Equitable Share', according to principles including: the developmental and other needs of counties; economic disparities within and among counties and the need to remedy them; and the need for affirmative action in respect of disadvantaged areas and groups. There is also provision for an 'Equalisation Fund' to narrow the gap between marginalised areas and the rest of the population, and also a Commission on Revenue Allocation to determine how the Fund would work. Using a County Development Index of health, education, infrastructure and poverty, combined with expert analysis and its own marginalisation survey, the commission subsequently identified 14 counties as marginalised – shaded red in Figure 2.[19]

Our interviews with Kenyan state and non-state actors suggested that although this geographical approach to marginalisation is quite widespread, there are some important caveats. Interviewees emphasised that these areas of Kenya are marginalised because of 'historical reasons'[20] compounded by a challenging terrain and climate. Nevertheless, the concept is under review, since one senior government official admitted that 'there is no common understanding of leaving no one behind. It is not well understood, and it will take some time before Kenyans understand what it means.' The Ministry of Devolution and Planning, for example, tasked with implementing an 'SDG roadmap', has no settled definition of the concept. Several ministries, especially those in receipt of World bank funding, have instead adopted and adapted the World Bank's Vulnerable and Marginalized Group Framework, which takes a more population-based approach (World Bank, 2013).[21]

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19 See www.crakenya.org/cra-chairman-launches-marginalization-policy.

20 'Historically, the road network was developed as a subsidiary of the railway system up to the time of Kenya's independence in 1963. Railways were developed for the transportation of bulk commodities and passengers over long distances. Roads were used as a link between the railways and the European-owned large scale farming areas. Little or no interest was accorded to rural areas where subsistence farming was practiced by Africans' (MoT, 2009).

21 For example, the Kenya Water Security and Climate Resilience Program, funded by the World Bank, and managed by the Ministry of Environment, Water and Natural Resource, identifies the Sengower, Ogiek, Turkana, Rendille, Gabra, Ajuran, Masaai, Illchamus, Aweer, Pokot, Endorois, Boni and Watha as vulnerable and marginalised. Other projects run by other ministries identify different collections of groups.

Figure 2. Marginalised counties in Kenya
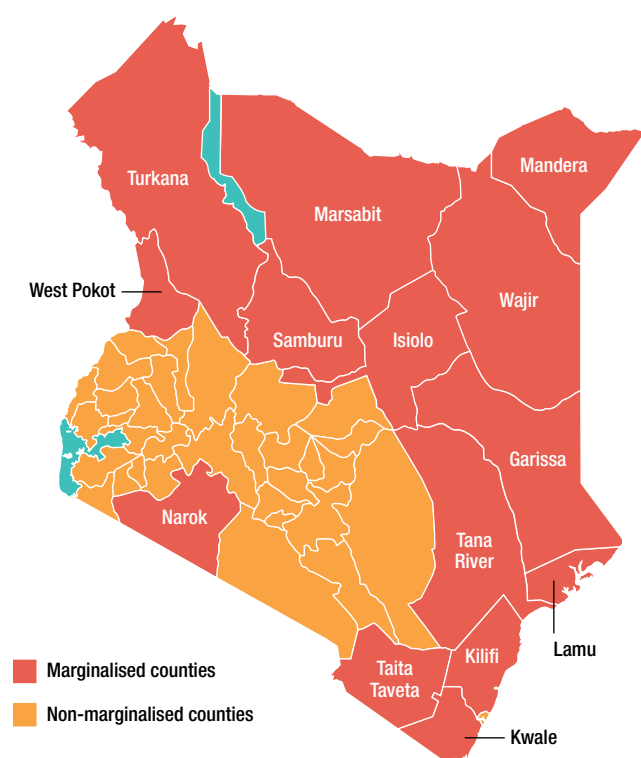
Source: CRA (2013).

3.2 Kenya, 'leave no one behind' and the roads sector

Kenya faces a significant challenge in connecting its 46.05 million inhabitants across a country that covers 580,370 km² (WDI, 2016). Roads are the key mechanism for this connection, with 93% of land freight and passenger traffic being accounted for by road transport and only limited networks of rail and inland water transport (MoR, 2012).

The latest available inventory recorded a total road network length of 160,886 km,[22] split into 61,945 km of classified[23] and 98,941 km of unclassified roads (MoR, 2010). The quality and condition of these roads varies widely. Paved roads account for 11,197 km (7%) of network length, while the remaining 149,689 km is of earth or gravel standard (ibid). Some 56% of roads are in poor condition, with only 11% being described as 'good' and 33% 'fair'. Around 4000 km of the paved road network (36%) is in a poor or failed condition (KRB, 2010).

At the highest level, Kenya has demonstrated an ambition to expand roads access to all areas of the country. The Kenya Vision 2030 document states that 'by 2030,

it will become impossible to refer to any region of our country as remote' (GoK, 2007: 6). Specific plans for achieving this have also been laid out. The second mid-term review of Kenya 2030 emphasised that: 'Expansion of roads will be continued, aiming at achieving a road network with 75–80 per cent of the classified roads in good condition and construction or rehabilitation of 5,500 km of roads.' (GoK, 2013: x). This includes a mixture of national trunk roads (3,825 km) and county roads (1,675 km) (ibid: 18).

The broad ambition to ensure that all areas of Kenya are connected to the road network is also operationalised in the priorities and plans of the roads sub-sector, and in a manner that aligns well with the 'leave no one behind' agenda. The Sessional Paper No. 5 of 2006 on the Development and Management of the Roads Sub-Sector for Sustainable Economic Growth (MoRPW, 2006), which outlined the key development priorities pursued in subsequent Road Sub-Sector Investment Plans (RSIPs), contains two specific commitments related to the 'leave no one behind' agenda. These are:

- Bituminise [upgrade to tarmac] economically viable urban arterial roads, especially where these serve low-income neighbourhoods.
- In support of the Millennium Development Goals, work towards eventually providing all season road[24] access within 2 km for all Kenyans.

These progressive priorities demonstrate an increased commitment to improving access to roads for all Kenyans and, while they pre-date the Sustainable Development Goals, they could serve to fulfil the SDGs were Kenya able to meet them.

Kenya therefore presents an interesting case where policy frameworks appear to prioritise – and includes specific commitments to – improving access to roads for all citizens, as well as recognising a range of 'left behind' groups. This emphasis reflects the need to overcome existing inequalities in roads access in Kenya.

Overall, Kenya appears to have made strong progress in expanding roads provision and improving road access in recent years. Over 2008–2012, a total of 2200 km of roads were constructed – exceeding the target of 1500 km (GoK, 2013:2). Similarly, 1129 km of new roads and bridges were constructed over 2012/13 and 2014/15 – surpassing the target of 704 km – and the length of paved roads has expanded by approximately 400 km annually over the same period (PBO, 2015: 20). Expansion in rural areas has also exceeded targets, with the Kenya Rural Roads

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22 Including all roads with a width of 9 metres or more.

23 Roads that are recognised by the government and fall under the authority of the Kenya Roads Board.

24 An 'all-season road' is a road that is motorable all year by the prevailing means of rural transport (often a pick-up or truck that does not have four-wheel drive). Predictable interruptions of short duration during inclement weather (e.g. heavy rainfall) are accepted, particularly on low volume roads (World Bank, 2007).

Authority (KeRRA) constructing 265.4 lane km[25] of new roads in 2014/15, against a target of 242 lane km.

Despite this progress, there are still a number of barriers to overcome – particularly from a 'leave no one behind' perspective. The current rate of expansion means that the Vision 2030 target of 5,500 km paved within five years is unlikely to be reached, while estimates at the county level suggest that in order to ensure that all people are even within 5 km of a gravel or paved road[26] by 2030 (a less ambitious target than SDG 9.1.1) ambitious increases in access would be required – as explored in following sections. Maintenance targets have been consistently missed over 2012/13 to 2014/15, with the shortfall being particularly pronounced in rural regions that are less well connected and most relevant to the 'leave no one behind' agenda.

The overall picture, then, is mixed. Access to roads is improving in Kenya and there are steps towards greater equity. However, there are continuing challenges to ensuring effective and efficient expansion that improves access in line with the 'leave no one behind' agenda. The remainder of the paper will explore the reasons for this – looking first at the structure of the road sector and identifying those who are left behind, before moving to a deeper analysis of drivers and concluding with a series of recommendations.

3.3 The structure of the road sector

Presiding over this situation is an institutional structure that has undergone considerable change over the last decade thanks to the enactment of the Kenya Roads Act in 2007 and implementation of the new Constitution. The enactment of the Kenya Roads Act established three state corporations, each responsible for specific types/classes of roads: the Kenya National Highways Authority (KeNHA); Kenya Rural Roads Authority (KeRRA); and Kenya Urban Roads Authority (KURA) (see Box 5). Prior to this, uncertainties, duplication of roles and inconsistency in the road asset management system were seen as the main contributors to the poor state of roads in the country (MoR, 2012). This in turn was the result of several ministries concurrently exercising road management responsibilities through some of their departments and agencies. A second and more recent development in the roads sector relates to the promulgation of the Constitution of Kenya in 2010, which introduced a devolved system with two levels of government. Under the Constitution, functions and powers, including those relating to roads, have been divided between the national and county governments.

Box 5. Management of the road subsector

At the national level, the State Department of Infrastructure under the Ministry of Transport and Infrastructure is the main department involved in developing and administering the road network. It is responsible for the development and implementation of Road Sub-Sector Policies and delivers on its functions of standardisation, maintenance and research on roads through the five state corporations. As shown in Figure 3, the Kenya Roads Board (KRB) has a largely managerial and regulatory role over the other four agencies, which are then responsible for the management, development, rehabilitation and maintenance of roads of specific types and in particular contexts. KRB also manages and coordinates the utilisation of the KRB Fund which comprises the road maintenance levy and transit tolls.

Figure 3. State Department of Infrastructure

State Department of Infrastructure

Kenya Roads Board (KRB)
Management of Kenya Road Board Fund and evaluation of road works

Kenya Urban Roads Authority (KURA)
Management, development, rehabilitation and maintenace of all public roads in cities and municipalities, except those that are national roads

Kenya National Highway Authoirty (KeNHA)
Management, development, rehabilitation and maintenance of class A, B and C roads

Kenya Rural Roads Authority (KeRRA)
Management, development, rehabilitation and maintenace of rural roads

Kenya Wildlife Services (KWS)
Management, development, rehabilitation and maintenance of roads in National Parks and Game Reserves

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25 A lane km is defined as a kilometre-long segment of roadway that is a single lane in width (for example, a one kilometre stretch of a standard two lane road represents two lane km).

26 Currently available data does not allow assessment of the proportion of county populations within 2 km of an all-season road. Here, and elsewhere, we assume that paved and gravel roads are equivalent to all-season roads.

The division of responsibilities in the road sector between national and county government is laid out in Table 2. National government is assigned responsibility for the construction and operation of 'national trunk roads', as well as having a key regulatory function in setting and monitoring standards for construction and maintenance at all levels. It currently exercises these functions through the State Department of Infrastructure and the state corporations under the Ministry of Transport and Infrastructure.[27] County governments then have responsibility for constructing and maintaining 'county roads', and tend to exercise these functions through their country road or infrastructure departments. However, the Constitution does not explicitly define what roads are to be classified as a 'national trunk road' and as a 'county road', leading to controversy as different levels of government seek to exert influence over the road network. Given that this transition has yet to be completed, the road agencies of the national government still exist and continue to construct and perform maintenance and repair works on roads that some perceive as 'county roads'. The implications of this ongoing transfer of powers for the 'leave no one behind' agenda is discussed in sections 3.2 and 4.2.

Table 2. Division of responsibilities for transport and roads between national and county government

Level of government	Responsibilities relating to transport and roads
National	• Road traffic • Construction and operation of national trunk roads • Standards for the construction and maintenance of other roads by counties
County	• County transport • County roads • Street lighting • Traffic and parking • Public road transportation • Ferries and harbours, excluding the regulation of international and national shipping etc.

Source: GoK (2010)

Funding for roads at the national level relies on general government revenue as well as donor funding, with the latter financing closing to 50% of roads development (Kaunda, 2014).[28] In addition, there are a number of dedicated levies, most notably the Road Maintenance

Box 6. Classification of the road network

A – International Trunk Roads

B – National Roads

C – Primary Roads

D – Secondary Roads

E – Minor Roads

SPR – Special Purpose Roads

U – Unclassified Roads

Levy Fund (RMLF),[29] which funds road maintenance at both the national and county level. Roads funding at the county level is set by the budget agreed by the County Assembly and Governor, with revenues coming largely from a block grant from the national government, with some additional local government revenues.

