

REPUBLIC OF KENYA

Ending Drought Emergencies:
Common Programme Framework for
Climate-proofed Infrastructure

2014

Table of Contents

Key data	iii
Acronyms	iv
Acknowledgements	v
1 Executive summary	1
2 Situation analysis.....	2
2.1 Sector analysis	2
2.1.1 Transport: Roads	4
2.1.2 Energy	7
2.1.3 Water and sanitation.....	8
2.1.4 Information and Communication Technology (ICT)	10
2.2 Critical issues to address	11
2.2.1 Medium-term predictability for national projects	11
2.2.2 Integrated design and specifications for national projects	12
2.2.3 Private sector participation in productive investment projects	12
2.2.4 County capacity.....	12
2.3 Justification for the common programme	14
2.4 Contribution to relevant policies and sector priorities	15
3 Programme framework.....	17
4 Cross-cutting issues.....	21
4.1 Gender and diversity	21
4.2 Sustainability.....	21
4.3 Links with other EDE pillars	22
5 Risk management	23
6 Institutional arrangements	24
6.1 Programme management and implementation.....	24
6.2 Coordination mechanisms.....	25
6.3 Monitoring and evaluation	26
7 Resources	28
7.1 Funding level	28
7.2 Sources of funding	28
7.3 Funding allocation to counties and selected projects.....	29
7.4 Accounts and fund flow	29
7.5 Resource mobilisation strategy	29
7.6 Financial control and fraud remediation measures	30

Annex 1	Results framework	31
Annex 2	Detailed budget	36
Annex 3	Infrastructure status in ASALs.....	38
Annex 4	Infrastructure commitments in the ASAL Policy and EDE MTP	46
Annex 5	Summary of key stakeholders by sub-sector.....	47
Annex 6	Ongoing and planned water projects in the ASALs.....	49

Key data

Country	Kenya
Title	Ending Drought Emergencies Common Programme Framework: Climate-Proofed Infrastructure
Duration	July 2014 – June 2020
Total budget	Kshs. 53,030 million
Overall outcome	The deficit of climate-proofed productive infrastructure and its maintenance is identified, planned and progressively addressed in a coordinated and comprehensive manner at national, county and community level.
Expected results	<ol style="list-style-type: none">1. Prioritisation of national infrastructure projects in ASALs improved.2. Standard guidelines for climate-proofed design of ASAL infrastructure produced and integrated in current and future infrastructure projects at national, county and community levels.3. County capacity to plan, contract and supervise implementation of climate-proofed infrastructure progressively built.4. County capacity for infrastructure operation and maintenance is progressively built.5. The deficit of county climate-proofed productive infrastructure is progressively addressed in a coordinated and comprehensive manner.
Focus area and population	Arid and semi-arid counties, approximately 15 million people (36% of the national population)
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Acronyms

ARC	African Risk Capacity
ASALs	Arid and Semi-Arid Lands
CCK	Communications Commission of Kenya
CCPISP	County Climate-Proofed Infrastructure Support Programme
CDF	Constituency Development Fund
CIDP	County Integrated Development Plan
DRR	Drought Risk Reduction
EDE	Ending Drought Emergencies
GDP	Gross Domestic Product
ICT	Information and Communication Technology
IGAD	Intergovernmental Authority on Development
KeNHA	Kenya National Highways Authority
KeRRA	Kenya Rural Roads Authority
KFSSG	Kenya Food Security Steering Group
KPLC	Kenya Power and Lighting Company
KRBF	Kenya Roads Board Fund
KURA	Kenya Urban Roads Authority
LAPSSET	Lamu Port South Sudan Ethiopia Transport Corridor
MIS	Management Information System
MTP	Medium Term Plan
MW	Megawatt
NCCAP	