Outside of the state, there appear to be few active civil society organisations or non-governmental organisations (NGOs) that lobby around the expansion of the road network, either at the national or county level. There are a number who focus on road transport safety issues (e.g. the Association for Safe International Road Travel, the Road Safety Network of Kenya, Kenya Road Safety Initiative and Zusha) and others that examine the sector from an anti-corruption perspective (e.g. Twaweza, International Budget Partnership, Transparency International and the National Taxpayers Association). However, there appear to be none that are specifically involved in road infrastructure as a specialised sector.

Business associations, private companies and individual businessmen also play a gap-filling role in terms of road construction and maintenance, focusing on specific routes that are important to their business interests. This is reported to occur particularly in the case of major agricultural bodies, such as the Kenya Sugar Board and Kenya Tea Development Agency. These agencies sometimes finance sugar or tea companies to undertake road works, while individual firms also take action – often out of frustration with a lack of responsiveness from the road bureaucracy (KACC, 2007). In our research, examples were highlighted in Narok and West Pokot of individual businessmen and farmers engaging in road maintenance and rehabilitation, often using local labour, in order to ensure free movement of their goods. However, it appears

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27   The Ministry of Transport and Infrastructure has recently been restructured to include transport, infrastructure, housing and urban development, maritime and shipping affairs as well as public works, and is now referred to as the Ministry of Transport, Infrastructure, Housing and Urban Development.

28   Roads development refers to the capital cost of upgrading existing roads or building new roads. It therefore differs from the rehabilitation and maintenance of roads, some of which also involve capital costs.

29   Others include the Mechanical and Transport Fund, road transit tolls and agricultural cess. Funds are also channelled into the sector by international donors.

that these efforts are ad hoc and largely used as a last resort (KGCO1, FGDLR2).[30]

3.4 Who is left behind in terms of road access?

The existing distribution of road transport infrastructure demonstrates significant imbalances. There is a high concentration of road infrastructure development along the Mombasa-Nairobi-Malaba transport corridor that served the former white highlands[31] (see Figure 4). This concentration is partly the result of relatively high population concentrations and the presence of the main route linking the Port of Mombasa to the rest of the land-locked countries in East Africa. However, as explored in later sections, it is also closely related to the historical legacy of colonialism and the uneven distribution of power in post-Independence Kenya. In contrast, the northern, eastern and southern parts of the country are poorly served by roads and existing networks are in poor condition (MoT, 2009). Connectivity is particularly poor in the arid and semi-arid areas in the north-east. The North Eastern province covers approximately 30% of the country's land mass, but has less than one per cent of its roads network paved (MoT, 2009).

In order to identify who is left behind in terms of roads, the main variable used is the distance to the nearest road by household. As noted above, this would ideally have been done looking at households with different characteristics, such as income, ethnicity, location (rural/urban), gender of household head and so on. However, lack of data meant that this was not possible. Instead, we were only able to look at the average distance to a road (by type) by county. The data sources used were the Global Roads Open Access Data set from 2013 and the Kenya and Demographic and Health Survey 2014 population distribution. See Annex 3 for more detail on the methodology, including some of its limitations. We also consider the quality of roads in each county: having access to a road is not helpful for those left behind if the quality is so poor it becomes impassable.

The data analysis showed that there are considerable inequities in household access to roads, by both road type and condition.[32] We identify the distance to the nearest road for households by county and by the type of surface.

Figure 4. Map of Kenyan roads by category
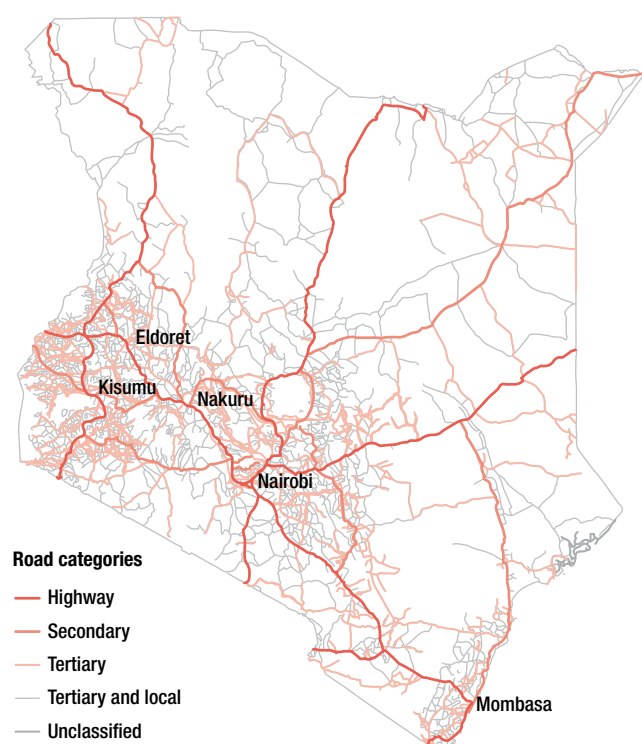
Source: CIESIN and ITOS (2013).

Figure 5. Mean household distance to a road by county
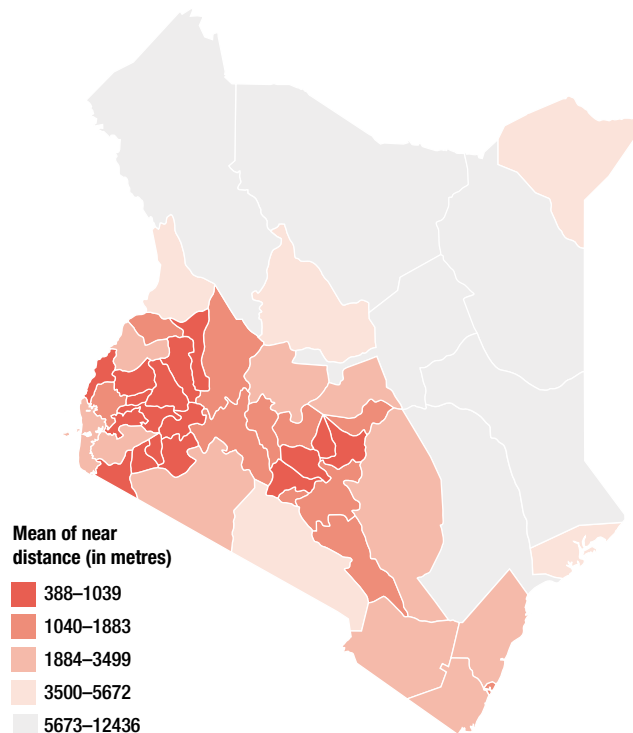
Source: CIESIN and ITOS (2013), DHS (2014).

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30 See Annex 4 for a list of interviewees and reference codes.

31 The White Highlands is an area in the central uplands of Kenya, so-called because, during the period of British colonialism, European or white immigrants settled there in considerable numbers.

32 Figures quoted here are from original analysis undertaken for this project using 2013 data for Kenya from the Global Roads Open Access Data Set – data collected by CIESIN of Columbia University and Information Technology Outreach Services (ITOS) of the University of Georgia – and the Demographic and Health Survey 2014 for the population distribution. See Annex 3 for technical details.

As of 2014, 19.8% of households are 10 km or more from a paved road, and 7.7% of households are 20 km or more from a paved road. 39.1% of households are 5 km or more from a paved road. Access to other forms of roads is better, however. Only 1.5% of households in Kenya are 20 km or more from a paved or gravel road, 3.6% are 10 km or more from a paved or gravel road, and 7.3% are 5 km or more from a paved or gravel road.[33]

Poorer counties tend to have less access to roads. There is a strong negative correlation at the county level between the proportion of households within 10 km of a paved or gravel road and the share of people in the bottom wealth quintile. This holds for both paved and gravel roads, with the impact effect on the former being particularly strong.[34] The regional imbalances noted above also emerge strikingly from the county-level data, as can be seen in Figure 5. More than one out of every ten households in ten counties – Turkana, Samburu, Garissa, Lamu, Wajir, Isiolo, Mandera, Marsabit, Tana River and Kitui – are located 5 km or more from a road.[35] These figures are even more striking for paved roads. 90% of households in Lamu, Marsabit, Samburu and Wajir are more than 5 km from a paved road, while in a further 21 counties over half of all households are located 5 km or more from a paved road.

The challenge of road quality, by contrast, appears to be more evenly spread across wealthier and poorer counties. Our analysis found no correlation between the condition of roads and county development levels, and while eight of the 14 most marginalised counties have a smaller share of their roads in good or fair condition than the national average (44%), others such as Turkana (60%),

Samburu (61%) and Isiolo (68%) were among the best counties nationally. This highlights that although poorer counties face major challenges in terms of expanding the road network, maintenance concerns plague even relatively rich and better connected counties.

Previous sections have noted strong improvements in the overall reach of the road network and it is notable that these are also reflected in improvements in access for many historically marginalised countries. However, it is also clear that the pace of expansion will need to be increased significantly if the ambitious targets of Vision 2030 and the Roads Sessional Paper 2006 are to be met. For example, Isiolo, Garissa, Turkana, Samburu, Marsabit and Mandera will all need to ensure that more than an additional 4% of their population per year become within 5 km of a gravel or paved road if all of their population is to meet this standard by 2030.

The overall picture, then, is mixed. Access to roads is improving in Kenya and there are steps towards greater equity, aided, as we shall see in the next section, by policy commitments and the shift in powers, incentives and finances associated with devolution. However, there are continuing challenges arising from the dominance of economic and political priorities over 'leave no one behind' considerations, combined with coordination problems, funding shortfalls and inefficiencies that undermine the effectiveness of road sector spending. The remainder of the paper will explore the various drivers behind these patterns, concluding with a set of recommendations on next steps towards ensuring that no one is left behind in the roads sector.

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33 Data using the 5 km distance should be considered with caution, as the DHS survey database includes potential displacement of GIS coordinates for households by up to 2 km in urban areas and up to 5 km in rural areas for privacy reasons. For more information, see Simonet (Forthcoming).

34 Correlation with the proportion of people in bottom wealth quintile as follows for proportion of population within 10 km of different road types: (i) paved or gravel road (p= -0.7); (ii) paved and gravel roads (p= -0.77); and (iii) paved road (p= -0.82).

35 As explored in later sections, these are likely to be underestimates as many remote and pastoral communities may be excluded from the population data.

4. Drivers of progress

4.1 Roads as a priority area for the Government of Kenya

The 'leave no one behind' agenda in roads access benefits from the fact that road transport is a priority area for the Government of Kenya. As a sub-sector of the broader Energy, Infrastructure and ICT (EII) sector, it is considered to be one of the key enablers for sustained economic growth, development and poverty reduction. Accordingly, the road transport programme is considered one of the highest priorities within the EII sector, having been ranked first out of the 13 programmes[36] analysed as a part of the MTEF-EII sector plan (GoK, 2015a).[37]

As discussed in Section 3.2, the Government of Kenya has expressed an ambition, pre-dating the Sustainable Development Goals, to expand roads access to all areas of the country and for all Kenyans. It should be noted that these policy commitments do not explicitly prioritise access for marginalised or low income groups per se. However, this target may still contribute to the 'leave no one behind' agenda in roads, particularly if the high priority given to the roads sub-sector leads to an expansion of infrastructure in more remote areas that are populated by 'left behind groups'.

Alongside these specific project priorities, there is also a movement within the KRB to shift the criteria used to determine the viability of roads maintenance projects – moving from strictly economic cost-benefit analysis to the development of multi-criteria analysis that would incorporate social indicators (KGO9). Once implemented this could have a much broader impact on the extent to which roads projects meet 'leave no one behind' objectives by ensuring that non-economic priorities are consistently considered or at least considered more frequently.

4.2 New constitutional arrangements

The agreement and implementation of the 2010 Constitution of Kenya resulted in a major redistribution of power and resources between different levels of government, alongside shifts in political incentives, with important implications for roads access in marginalised regions.

The devolution process, implemented in 2013, saw county governments taking over a range of responsibilities for the development and maintenance of roads and transport within their boundaries (see Table 3). This was accompanied by fiscal empowerment at the county level (explored in the following sections) that enabled counties to formulate, finance and implement their own infrastructure development plans independently of the national government.

Counties, and particularly those in remote areas or which have been historically marginalised, have therefore been able to use their increased control over public spending and the road sector to expand the road network in areas that would not otherwise have seen this investment. This is emphasised in both interviews and data analysis from the two case study counties. In West Pokot, county officials interviewed attributed the extension of the tarmac road network and the construction of a number of roads within the county after 2013[38] to the decentralised powers of the county government (KGCOs 5–6). Similarly, in Narok, considerable progress appears to have been made over FY2013/14 to FY 2015/2016. Over 800 km of county access roads were gravelled during this period (an increase of 95%) and 600 km of roads received heavy grading, alongside a range of other projects (KGCO1; CGoN, 2013).[39]

Priorities at the local level may be more closely aligned with the 'leave no one behind' agenda, although there are a range of political dynamics that complicate this, as explored in later sections. In Narok, for example, 87%

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36 This is based on criteria developed by the National Treasury for the current MTEF period 2016/17–2018/19. The ranking of remaining 12 programmes is as follows: 2. Power Transmission and Distribution; 3. Rail Transport; 4. Power Generation; 5. ICT Infrastructure and Development; 6. Alternative Energy Technologies; 7. Information and Communication Services; 8. Road Transport Safety and Regulation; 9. Marine Transport; 10. Air Transport; 11. Exploration and Distribution of Oil and Gas; 12. ICT and Mass Media Skills; and 13. Government Clearing Services.

37 It should be noted that in 2015/16 and 2016/17 rail transport will absorb a slightly larger proportion of the budget due to investment in the Standard Gauge Railway (Kshs. 147 billion compared to 133 billion for road in 2015/16 and Kshs. 154 billion compared to 147 billion for roads in 2016/17) (GoK, 2015b, 2016c).

38 18 roads projects were initiated, alongside 25 projects focused on drainage and protection works.

39 Data from 2013 notes that Narok then had a road network of approximately 2,798.4 Km. The majority of roads were earthen (60.7%), with gravel surfacing making up 840km (30%) and bitumen (tarmac) surfacing on only 260km (9.3%) (CGoN, 2013).

of the Ksh. 1.1 billion ($10.9m)[40] revised allocation for the construction of roads for 2013/14 went towards rural roads (CGoN, 2014), which are more likely to serve left behind groups, with the remainder allocated to conservation roads. County officials also stated that they have diverted resources from social sectors towards roads in order to improve access to basic services (e.g. health) and the transport of agricultural produce (KGCO1). However, it is notable that budget allocations in more recent years have focused on major roads rather than access roads. Moreover, road investments for agricultural transport appear to have been oriented to benefitting local elites (i.e. prominent local farmers), rather than focused on left behind groups per se. Prominence was also given to a project to tarmac the road to the Maasai Mara reserve and game park. This suggests that local economic growth, with at least a degree of elite focus, can play an important role in driving local roads policy. Benefits are still likely to be felt by left behind groups, however, as improvements in the local economy should have positive spillover effects. Decentralisation has therefore given county governments the discretion to channel roads financing into areas that were previously neglected and in a manner that is likely to improve conditions for left behind groups. However, it is unclear whether these new powers will necessarily result in a joined up approach to public spending that improves access to basic services in a manner consistent with the broader 'leave no one behind' agenda.

The focus of roads projects on meeting social objectives and improving access for left behind groups may also be assisted by the requirement for local participation processes to influence roads priorities and budget allocations. These processes are mentioned frequently by county-level officials, with West Pokot publishing details in a Public Participation Report, and are also integrated into KeRRA's prioritisation of rural roads projects (KGO3, KGCOs 1, 5–6; CGOWP, 2014a, 2015c). These processes may therefore provide an additional driver for expansions in the road network to align with the 'leave no one behind' agenda, to the extent that members of left behind groups are represented within them. However, the influence exerted by these processes may be limited, an issue explored in later sections.

The 2010 Constitution has also created greater incentives for national politicians to focus on more marginalised regions. This is partly driven by a provision requiring candidates for the Presidency to secure at least 25% of the vote in at least 24 counties in order to be elected President (GoK, 2010). This creates greater political competition in areas of Kenya that were historically neglected and marginalised, and so generates incentives for national politicians to channel resources to them. Carrier and Kochore (2014) note this dynamic as being an important feature of political competition in northern Kenya around the 2013 presidential election, with a number of major infrastructure investments being promised by candidates. Increased investment in these marginalised regions may therefore lead to improved access for left behind groups, although – as explored in later sections – this will be tempered by the extent to which the substance of investments are aligned with their needs.

4.3 Strong budget priority and pro-poor county allocations

The expansion of the road network and improvements in access to marginalised regions have been enabled by considerable financial resources being directed to the sector overall, and the fact that the county revenue allocation formula and other transfers that were implemented as part of the devolution process tend to favour the most marginalised counties.

For the reasons outlined in Section 3.1, the roads sector receives high financial priority in the national budget, with national government expenditure on the sector increasing by almost threefold over the last 10 years – from Ksh. 46 billion ($453.8m) in 2006/2007 to Ksh. 136.2 billion ($1.34 billion) in 2014/2015 (MoR, 2010: v; OCB, 2015: 61). Similar findings also emerge from analysis of budget estimates at the programme level, which reveals that funding for the road transport programme is rising by the highest absolute amount of any government programme – up by Ksh. 42.8 billion ($422 million) between 2015/16 and 2016/17 (Kinuthia and Lakin, 2016). This prioritisation is replicated at the county level. Out of the 46 counties[41] with expenditure data on roads specifically for FY2014/15, roads accounted for 25% of the counties' total development expenditure on average – ranging from 56% in Kisumu to 2% in Kwale, and with 20 counties spending above the average (OCB, 2015). While improvements in resource levels do not guarantee improvements in provision, they are likely to play an enabling role and so explain some of the progress observed in expanding road access.

The differences in roads expenditure across counties, especially since devolution, are partly explained by the considerable discretion that county governments have in their financing of different sectors and priorities, and partly by the pro-poor nature of national government transfers to county governments. The majority of county revenue comes from a large unconditional grant from national government[42] – the equitable share – which is allocated

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40   Throughout, figures for USD amounts are based on currency exchanges rates on 24th October, 2016.

41   Road expenditure data is not available for Marsabit County.

42   Locally raised revenues are generally low and uncertain, making them too unreliable for financing investment in major infrastructure projects.

according to a progressive formula that allocates a greater share of revenue to poorer counties.[43] The impact of these funding arrangements on road spending – when combined with county decisions on sector prioritisation – seems to have been positive by benefitting the poorer and more remote areas, in line with the 'leave no one behind' agenda. However, there is insufficient data to determine the extent to which county expenditure is pro-poor *within* counties, and based on interviews with county officials it should not be assumed that county government would automatically prioritise roads that would benefit those left behind over those that would benefit elites or generate significant economic benefits.

Nonetheless, analysis of county road expenditure finds that though weak, there is a positive and statistically significant[44] relationship between this expenditure and the level of poverty in a county,[45] and that counties that are less accessible[46] also tend to spend more on roads (see Figure 6). The pro-poor nature of road spending across counties is also likely to increase in the near future, as a conditional grant from the RMLF was introduced

from FY2015/16 using the same formula as the equitable share (Kinuthia and Lakin, 2016), thereby channelling further resources to the poorest counties and those that are least accessible.[47]

A similarly pro-poor impact at the county level is anticipated from the creation of the Equalisation Fund, as mandated under the 2010 Constitution. This provides for annual appropriation of 0.5% of all the revenue collected by the Government of Kenya, which is then channelled to provide additional funding for basic services (e.g. water, roads, health facilities and electricity) in the 14 most marginalised counties (GoK, 2016b).[48] Road infrastructure projects have been given a high priority – accounting for 58% (Ksh. 6.7 billion or $66.1 million) of the Ksh. 11.5 billion ($ 113.5 million) allocated to the Equalisation Fund in the 2016/17 budget (GoK, 2016b). This represents a substantial increase in road financing in these counties, equivalent to half of the previous year's non-Equalisation Fund allocations for road projects in the 14 most marginalised counties.[49]

Figure 6. Exploring correlations between county and road expenditure, poverty and accessibility
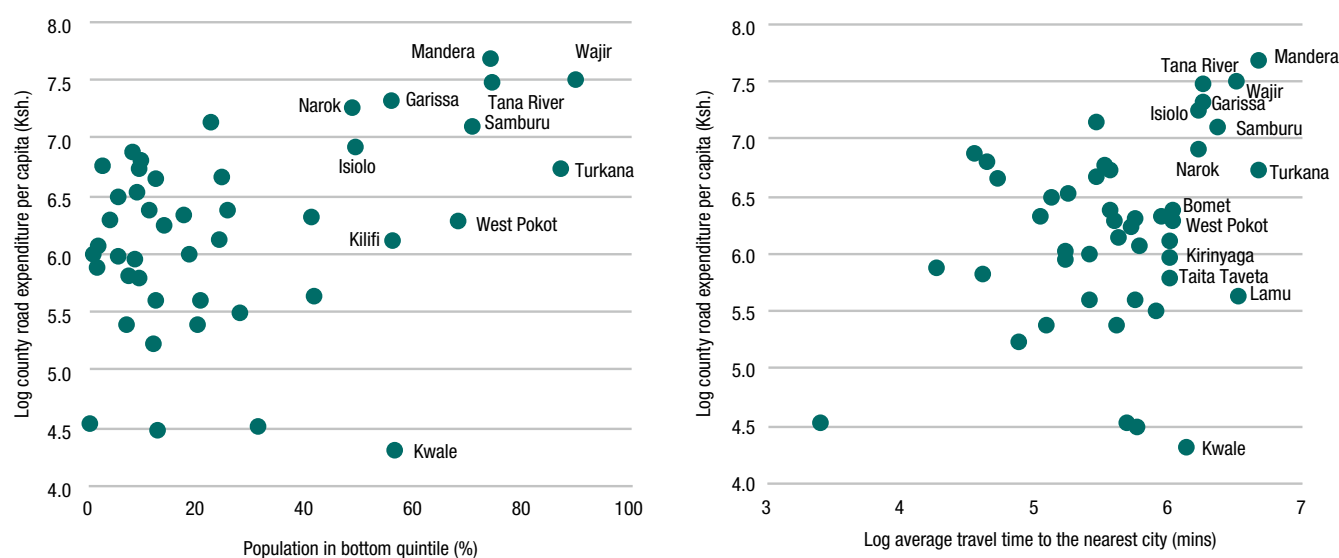
Source: Calculations based on data from GoK (2015a), OCB (2015). Estimates of distance from roads is computed in Simonet (Forthcoming) using data from CIESIN and ITOS (2013), and the 2014 Demographic Health Survey.

43   However, interviews with officials in Narok and West Pokot did raise concerns that the formula's relatively low weight on population, and relatively high weights on poverty gap and on the land area, led to them being disadvantaged in comparison with neighbouring counties.

44   Both relationships are statistically significant at the 1% level.

45   Poverty is measured by the proportion of the county population that are in the bottom income quintile, and the correlation coefficient is 0.403 based on data for FY2014/15.

46   Accessibility is measured by average travel time to nearest city and share of surface area outside time distance of six hours, with a correlation coefficient of 0.328 and 0.374, respectively.

47   Conditional allocation from the Road Maintenance Levy Fund has a pairwise correlation of 0.676 with the percentage of population in bottom income quintile and 0.736 with the share of surface areas outside time distance of 6 hours.

48   These were selected by the Commission for Revenue Allocation (CRA), using a survey of socio-economic indicators in the 47 counties, with one of the parameters being the percent of the county road network that was tarmacked in the 2009 census (CRA, 2013).

49   These amounted to Ksh. 13.1 billion in the 2015/16 budget.

Box 7. Adjusting road expenditure based on county's degree of road deprivation
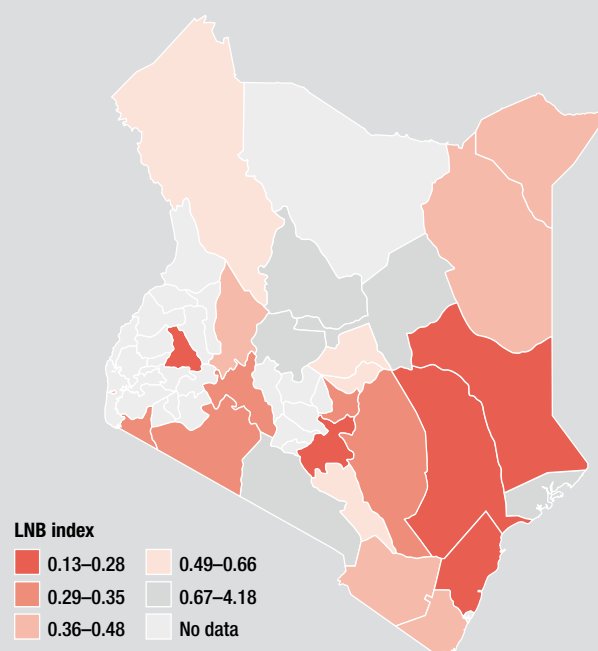
Using road expenditure[50] by the county government alone (column 1), for the 25 counties with available data, the average is 0.8 while the median is 0.6. In three counties, spending is higher than what an allocation in line with the share of road-deprived people would be. It is less than 50% of what a needs-based allocation would suggest in nine counties. Notably, for our two counties of interest, Narok and West Pokot, the measure is 0.7 and 0.5, respectively.

On the other hand, when we look at road expenditure by national government[51] (Column 2), the average and median is slightly less at 0.6 and 0.5, respectively. Bearing in mind the smaller number of observations, this suggests that national road spending may not be well aligned with need compared to county government road expenditure. The range is from a high of 2.1 (Machakos) to 0.1 (Isolo, Garissa and Turkana). Thus in the former, spending is twice as high as a needs-based allocation would dictate whereas in the latter, it is just 10% of what a needs-based allocation would dictate. Spending is high relative to need (above 1) in two counties and less than 50% of what a needs-based allocation would dictate in six counties.[52]

When we combine the county government and national government expenditure for the 25 counties[53] (Column 3 and Figure 7), the average is 0.7 and median is approximately 0.4. Three counties are above 1 while 13 countries are less than 0.5. Notably, in comparing the results in the last two columns, Migori and Garissa are no longer below 0.5, while Makueni falls to below 0.5 (from 0.6 to 0.3) suggesting that county government road expenditure of the latter is well below the level suggested by the county's road deprivation measure while the opposite holds for Migori and

Garissa. Narok's value is 0.5 while West Pokot's value is 0.3. Thus in comparison to Narok, West Pokot's road spending is even lower than what would be expected if spending was proportional to the county's share of the road-deprived population nationally.

Figure 7. Proportionality of count and national government roads expenditure using the 'leave no one behind' (LNB) index

LNB index
0.13–0.28	0.49–0.66
0.29–0.35	0.67–4.18
0.36–0.48	No data

Note: For more on the LNB index, please see Annex 3.

Table 3. Adjusting road expenditure (development) by the county's share of the national road deprived population

	Road expenditure by county government (1)		Road expenditure by national government (2)	Road expenditure by county government and national government (3)	
Number of countries	25		13	25	
Counties above 1	Kilifi Nandi Machakos		Machakos Nandi	Kilifi Machakos Nandi	
Counties roughly equal to 1	Garissa Tana River		–	–	
Counties less than 0.5	Turkana Tharaka Nithi Samburu Isiolo Meru Kajiado Lamu	Makueni Laikipia	Migori Meru Laikipia Isiolo Garissa Turkana	Kwale Wajir Mandera Meru Turkana West Pokot Makueni	Tharaka Nithi Samburu Isiolo Laikipia Kajiado Lamu

Source: Calculations based on data from GoK (2015a), OCB (2015). Estimates of distance from roads is computed in Simonet (Forthcoming) using data from CIESIN and ITOS (2013), and the 2014 Demographic Health Survey.

See overleaf for references.

However, a less optimistic picture emerges when we assess the extent to which actual road expenditure is targeting marginalised areas. We do this by adjusting the county's share of actual road expenditure (development) based on a road deprivation measure for each country. This road deprivation measure is the county's share of the national road deprived population (based on the 5 km threshold).[54] A value of 1 implies that the spending within a county is exactly proportional to its left behind population; a value greater than '1' implies that spending is higher than what would be expected given its level of deprivation; and a value less than '1' indicates that it is less than would be expected. Based on this measure, most counties' spending on roads is less than proportional to their share of national road deprived population. Combining road spending by both national government and county governments for 25 counties with data reveals that only three counties' road spending is more than what would be expected if the allocation was in line with the share of road-deprived people, while the remaining 22 counties' spending is less than would be expected. Of these 22 counties, 13 counties are less than 0.5, including West Pokot, while Narok is 0.5. The results are slightly more pro 'leave no one behind' when we look at road spending solely by the county governments for 25 counties with data, with three counties above '1' and two counties roughly equal to '1'. Conversely, when we look at road spending by the national government only, two of 13 counties are greater than '1' while the rest are below. These results are summarised in Box 7. Annex 3 describes the methodology in more detail and highlights some important caveats for this analysis.

Box 8. Road spending in Narok and West Pokot

Interviews in Narok and West Pokot suggest that both counties place a strong emphasis on development of the roads sector. However, they exhibit very different patterns of investment overall. Narok is one of the top three counties, dedicating more than 50% of development expenditure to roads in FY2014/15. The county allocated Ksh. 1.1 billion (US$10.9 million) for the construction of rural and urban roads out of the total development budget of Ksh. 2.4 billion (US$ 23.7 million) in 2013/14 (IBP, 2013: 3; OCB, 2015). In West Pokot, the road sector was not the largest development expenditure item in FY2014/15 and funding for roads actually fell from Ksh. 493 million (US$4.9 million) in 2013/14 to Ksh. 142 million (US$1.4 million) in 2014/15 (CGoWP, 2015a; 2015b). However, this fall is attributed partly to a reduction in the cost of roads provision in the county due to investment in county to reduce construction costs and absorption capacity problems (these issues are explored further in later sections) (CGoWP, 2014b).

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50   Based on actual road expenditure for FY2014/15.

51   Based on a three-year average of actual road expenditure for FY2012/13, 2013/14 and 2014/15.

52   Based on available data, there was no national government road expenditure (development) on rural and urban roads for Narok and West Pokot between FY2012/13-FY2014/15.

53   Based on available data, there was no national government spending on rural roads and urban roads in 12 of these 25 counties.

54   21 counties are without any road deprivation.

5. Persistent barriers and challenges

Although the previous section has noted a number of positive developments in Kenya's policies and budget priorities that have facilitated progress towards leaving no one behind with respect to access to roads, there remain several challenges when it comes to this sector. This section discusses these persistent challenges.

5.1 Economic and political priorities: policy commitments in practice

While there are specific road sector commitments that focus on 'leave no one behind' issues, formal criteria for roads project selection emphasise economic considerations – meaning that roads access for left behind groups is not accorded a high priority. Strong political involvement in actual project selection further lowers the priority given to access for left behind groups, who are generally not politically influential, and also contributes to policy incoherence and inefficiency as political incentives do not align well with a rational and effective distribution of roads funding and projects. Roads policy in practice therefore presents several barriers to achieving sustained progress towards achieving the 'leave no one behind' agenda for the roads sector.

The formal prioritisation criteria for roads projects in Kenya are largely based on economic priorities and standard cost-benefit analysis approaches. The two 'leave no one behind'-aligned priorities laid out in the 2006 Roads Sessional Paper – increasing the number of urban arterial roads with tarmac surfacing, particularly where they serve low income neighbourhoods (provided they are economically viable) and working towards all season road access within 2 km for Kenyans – are ranked as the lowest of six priorities, below international roads and various forms of economically viable roads projects (MoRPW, 2006). The RSIP (2010–2024), which sets out the process for prioritisation of road development programmes and maintenance within the framework of the 2006 Roads Sessional Paper, also outlines a cost-benefit analysis approach to prioritisation that focuses on technical and economic appraisal, rather than left behind groups or

social indicators (e.g. access to health and education services) (MoR, 2010).[55] The priorities and road project plans outlined in the County Integrated Development Plans (CIDPs) of Narok and West Pokot are also framed in terms of economic benefits, although roads are also referenced in relation to poverty reduction and access to services (CGoN, 2013; CGoWP, 2013). Interviews with officials in the main national roads bodies (KGOs 1–5) are generally consistent with the idea that the identification of roads projects tend to be thought of geographically and in economic cost-benefit terms, rather than taking into account data on road access for left behind groups. 'There are areas where there are only 200 people and it is economically unfeasible for us to build a road for them at this point' (KGO1).

Actual funding allocations and project selection also bear out the primacy of economic factors. Of the projected Ksh. 604.6 billion ($5.9 billion) of funding for Phase 1 of the RSIP (2010–2014), less than 1% was to be allocated to projects that were prioritised on the basis of a mix of economic and social criteria rather than purely economic or technical factors. Furthermore, while road development projects related to 'leave no one behind' priorities were identified in the RSIP (e.g. Ksh. 5 trillion ($49.3 billion) estimated for road projects in support of the MDGs target of 2 km road access), the document explicitly states that due to budgetary constraints they are not proposed for financing during Phase 1 (2010–2014) (MoR, 2010). Although ambitions are high for Phase 2 of the RSIP (2015–2019) – including the clearing of all ongoing road projects within two years and the development of 10,000 km of paved roads within four years – it is likely that decisions on resource allocation will still place a significant emphasis on economic factors, meaning that the benefits for left behind groups will be limited (ibid).

Political priorities and patronage networks also play a significant role in project selection, with the influence of political actors underlying many decisions that are formally based on economic or technical criteria. These are driven by a range of incentives and mechanisms at different levels of the road system, as we explore below.

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55 The approach used is adapted from the internationally recognised Highway Development and Management Model (HDM-4). Its analysis utilises data on: (i) The road inventory and condition; (ii) The traffic volumes and composition; (iii) The cost estimates of the interventions; (iv) Vehicle operating costs; (v) Pavement strength and roughness; and (vi) Estimated budgetary resources.

Box 9. Approaching road sector cost-benefit analyses from an 'leave no one behind' perspective

A range of variations have been proposed to standard cost-benefit analysis (CBA) approaches that would give greater priority to left behind groups and promote rural development. These could be used for particular classes of road investment (e.g. highways versus rural roads) or in a strategic manner depending on the priorities of the road investment in question. For example, access to local public services (e.g. schools or health centres) can be facilitated by feeder roads linking these services to settlements, whereas economic benefits will also depend on the state of trunk roads and connections to the wider national economy. Different criteria and considerations might therefore be appropriate across these cases.

The Roads Economic Decision (RED) model has been proposed specifically as an alternative economic evaluation approach to the HDM-4 model used in Kenya, based on RED being more appropriate for roads with low volumes of traffic, and particularly rural roads. It allows for the incorporation, for example, of benefits and costs related to: (i) non-motorised traffic; (ii) changes to social service delivery; (iii) environmental impacts; (iv) new flows of traffic resulting from road development; and (v) disruption to traffic caused by deteriorating road conditions. The model also takes into consideration greater uncertainly relating to inputs and outcomes.

Both RED and HDM-4 can be combined with other approaches to decision-making and prioritisation that may be more amenable to roads projects that benefit left behind groups, and particularly rural roads.

Multi-criteria analysis is commonly cited as an alternative approach or complementary approach to CBA. Potential road links are assessed for criteria such as proximity to health and education facilities, agricultural assets and traffic levels and points are assigned based on weighting of the relative importance of the different factors. These allow the ranking of potential investment options, either through simple aggregation or a formula approach that weights combinations of criteria. Multi-criteria analysis is generally applied to low volume roads that are unlikely to have strong economic impacts but for which strong social benefits are anticipated. KRB is currently exploring options for utilising this approach in its maintenance project prioritisation process.

Cost Effectiveness Analysis (CEA) compares the cost of interventions with their intended impacts (e.g. reduction in poverty, improvements in service access, improved travel times etc.). It differs from traditional Cost-Benefit Analysis in that total expenditures for the project must be fixed and the main focus is on deciding how to best use these funds to serve the project purpose, rather than comparing across projects. Specific criteria to prioritise benefits for left behind groups can therefore be integrated. CEA historically was used in the appraisal of social sector investments, but has also been considered in the context of transport as recognition of its broader role in reducing poverty and marginalisation has increased.

Sources: Lebo and Schelling (2001) and Lombard and Coetzer (2013)

For example, Kenya has a strong tendency towards ethnic-based voting and support blocs. Electoral strategies are often based on ethnic groupings and involve the targeting of resources (including funding for road construction) so as to develop and maintain patronage networks (Burgess et al., 2009, 2015; Bedasso, 2015; Lynch, 2006). There is strong evidence that the President and broader executive used targeted investment in road construction for patronage purposes throughout much of Kenya's post-Independence history,[56] partly explaining the current shape of the road network (Burgess et al., 2009, 2015). Analysis suggests that this particular form of patronage has declined in the road sector since the re-introduction of multi-party democracy.[57] However, there are also strong indications that the locus of roads-based patronage networks has actually shifted away from the executive towards members of parliament (MPs) in the National Assembly and to the Governors and Members of the County Assembly (MCAs) at the county level – particularly as all of these actors were significantly empowered by the 2010 Constitution (Kramon and Posner, 2011; Booth et al., 2013; Burgess et al., 2015; Carrier and Kochore, 2014; Cornell and Michelle D'Arcy, 2014).

Strategically important highways and major roads appear to be less affected by these forces, particularly where they are considered vital to building economic corridors and developing international trade – priorities that are largely covered by an elite consensus.

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56 Investment in roads during periods of one-party rule was found to be consistently targeted at the home regions and co-ethnic areas of the President, Vice President, key ministers, ministers involved in roads decisions (i.e. ministers of roads and of public works), and the dominant ethnic group in the cabinet (Burgess et al., 2009, 2015).

57 During periods of multi-party democracy, the home regions and co-ethnic regions of the individuals/groups listed above were found not to be receiving abnormal levels of roads investment (Burgess et al., 2015). This may be due to a decline in patronage overall, the shifting of the locus of patronage to the legislature or county level, or may represent a shift in the way the executive uses roads funding for patronage (i.e. less direct targeting and instead the use of corruption in roads projects to fund campaigning or the use of targeting as part of 'pork barrel' politics to secure votes from MPs). Which of these options – or combinations of them – is correct is not fully investigated in Burgess et al. (2015).

However, major investments (such as the Roads 10,000 Programme)[58] that involve a large number of small and moderate sized roads projects – particularly at the constituency and county level – appear to be subject to considerable political influence (KGOs 6–7). The promise of infrastructure projects, including roads, was an element in the 2013 Presidential election, and former MPs and officials standing for County Governor posts in the same year emphasised their record of securing roads funding for their constituencies (Carrier and Kochore, 2014; Cornell and D'Arcy, 2014). While MPs are not generally involved in setting the roads budget at the national level, they are able to influence funding through their use of the Constituency Development Fund and their control over the allocation of the Equalisation Fund (KGO1). In practice, national politicians also appear to be strongly involved in the selection of roads projects and exert significant control over which projects are initiated and where (KGOs 6–7). Political priorities and competition are thus important drivers of the distribution of roads and roads projects across and within constituencies.

At the county level, County Governors and MCAs have considerable power to set road sector priorities and their political priorities and patronage networks are accordingly influential in targeting roads projects (see Carrier and Kochore, 2014; Cornell and Michelle D'Arcy, 2014). Interviews noted that campaign promises made by the County Governor plays an important role,[59] as does the channelling of resources to the home wards and villages of both Governors and MCAs. For example: (KGCOs 5–6):

A number of the villages have done better since the decentralisation [devolution] because they have elites who have gone back to the village and tried to make a difference to the infrastructure. For example, you can see MPs and MCAs who come from Anet, Masol, Muino, Tamkaka, Mogoto have gone back there to make sure their needs are given attention at the county level.

These dynamics can also promote the extension of resource access to a wider range of groups beyond the Governor and prominent MCAs, where this is politically beneficial. Interviews suggested that this dynamic was partly in operation in the case of Narok, where there is a non-Maasai Governor of a Maasai-dominated county who needs to secure the support of a range of different groups and so cannot focus on channelling resources to his group alone (KGCO11).

The implications that these political dynamics have for 'leave no one behind' priorities in the road sector are likely to be mixed. The demands of MPs, County Governors and MCAs for roads projects for their constituents and to secure political alliances may help to spread these projects more evenly across the country and within individual wards. For example, these dynamics are likely to have contributed to the decision to construct roads in all six sub-counties in Narok (CGoN, 2013). However, the targeting of roads within constituencies, counties and wards is still based on political priorities, and so is unlikely to target left behind groups, simply because these groups have little political power or influence.[60] The extent of benefits for left behind groups are therefore likely to depend on spill-over effects from projects focused on other priorities.

A more significant challenge is the inefficiencies that arise from rent-seeking political interference and patronage networks, reducing the funding available for 'leave no one behind' priorities. These may facilitate corruption in the awarding of contracts (see Booth et al. 2013 for analysis on Uganda) and encourage a focus on expanding the road network in ways that are highly visible but not necessarily sustainable (see review in Wales and Wild, 2012). At the county level, there may be an underfunding of resilience elements (e.g. drainage and gravelling) and regular maintenance in order to maximise the total number of highly visible roads projects – essentially spreading expenditure too thinly and so creating a fragile, low quality network that needs repeated repairs due to rapid deterioration (KGCO1, FGDKECO1; CGoWP 2013, CGoN, 2013). Questions of inefficiency in road spending are examined in more detail in later sections.

The push for local public participation processes to influence roads policy also appears to have made little difference to road sector plans in practice. While some counties do systematically collect and publish data on the outcomes of public participation exercises (e.g. West Pokot), in others there does not appear to be any publically available data on the outcomes or conduct of these processes (e.g. Narok). The validity of local public participation processes – in terms of frequency, attendance levels and inclusivity – was also brought into question

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58 The Roads 10,000 programme commits the government to tarmac 10,000km of road before the next elections. 80% of these are intended to be small, rural roads projects overseen by KERRA, while the remaining 20% will be national highways.

59 In West Pokot, for instance, 'The governor, when he was on the campaign trail, had to walk to many places for up to two hours to get to a village and is very aware of the problem with roads' (KGCOs 5–6). In Narok, an interview with a county official listed Kilgoris as one of the roads prioritised for development (KGCO1). The road is close to the Narok Governor's birth town in the Transmara sub county (KGCO11).

60 This extent to which this is true will vary across counties. For example, variations in ethnic composition will have an important impact on alliance building at the county level – potentially benefiting smaller, marginalised ethnic groups if they can form a key part of a winning coalition and so claim a share of patronage resources (see Carrier and Kochore, 2014; Willis et al., 2014).

in a number of interviews conducted for this study. Informants suggested that these processes were largely symbolic, so unlikely to influence policies in the direction of 'leave no one behind' goals (FGDLR1, FGDNGO1).

5.2 The 2010 Constitution: teething troubles

Despite the benefits of the devolution process noted in earlier sections, there are a number of issues yet to be resolved in terms of overlapping mandates and coordination that are undermining the effectiveness of the road sector. For example, the division of labour between the national and county governments (as discussed in Section 1.1) has been complicated by the creation of a new category of 'secondary national trunk roads' in the Kenya Roads Bill 2015, which gives national agencies control over some roads at the county level. This has become a source of confusion and friction, leading to protests from the Council of Governors and, as a consequence, leading, as of early 2016, plans to transfer control of roads to the control of county-level governments were on hold.[61] In another example, the Commission for Revenue Allocation[62] argues that the KeRRA and KURA are still carrying out devolved functions and recommends that their budgets – nearly Ksh. 28 billion ($ 276.2m), based on 2016/17 projections from the current year budget – be included in the equitable share to counties (IBP, 2016).

At the county level there is also a lack of coordination and co-operation, both between the county government and different roads agencies, and across the different agencies. This was considered to be a barrier to improving roads provision by a number of informants, with particular challenges being noted around planning, duplication and the coherence of work on the roads network (KGCOs 1, 5–6; KERRA, 2015). However, the extent of these challenges varies across counties. For example, West Pokot informants indicated that of late they had made efforts with KeRRA to avoid duplication of road maintenance projects, while the coordination between the Narok County Government and the three national road agencies (KeRRA, KURA and the Kenya National Highways Authority) continues to be poor (KGCO1).

These issues should begin to be resolved as the devolution process beds in, however, the resulting inefficiencies and challenges could be abated by stronger guidance and a clearer division of labour between the different actors.

5.3 Geographic barriers and historical legacies

Both the current distribution of the national road network and the geography of marginalised regions in which left behind groups are concentrated create challenges for implementing roads projects, as does the historically ambiguous relationship between the national government and nomadic populations. These present considerable barriers to improving access to roads for left behind groups, as well as contributing to a self-reinforcing concentration of road infrastructure.

As noted in a previous section, the existing distribution of road transport infrastructure demonstrates significant imbalances. There is a high concentration of road infrastructure development along the Mombasa-Nairobi-Malaba transport corridor that served the former white highlands – driven partly by relatively high population concentrations and the presence of the main route linking the Port of Mombasa to land-locked countries in East Africa, and partly by the legacy both of colonial development priorities and post-Independence ethnic patronage politics (MoT, 2009; Burgess et al., 2009, 2015). Connectivity in the arid and semi-arid areas in the north-eastern regions of Kenya is particularly bad, but there are also other marginalised areas that have not received much attention in public policy until recently (MoT, 2009; MoPD, 2015). These areas therefore start from a low base in terms of road infrastructure – meaning they must do more to close access gaps than other areas – and face disadvantages in that the lack of infrastructure itself is a barrier to developing infrastructure. For example, at the time of devolution West Pokot lacked access roads to most market centres and Narok had only one good road and lacked connecting bridges, creating challenges for moving road construction machinery (KGCOs 1, 4; CGoWP 2013:27).

The challenges and cost of expanding and maintaining the road network in remote and marginalised areas is also amplified by their geography and climate. These neglected areas are generally extremely arid and have extensive areas of rough hilly terrain that make road construction and maintenance more expensive and harder to carry out, sometimes requiring specialist machinery (KGCOs 1, 5–6; CGoWP, 2013: 27). Poor weather conditions, particularly in the rainy season, create further challenges as roads become impassable due to a combination of flooding, severe water damage and landslides from soil erosion (KGCOs 1, 5–6). Expanding and maintaining the road network in these areas thus requires more work and funding than is the case elsewhere. Allocations of funding to these areas will accordingly not stretch as far and standard cost-benefit analysis will tend to de-prioritise

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61 See www.standardmedia.co.ke/article/2000191400/how-ag-shortchanged-counties-on-roads and www.nation.co.ke/news/Governors-seek-control-of-roads-in-the-counties/1056-2994128-e33tku/index.html.

62 The Commission is mandated to make recommendations on the equitable basis for revenue sharing among county governments.

projects targeted at these areas, making investments that will benefit left behind groups less likely, except when projects are explicitly targeted for these purposes.

The expansion of the roads network in areas with significant nomadic populations – who are considered to be left behind and have historically been discriminated against – is particularly complicated by the ambiguous relationship these groups have with the national government (see Carrier and Kochore, 2014). Interviews highlighted that county officials in some areas consider them a lower priority for road access and there are important questions as to what the optimal strategy is for bringing road access and services to these groups. Connecting all settlements – regardless of size and terrain – would be impractical, but urbanisation and the concentration of populations to allow easier access to services and roads would also constitute a major change to the culture and lifestyle of nomadic groups in particular. Balancing the trade-offs between these priorities is therefore a challenge, even from the perspective of the 'leave no one behind' agenda. It is also notable that, in some cases, attempts to expand the road network have been hampered by community reluctance in the areas bordering Turkana and Uganda – linked to a disarmament policy intended to reduce cross-border cattle raiding (KGCOs 5–6). These populations are also less willing to engage with government institutions or census data collection, reducing their visibility to policy-makers (see following sections for detail). This combination of factors means that roads access for these groups is given a lower priority and that actual implementation of projects faces a range of challenges in practice.

5.4 Inadequate finance and inefficient spending

Despite the fact that national spending on the roads sector has increased significantly over the last decade and accounts for a large share of county budgets, there is general agreement that current financial resources are insufficient relative to the resource requirements of sector (KeRRA, 2015; KRB 2014). This is driven by a range of issues – including limited financial resources as a whole and a range of inefficiencies – resulting in underfunding of projects aimed at leaving no one behind as these tend to be lowest on the priority list (as discussed in Section 3.1).

One challenge to the financing of projects to improve road access for left behind groups is the fact that rural roads are underfunded. KeRRA, which is responsible for rural roads, had a funding resource requirement of Ksh. 31.9 billion ($314.7 million) in the FY2014/15 based on its strategic plan (KeRRA, 2015: 20). However, the total funds allocated for construction and maintenance of the rural

road network in the financial year was Ksh. 27.5 billion[63] ($ 271.3m) (up from up from Ksh. 24.6 billion – $242.7 million – received in the previous financial year), leaving a gap of Ksh. 4.4 billion ($43.4 million). Those funds were inadequate to effectively cover the planned road works and as a result the authority was unable to upgrade some of the targeted works to bitumen standards.

The substantial deficit in the road maintenance budget is also a challenge to sector efficiency and the maintenance of the roadwork, particularly for left behind groups given their low overall prioritisation. The optimal budget for the routine and periodic maintenance of rural roads[64] is estimated at Ksh. 40 billion ($394.6 million), but the special fund created for this purpose (the RMLF) nets just Ksh. 25 billion ($246.6 million) annually, leaving a yawning deficit of Ksh. 15 billion ($148 million) (KeRRA, 2015: 23). The KRB has highlighted the challenges it faces related to insufficient RMLF and Transit Toll collections, as well as insufficient development funds forcing KRB funds for routine maintenance to be used for major rehabilitation and reconstruction works (KRB, 2014). The financing of maintenance at the county level also suffers from inefficiencies within the system. The conditional fiscal transfer to counties from the RMLF to finance the maintenance of county roads essentially reallocates already insufficient resources from national road agencies, specifically KeRRA and KURA. There are concerns that this reform will lead to poorer results than the previous system due to a combination of coordination challenges, low capacity at the county level and poor enforcement of conditionalities. The allocation formula also results in a paradoxical situation where counties with fewer roads receive greater funding for maintenance (Kinuthia and Lakin, 2016). This may improve funding for marginalised counties, but in a manner that results in greater inefficiency overall. The result of these shortfalls and inefficiencies in funding is a significant maintenance backlog and the emergence of 'orphaned roads' that are largely impassable due to disrepair (KeRRA, 2015).

The efficiency of the roads sector is also undermined by a wide range of issues, which limit the funding available for investment in 'leave no one behind' priorities and the achievement of the two related priority goals.

The costs of maintaining the road network are driven up by the neglect of routine maintenance, which the current political dynamics and patronage systems do not give priority to – instead focusing on more visible and electorally rewarding construction and rehabilitation projects. At the county level these dynamics also result in an underfunding of resilience elements (e.g. drainage and gravelling) in order to maximise the total number of roads projects, as well as a failure to preserve an

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63   Comprising of Roads Maintenance Funds of Ksh. 9.7 Billion, Exchequer Funds of Ksh. 16.6 Billion, and Development partners of Ksh. 1.1 Billion.

64   Roads that fall under the purview of KERRA.

Box 10. The Peru Rural Roads Programme

The Peru Rural Roads Programme (PCR) provides a strong example of how community participation in large-scale rural roads programmes can improve access and transport links. It was initiated in 1995 by the Peruvian Ministry of Transport and Communications and a range of international donors to support the decentralisation of rural roads management to the local level. It initially focused on the 12 poorest departments – covering 70% of Peru's rural population – and has since been scaled up to cover the entire country. The programme has rehabilitated and maintained 15,000 km of rural roads and 7,000 km of paths (used primarily by women and children), and increased the availability of transport services by 150%. This has had quantifiable benefits in terms of primary and secondary enrolment rates, travel time and travel costs for individual and freighting goods.

PCR aimed to reverse the poor quality of road construction and rehabilitation happening at the municipal level, with a focus on meeting the need for technical expertise, a skilled labour force and specialist equipment. Under PCR, rehabilitation was contracted out by a central agency to private construction firms through a transparent bidding process, which was subsequently handed over to the control of municipalities. Communities were involved in two key stages: (i) the identification and prioritisation of roads for maintenance/rehabilitation; and (ii) the creation of micro-enterprises (Microempresas de Mantenimiento Vial Rutinario – MEMVs) to carry out maintenance of rural roads.

MEMVs are contracted by local government on the basis of transparent processes for contracting and payment. Contracts are results-based and must be verified by supervisors before payment is varied out. They are formed by temporary workers, contracted on a three-month basis to share benefits amongst community members, with a core group of permanent members for continuity in technical standards. At least 10% of MEMV members must be women in order to improve their participation. MEMVs focus on maintaining the roads used by their communities, taking advantage of the fact that this is a set of tasks that are more labour intensive, but require less in terms of technical expertise and heavy machinery compared to rehabilitation and construction. Training, supervision and support from the programme then helped to build the capacity of these organisations to first undertake regular maintenance and then gradually more complex tasks with greater efficiency. The programme has also been shaped to build the capacity of these organisations. Initially they were paid a fixed sum and did not compete with other suppliers – allowing them the time to build up skills and capacity. Competition has now been opened up – meaning that MEMVs now compete for local government contracts both with each other and private contractors. However, they are now in a much stronger position and frequently win choice contracts ahead of private sector rivals. The capacity of the sector overall has therefore been improved, as has the extent of local control over roads priorities and quality.

Sources: Lebo and Schelling (2001) and Lombard and Coetzer (2013)

adequate contingency budget for emergency repair work (KGC01, FGDKECO1; CGoWP 2013; CGoN, 2013. See also, Wales and Wild, 2012). The result is that road quality deteriorates much more rapidly than it would do otherwise, creating higher costs for reconstruction or rehabilitation projects in the long run.

Funding shortages are also exacerbated by the high unit cost of road interventions in Kenya (GoK, 2013:17; AfDB, 2014; KRB, 2015),[65] particularly compared to other African states.[66] Based on interviews with various stakeholders as well as a review of donor and government documents, these higher costs and broader inefficiencies are driven by a range of challenges, including:

a. The topographic and climate challenges noted in earlier sections
b. Issues of bribery, corruption and collusion in the awarding of roads contracts (EACC, 2015; Jerotich, 2016)[67]
c. Inflated costs by contractors, partly due to high levels of uncertainty among contractors regarding

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65 A range of cost averages for different types of road at the national and county level are laid out in TA and CRA (2015). However, these figures do not include estimates for Narok and West Pokot and there is a lack of published data on actual costs at the county level. We were therefore unable to make assessments regarding the relative costs of road construction across counties in this analysis.

66 An overview of 172 road infrastructure projects found that the unit cost of rehabilitating a kilometre of road in urban areas of Kenya was $440,000 in 2011 compared to $101,600 in Angola (AfDB, 2014). Analysis also demonstrates that the per kilometre cost of constructing a two-lane urban road is Ksh. 132.5m ($1.3m) (TA and CRA, 2015), strikingly higher than the typical road unit costs for similar projects laid out in AfDB (2014).

67 According to Ethics and Anti-Corruption Commission (2015), the road and public works department are among the County Departments where corruption is most prevalent and whose staff receive the highest level of bribes (EACC, 2015). The Commission found evidence of collusion between contractors and supervisors resulting in poor road construction in Narok as well as procurement irregularities in West Pokot.

timely payments for completed works (EACC, 2006; KRB, 2014)[68]

d. Procurement delays, leading to projects suffering from time delays and contractors experiencing payment delays,[69] as agencies and counties are unable to fully utilise funds within their allocated financial year (Kinuthia and Lakin, 2016)[70]

e. Exorbitant land acquisition costs (GoK, 2016a)

f. A lack of technical capacity among county governments and road agencies to monitor and verify the completion of projects (KeRRA, 2015).

These compounded issues have recently led to the Ministry of Transport and Infrastructure adopting a controlled uptake of new roads projects in a bid to cushion itself from costs associated with accrued interests due to delayed payment of certified works (GoK, 2016a). It is also striking, from an 'leave no one behind' perspective, that cost escalations have also been noted as a particularly common challenge for rural road projects.[71] High costs and inefficiencies therefore reduce the total funds available for roads projects, and thus may adversely affect projects that are most likely to improve access to left behind groups since these are generally not seen as priority.

On the specific issue of contracting, there are a series of challenges. Low capacity among local contractors has been particularly highlighted, with the creation of training programmes (e.g. the Kisii Training Centre) – with the assistance of development partners – being one response to this (KeRRA, 2015). The Roads 2000 project is also partly intended to address these issues using a combination of training engineers and other technical staff on technical contract administration and business skills and the development of locally based small-scale contractors for routine maintenance and improvement works. The programme also recognises the challenge of low institutional capacity at the district level and aims to strengthen this (ibid). These approaches mirror, to some extent, successful examples of capacity improvement among contractors elsewhere that have had a significant impact in the road sector in questions (see example of Peru in Box 10).

5.5 Delayed implementation of the Equalisation Fund

There are also a number of challenges and delays related to the pro-poor funding formulas and grants referenced in earlier sections. The Equalisation Fund, for example, has not at the time of writing been disbursed despite approved annual allocations since 2014/15.[72] This delay was partly attributed to the lack of guidelines for the administration of the fund and implementation (PBO, 2016) as well as the friction between national government and county government concerning who controls it. This source of finance has therefore had no direct impact on the provision of roads to marginalised counties or left behind groups so far.

There are also a number of concerns as to how effective the fund will be in improving access to left behind groups. Interviews with county officials in both Narok and West Pokot suggest that processes of identifying roads to be funded by the Equalisation Fund are not transparent and act as a barrier to them reaching left behind groups (KGCOs 5–6):

It does not make any sense to us why the Fund is not coming to us directly. We work with the people, we know their priorities and needs, what does the national government know about where roads need to be built in our county?

Similarly, there are concerns that because the fund focuses on targeting marginalised (geographical) areas, as represented by counties, rather than marginalised groups within counties or Kenya as a whole, it may not address the needs of left behind groups.[73] There is little data available on how many marginalised people are living in non-marginalised counties, however, it is notable that health marginalisation does appear to be concentrated in the counties targeted by the Equalisation Fund. There are also concerns that the Equalisation Fund's limited resources led to only those projects with significant economic impact being considered, and that roads projects were specifically expected to 'have immense social-economic benefits to the marginalized counties'

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68 In West Pokot, Ksh. 280 million of the FY 2014/15 allocation was utilised for payments of contracts and Force Account works carried over from FY2013/2014, leaving the Roads Department with only Ksh.18 million to implement FY2014–2015 programmes. The roads sector suffers from very high pending bills. This is due to delayed payments for contracted civil works and professional services, variation of contracts, austerity measures and delays in exchequer releases to facilitate payments (GoK, 2015a).

69 In Narok, the County Executive allocated Ksh. 1.2 billion in the 2013/2014 budget for the construction of rural and urban roads, but most of the tenders were awarded in April 2014 and so work therefore spilled over to financial year 2014/2015. These delays then had a negative impact on service delivery (KENAO, 2014).

70 The road transport programme only spent 46% of its budget in 2014/15, and by the middle of 2015/16 had only spent 15 percent (Kinuthia and Lakin, 2016).

71 Equally striking is the fact that based on available data on contract costs and expected contract cost, urban roads are often under budget and national trunk roads generally match budget allocations (GoK, 2015a).

72 It is estimated that the entitlement towards the fund amount to Ksh. 20.08 billion including that of 2016/17 (IBP, 2016).

73 This was critiqued in several interviews with government officials, who noted that even within fairly affluent counties there are vulnerable groups that miss out when the focus is only on specific counties.

such as enhancing trade, security and emergency response (GoK, 2016b). This lack of focus on the needs of left behind groups was confirmed by government officials who stated that economic gains were the main criteria (GoK, 2016b; KGO1).

5.6 Incompatibility between donor behaviour and the 'leave no one behind' agenda for roads sector

A further challenge to financing the 'leave no one behind' agenda in Kenya is the incompatibility between donor[74] behaviour in the sector and the requirements of this agenda. Firstly, although the interests of these donors are varied, like the GoK, their main focus in the roads sector, is to finance projects in the RSIP based on economic considerations. The main exception is the French aid agency, *Agence Française de Développement* (AFD), due to its support of rural roads as part of broader programmes focused on Kenyan agriculture. This is less likely to be the case for other major donors in the road sector, with the African Development Bank supporting regional roads that connect Kenya to neighbouring countries, the World Bank focusing on trunk roads and more recently primary roads, the European Union (EU) funding focusing on highways, and the Japan International Cooperation Agency (JICA), focusing on urban roads and strengthening the maintenance system. A review of government documents including the national budget revealed only two donor-financed programmes that focused explicitly on left behind groups: the Kenya Informal Settlement Improvement Programme (KISIP),[75] and the Roads 2000 programme.[76] The former is a slum upgrading project, while the latter uses locally available resources, including labour-based methods (where and when these are cost-effective) with the aim of alleviating poverty. With the exception of these two programmes, there is a significant mismatch between 'leave no one behind' agenda and donor projects in the road sector.

Secondly, the form of donor financing is increasingly incompatible with the 'leave no one behind' agenda for the roads sector. Between 70–90% of donor funding commitments in this sector between 2015/16 and 2013/14 was in the form of concessional loans,[77] rather than grants, with the proportion of funding channelled in the form of the latter actually decreasing.[78] More generally, the terms of the concessional window of multilateral creditors is hardening. In the case of Kenya, as it achieved lower-middle-income country status in June 2015, its access to highly concessional loans will be reduced (National Treasury, 2016). Given that loans have to be repaid, the government may be unwilling to use more expensive funding sources to finance projects that may have high social returns but low economic returns. This is particularly true for the use of non-concessional loans which are expected to finance projects with high expected risk-adjusted rates of return, including critical infrastructure (Prizzon and Hart, 2016).

Thirdly, in terms of geographical distribution, government officials stated that donors generally do not finance roads in areas where other donors are active for reasons of visibility. This is highlighted in the implementation of the Roads 2000 programme: the AFD finances projects in Central Kenya and Laikipia County; the EU covers most of the Counties in Eastern Kenya; the German development bank KfW covers Kakamega, Vihiga and Bungoma Counties; and Government of Finland is active in Busia County (KRB, 2014b). Although this geographical division of labour among donors may work in favour of the 'leave no one behind' agenda, it is somewhat contrary to the GoK's approach to addressing marginalisation by focusing on the 14 marginalised counties (KGOs 6–7). The 'leave no one behind' agenda is therefore not in a strong position to benefit from the substantial increase in donor financing of roads in recent years.

5.7 Data gaps and challenges

The importance of data gaps and challenges to the 'leave no one behind' agenda in Kenya is threefold. Firstly, under progressive funding formulas the accuracy of the data used will have an important influence on the equity of funding allocations. Secondly, accurate data on the extent and quality of the road network is crucial to ensuring that the funds allocated are spent in an efficient manner, maximising funds that can be spent on 'leave no one behind' priorities. Thirdly, the existence and utilisation

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74 Major donors to the Kenya roads sector include AFD, the African Development Bank, the EU, JICA, the German Development Bank KFW, and the World Bank.

75 KISIP was co-financed by the Government of Kenya and a group of international donors, to facilitate a systematic scale-up of slum upgrading that included construction of 25 km of access road to ensure that all people in informal settlements will be provided with access to all-season roads within a 500-metre range (World Bank, 2016).

76 The bulk of local funding for the implementation of the R2000 Strategy comes from the RMLF through KRB. Other sources include national development budget allocations, contributions from Development partners as well as local sources such as the LATF, Constituency Development Fund and Agricultural Cess.

77 County governments are interested in building links with donors, but are limited in this outreach due to the fact that all loans must be guaranteed and approved by the national government.

78 Concessional loans accounted for 60–70% of planned donor funding of roads between 2005/06 and 2007/08.

of data regarding left behind groups and their access to roads is critical for the targeting to roads towards 'leave no one behind' priorities.

Kenya has been noted as having one of the best census series among sub-Saharan African countries with considerable mobile pastoral populations, and has made substantial efforts in recent years to generate better data on pastoralists, nomadic groups and remote communities (Randall, 2015; Jerven, 2015). However, despite these efforts, the census data almost certainly undercounts the

populations of these types of left behind groups – particularly among populations in the north-eastern parts of the country (Randall, 2015; Jerven, 2015). While these groups likely only represent a small percentage of Kenya's total population, estimates suggest that – across countries with a significant pastoralist population – their numbers are probably 10–40% higher than recorded (Randall, 2015).[79]

This undercounting is due to a range of enumeration issues, including: (i) concentrations of left behind groups in more remote and inaccessible regions; (ii) the mobility of pastoralist groups;[80] and, (iii) mistrust rooted in the historically ambivalent relationship between certain nomadic cultures and the Kenyan state, as explored in Box 11 (Carrier and Kochore, 2014).

It is possible that the combination of devolution and the introduction of progressive funding formulas may create incentives to improve population data at the county level in order to secure additional resources.[81] However, whether this will lead to left behind groups being more willing to be included in the census data will depend, in part, on these groups' expectations as to their ability to secure political influence and a share of increased county revenue.[82] At present, therefore, these data gaps present a major challenge to the equity of funding allocation, as it is precisely the groups and regions that have been historically most marginalised that are most prone to under-counting

There are a range of challenges surrounding the collection and sharing of data on the road network, undermining the efficiency of roads planning and implementation.

Data on the extent, quality and condition of the road network is collected infrequently at the national level. Three Roads Inventory and Condition Surveys (RICS) have been undertaken over the past 15 years and, while each round has seen increasing coverage, the most recent available data comes from 2007–2009 and so is severely out of date.[83] While the KRB was scheduled to initiate a new roads inventory[84] in January 2016, its results are not available at the time of writing and there have been considerable delays in its implementation due to

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Box 11. Opting to be off the map? An example in West Pokot

In some areas there are low levels of trust in the government machinery and so certain populations prefer to remain off the grid and not be counted in the data. Many pastoralists reside in areas of northern Kenya that suffer from local and international conflict, and so may be unwilling to be enumerated by the state due to fears that this information could be misused in the future. For instance, the Pokots have always been considered pastoral populations. Some of these communities have been involved in cattle rustling in the northern county of Turkana or neighbouring Uganda, and over time their raids increasingly became an armed activity. However, as a result, their access to social services was very poor. More recently, since the government has ramped up security and is undertaking disarmament, leading to some of these populations becoming much less willing to use the roads network – which is monitored – and much more opposed to the expansion of the network into their areas. However, as education levels among members of these groups increase, there is greater awareness that raiding does not create value. Instead, they are encouraged to do business and trade in cattle, which has increased the importance of roads. As a result, there is much less resistance to roads from these communities these days.

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79   Estimates vary on this, however, with interviews in West Pokot suggesting that only around 60% of nomadic communities had been enumerated by the census (KGCOs 5–6).

80   See Bonnet and Bertrand (2014), de Jode (2010) and Kratli et al. (2014) – cited in Randall, 2015.

81   County officials in West Pokot highlighted the increased importance of this data, noting that the county received a lower allocation of funds from KERRA due to decisions based on older population and poverty data, which missed off many citizens in more remote areas of the county (KGCOs 5–6). The potential for these factors to create incentives to falsify and exaggerate population data should also be noted. Analysis of data anomalies in enrolment following the shift to per-pupil grants in Kenyan schools provides some evidence for this occurring in practice, at least in education (see Sandefur and Glassman, 2014).

82   There are examples of mobile pastoralists with nationally split populations that cross international borders (particularly the Ugandan border) in order to be strategically counted in Kenya and so boost their representation in the census data (Jubat 2011; Mayoyo 2011; Oparanya 2010 cited in Randall, 2015).

83   There have been considerable changes in the extent and condition of the road network since 2009 and it is also notable that the 2009 RICS relied upon some data from the 2003 RICS, which is now over a decade old (KRB, 2010).

84   Financed by the World Bank's International Development Association.

insecurity in various regions and the poor condition of the roads network.

The lack of up-to-date data presents a challenge in assessing progress in expanding the road network and the extent to which targets for its expansion are realistic. A lack of baseline data for a number of national roads projects has been noted, as has a number of targets in the national budget that appear to be either unrealistic or illogical (Kinuthia and Lakin, 2016). The indicators used to measure progress have historically been limited – looking only at gross kilometres of roads constructed – although this has begun to be broken down further in official documents, and a number of counties are also being more systematic in their reporting of targets and actual performance (ibid).

Data collection and utilisation within the road sector is also further undermined by poor data sharing and a lack of guidance and capacity for data collection at the county level. Data collection is largely the province of the national government, with little data being systematically collected at the county level on the total road network and access to roads. The extent of data sharing between the national and county governments since devolution is unclear, as is the extent to which support has been provided to help develop county data-gathering capacity.[85] A lack of data sharing and guidance on data collection has also been noted across national statistics and roads agencies, both at the national and county level. This contributes to poor coordination among different government agencies, leading to a lack of joined up planning and so a combination of duplicated efforts and neglect. Data collection and verification is similarly undermined by coordination issues, as under devolution it is not yet clear how these responsibilities are being delineated.

There is also a lack of indicators or data collection that could aid in the targeting of roads projects to left behind groups or to create progress towards 'leave no one behind' goals. Monitoring data tends to focus on construction indicators, particularly the number of kilometres of roads opened up or improved, rather than individuals or groups with increased access (CGoN, 2013; CGoWP, 2013). A striking gap in this regard is that although both the RSIP (2010–2024) and the Sessional Paper of 2006 set out a commitment to providing all-season road access within 2 km for all Kenyans, it does not appear that any institution is in charge of monitoring progress towards this target. To the extent that data are available, they are not presented in a way that enables identification of the distance of people from roads, meaning there isn't a lens to ensure that no one is being left behind (MoRPW, 2006; MoR, 2010). In addition, data linking roads to economic and social objectives appears to be weak and poorly integrated. Interviewees from international donors suggested that 'data is weak on identifying where roads are and, as with other countries in the region, there doesn't seem to be a culture to collect data as politicians use other criteria when deciding where to build roads' (IDP2).

The primacy of political priorities in road project selection and siting may mean that the collection of formal data on left behind groups and 'leave no one behind' goals is largely a secondary consideration. The nature of the data used to determine prioritisation of roads at the county level is particularly murky and appears to rely on the mandates of MCAs, public participation processes and visual inspection visits. Whether data or considerations relating to roads access for left behind groups are a part of this process is unclear, but appears unlikely based on the prevailing political incentives and priorities stated in the CIDPs. The challenge of using existing data to measure progress for these groups suggests that political priorities and decisions do not hinge on being able to demonstrate this in a statistically credible manner. Therefore, it should not be assumed that improvements in data alone are likely to have an impact on the political decisions made regarding allocations of roads funding.

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85   The West Pokot roads department noted in interviews that the existing map of the roads in the county had not been updated in recent years and that, while each of the four sub-counties has a road inspector, there is no systematic collation of this data. Interviews in Narok highlighted that while planners have been seconded to the county level from national entities to improve capacity, there is no analogous support in terms of data collection, collation and sharing.

6. Conclusion and recommendations

The overall picture as regards improved road access in Kenya and the achievement of 'leave no one behind' goals in the sector is mixed. Access to roads is improving and there are steps towards greater equity – particularly in historically marginalised areas – aided and driven by road network expansion being accorded high priority and increased funding by the Government of Kenya, the shift in powers, incentives and finances associated with devolution and the 2010 Constitution, and explicit policy commitments to expand roads access for all Kenyans, including left behind groups. However, there are continuing challenges arising from the dominance of economic and political priorities over 'leave no one behind' considerations, combined with coordination problems, funding shortfalls, rent-seeking and inefficiencies that undermine the effectiveness and reach of road sector spending. Resolving many of these issues will be challenging due to the highly political nature of the road sector and the presence of a range of vested interests that will be unwilling to cede power if it means losing the potential to capture rents and secure political advantage.

Despite this, there are areas where improvements could be made through relatively uncontroversial technical changes and improvements in coordination – often building on existing initiatives and trends – and others where it may be possible to use the range of new political spaces and momentum created by the devolution process to achieve change and create improvements in line with the 'leave no one behind' agenda. The following 12 recommendations, divided into three broad groups, take this as their starting point and provide some first steps that could be taken to improve the effectiveness of roads provision in Kenya and begin to ensure that no one is left behind in this sector.

6.1 Improved coordination at the national level

There are a number of areas where basic clarifications and guidance in terms of responsibilities and mandates could help to improve coordination across agencies and reduce waste from neglect and duplication of work. These would boost the 'leave no one behind' agenda indirectly, by freeing up greater time and resources that could be channelled to improving road access for left behind groups.

These measures should be relatively uncontroversial, as gains can be made for a range of actors with a few relatively straightforward measures:

1. Clarification and rationalisation of the roles and responsibilities of the different agencies and levels of government in the road sector. This would include the demarcation of responsibilities between national and county agencies, particularly in terms of delineation of control over different road classifications and data collection, and the respective functions of KeNHA, KURA and KeRRA. Greater clarity would contribute to improvements in planning at both the national and the county level.
2. Clear guidance for county governments and national roads agencies on the collection and sharing of roads data, particularly at the county level.
3. Support from the Kenyan National Bureau of Statistics to improve capacity for data collection at the county level, and facilitate regular and published satellite surveys of road access, potentially supported by funding from international donors.

6.2 Improved coordination at the county level

Measures to directly improve coordination between different roads agencies and county governments would also have a positive impact on the road network from an efficiency and planning standpoint. These measures have the potential to be more politically challenging, as MPs in the National Assembly may be averse to changes that may reduce their influence over the provision of roads within their constituencies. Three measures could be pursued in this regard, which may have a greater chance of success, as they would fall largely within the remit of the executive or within the framework of devolution. However, political conflict and contestation should be anticipated, given the importance of control over roads for patronage and clientelist purposes. These are:

4. The national government could issue stronger guidance for national roads agencies on joint planning and consultation at the county level, or mandate this directly as part of the roads prioritisation process.

5. County Governors could be encouraged, or mandated, to act as a focal point and convening agent for the different road sector agencies operating within the county, helping to minimise the potential for inefficiencies related to poor planning and information sharing.

6. The creation of an institution to encourage counties to coordinate their planning on rural transport and develop spaces for coordination among stakeholders (e.g. County Governors, MCAs, national road agencies, NGOs, local businesses etc.) that could lead to shared development plans for transport around sectors such as tourism and natural resource extraction (see the example from Peru – McSweeney and Remy, 2008).

6.3 Improving access for left behind groups

From a specific 'leave no one behind' perspective, there are also a number of actions that could be taken to improve transparency and begin to shift incentives for road agencies and politicians. These may not necessarily result in direct improvements to roads access for left behind groups, but should – at the very least – provide resources that could be used by a range of actors to encourage policy in this direction:

7. Transparency at the county level could be improved by regular publication of budgets and actual expenditures. Similarly, the Controller of Budget reports could be augmented with a few key indicators – such as roads completed by class, and share of budget actually spent on access roads – to enable comparisons across county and, potentially, competition to improve services and reduce costs.

8. The national government should mandate a specific road agency or other body to collect data on progress towards the 2 km target for all-season roads access, with data at the constituency, county, ward and sub-ward level. Given that this would be very expensive; it should perhaps be piloted in areas that are perceived to be the most marginalised.

9. Development Plans of the national government as well as county government should incorporate performance targets for road projects based on travel times – linking them across sectors and to the SDGs where possible (e.g. average time to the nearest markets/hospital/school). Counties should work with the national government and donors to find ways to survey travel times cheaply and accurately. This could also be an area where civil society could provide useful data to citizens – helping to shift the focus away from directly visible construction and infrastructure (see Annex 2 for potential indicators).

10. International donors and government should adopt a more holistic approach to financing service provision, incorporating analysis of transport needs when financing education or health programmes in rural areas, and having the flexibility of funding to channel resources to support counties or national road agencies in road construction or rehabilitation projects where it will maximise the programme's impact on targeted beneficiaries. A focus on concentrating services in areas where there are viable transport links – particularly in terms of nomadic populations – could also improve the potential for reaching left behind groups as Kenya urbanises.

11. Trends towards integrating social indicators into cost-benefit analyses for roads projects should be encouraged for both the Government of Kenya and international donors. These could also be expanded to weight benefits for left behind groups more strongly, in order to channel funding into projects that can improve roads access for these groups. This would be further strengthened by greater transparency – both in terms of publishing cost-benefit analyses that have been conducted and being clear in terms of the criteria for roads investments. County governments in particular would benefit from greater transparency in donor funding criteria and could allow open competition for rural roads investment, with an emphasis on criteria requiring the targeting of left behind groups.

12. There is an urgent need to assess the criteria for sharing the conditional RMLF to determine whether it is an optimal method for reallocation these type of funding. As discussed in section 3.4, the focus of the current formula on channelling funding to areas with fewer roads is likely to be inappropriate for road maintenance. Although there is likely to be some opposition from those counties who are likely to lose out, the transfer is relatively new and thus has yet to become entrenched. Moreover, it is legally feasible since it is within the Commission for Revenue Allocation's mandate to recommend a new basis for revenue sharing among county governments.

The effort to ensure that no one is left behind in Kenya will be a highly political and challenging task. However, as we have set out in this report, there are many reasons for optimism regarding the general direction of progress over the last ten years. Focusing on tangible and tractable measures to improve coordination and efficiency in the roads, as well those that may shape the incentives for channelling resources to left behind groups, should allow further and more rapid gains to be made.

Realism is also necessary, both in that actors will need to work with Kenya's political dynamics as they are, and that access to roads is only one element of ensuring viable transport for all Kenyans. Alongside road infrastructure there needs to be a focus on many issues beyond the remit

of this report, such as how best to develop convenient and affordable transport options, and balancing different 'leave no one behind' strategies – whether to bring development to the population, or the population closer to development.

This report does not provide answers to these questions, but demonstrates how Kenya can continue to make progress towards ensuring no one is left behind in terms of road access.

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Annex 1. Data sources for assessing roads access in Kenya

We identify levels of access to roads using data from the Global Roads Open Access Data Set[86] from 2013 for Kenya and the Demographic and Health Survey (DHS) 2014 for the population distribution. (Owing to difficulties in accessing GIS data from the 2009 Census, we use the DHS despite certain limitations – see Box A1.) We identify the distance to the nearest road for households by county and by the type of surface.

Box A1. Using DHS's GIS data for population location

The DHS programme collects geographic information that can be linked with data on health, health facility locations, local infrastructure such as roads and rivers, and environmental conditions. However, the DHS data, in order to protect the confidentiality of respondents, undertakes two steps to anonymise the data.

First, it aggregates data from each enumeration area to a single point coordinate. This loses some of the granularity in terms of identifying the households being left furthest behind because even within a cluster there are likely differences in terms of distance of households to roads. Our analysis therefore considers the centroid of the cluster as the location for all households within a cluster without accounting for heterogeneity within each cluster.

Second, the DHS randomly displaces the actual location of clusters by up to 5 km in rural areas (and 1% of rural clusters up to 10 km) and up to 2 km in urban areas. The displaced data remain located within the boundaries of the assigned region. In most cases the random geographic displacement should not significantly affect analysis conducted at the proper scale (Burgert et al., 2013). As a result, although the DHS household survey georeferenced data pose some limitations, and in this regard the use of Census GIS data is preferable, it also provides an opportunity to analyse existing levels and disparities in access to roads. The use of buffer tool to conduct our analysis (i.e. creation of buffer polygons around input features to a specified distance) allows us to take this displacement into account. The analysis of vulnerable people – i.e. those who are further from roads – should prevent the potential bias due to displacement within 2 km radius.

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86   Data are collected by CIESIN of Columbia University and Information Technology Outreach Services (ITOS) of the University of Georgia.

Annex 2. Key indicators to monitor community support and utility of roads sector

Indicator	Type	Proposed source
Proportion of population using public transport to get to: • School • Hospitals • Market town • Local government office	Social/Economic	County government National census
Transport cost: • Weekly expenditure on transport via private transport • Weekly expenditure on transport via public transport • Frequency of using public transport in the last month	Social	County government National census
Transport time: Return journey to key infrastructure or social services • School – via public transport and/or via private transport • Hospitals – via public transport and/or via private transport • Market town – via public transport and/or via private transport • Local government office via public transport and/or via private transport	Social	County government National census
Proportion of population who say transport time is a deterrent to school attendance	Social	Local government NGO-led focus groups/surveys
Proportion of population who say transport cost is a deterrent to school attendance	Social	Local government NGO-led focus groups/surveys
Proportion of population who say transport cost is a deterrent to health centre visits	Social	Local government NGO-led focus groups/surveys
Proportion of population who say transport time is a deterrent to health centre visits	Social	Local government NGO-led focus groups/surveys
Proportion of population who say transport cost is a deterrent to supervised births	Social	Local government NGO-led focus groups/surveys
Proportion of population who say transport time is a deterrent to supervised births	Social	Local government NGO-led focus groups/surveys
Employment: • Number of people employed in construction of road • Number of people employed in maintenance of road • Number of adults employed overall in areas close to the road	Economic	County road agency Kenya Rural Roads Authority (KeRRA)
Percentage of populations living within 2 km of a road	Infrastructure	National census

Annex 3. Mapping and spending outcomes

Method

To better understand the relationship between spending on roads in Kenya and the extent to which spending is associated with outcomes in the sector at the county level, we constructed the LNB index to provide a snapshot of road access and actual road expenditure (development).

We measured deprivation as a binary variable – in terms of the share of people per county who are more than 5 km from a paved or gravel road.[87]

The index takes as a starting point an index constructed by Burgess et al. (2015: FN 15) to measure the extent to each county is spending an amount proportional to its relative population, which can be expressed as:

$Index_c = (Exp_c/Exp_t)/(Pop_c/Pop_t)$ where Exp denotes spending, Pop denotes population and the subscripts c and t denote county and total respectively.

We then adapted this formula to examine the amount of spending per person who is deprived in terms of access to roads. Under this formulation, the numerator remains the same, but the denominator is the county's share of 'road deprived' people in the national 'road deprived' population.

The resulting index signals the extent to which each county's share of road spending is proportional to its share in the road-deprived population nationally. A value of 1 implies that the spending within a county is exactly proportional to its left behind population; a value of greater than 1 implies that spending is higher than what might be expected given its level of deprivation; and a value below 1 indicates that it is less than might be expected.

Assume that the share of spending in County X on roads is 6% of national spending but its share of the people living more than 5 km from a road is 5% of the national total. Then 6/5 = 1.2. So spending is more than proportionate given the relatively small share of people who are road deprived in that county, relative to the share of road-deprived people nationally.

Three important caveats are worth noting. First, these indices assume that changes in money spent and road access are related in a linear fashion. Second, the assessment is a static one – this overlooks a possible lag between spending and outcomes, and that 'disproportionate' budget allocations may reflect past imbalances. Furthermore, the indices are based on actual road expenditure rather than planned expenditure, and thus it is possible than these two may diverge and thus would provide different results.

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87 The estimates on the average share of the population living more than 5 km from a road at a county level are computed in Simonet (Forthcoming) on the basis of data on the road network in Kenya (CIESIN and ITOS, 2013), and the distribution of the population (per the DHS 2014 survey). Simonet uses a '5 km-buffer analysis to take into account the DHS survey database displacement of GIS coordinates for households (for privacy reasons). The displacement is randomly carried out so that urban clusters are displaced up to 2 kilometres and rural clusters are displaced up to 5 kilometres, with 1% of the rural clusters displaced up to 10 kilometres. The displacement is restricted so that the points stay within the country and within the DHS survey region. Accordingly, her estimates are for the share of the population living more than 5 km (as a lower bound) and further still from a main road.

Annex 4. Interviewees

20 key informants were interviewed for the roads case study, in addition to two focus group discussions with citizens in rural Narok and West Pokot. While not all interviewees wished to be named, they included:

Name	Role	Organisation / Institution	Location
Zerfu Tessema Mammo	Chief Transport Engineer	African Development Bank	Nairobi
Dorian Kivumbi	Head of Infrastructure Section	European Union	Nairobi
Ezekiel Rono	County Executive Committee – Roads	Government of Narok	Narok
Elias Kibet	Chief Officer Roads	Government of West Pokot	West Pokot
Zepedee Isaac	County Executive Committee – Ministry of Roads, Public works & Transport	Government of West Pokot	West Pokot
Dr. Steve N Mogere	Infrastructure and Evaluation Advisor	Japan International Cooperation Agency	Nairobi
Hudson W Kihumba	Manager, Planning & Programming	Kenya Roads Board	Nairobi
Margaret N Ogai	Manager- Contracts Planning and Programming Department	Kenya Roads Board	Nairobi
Rashid Mohamed	General Manager Finance	Kenya Roads Board	Nairobi
James Njiraini Gachanga	Policy Analyst	Kenya Institute for Public Policy Research and Analysis (KIPPRA)	Nairobi
Benson M Kimani	Senior Economist	Ministry of Planning	Nairobi
Sarah Muii	Acting Head of SDG Unit	Ministry of Planning	Nairobi
Philip Wachira	Senior Principal Finance Officer	Ministry of Transport and Infrastructure	Nairobi
Wendy Schreiber Ayres	Senior Economist	The World Bank	Nairobi

Quotes are not attributed to specific individuals in this report, but the interview references given refer to various types of actor, and whether they were interviewed as a focus group, as outlined in the table below:

Acronym	Actor/Interview type
KGO	Kenya Government/Parastatal official
NGO	Non-Governmental Organisation official
KA	Kenyan academic/policy analyst
IDP	International development partner official
LR	Local resident
KECO	Kenyan Elected County Official
KGCO	Kenya Government/Parastatal County official
FGD	Focus Group Discussion

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Cover photo: North Eastern Province, Kenya: A hand-painted sign reading 'road work ahead' is propped up by a rock at the edge of a dusty track, in a region which lacks basic infrastructure, 2006. © Dieter Telemans/Panos.

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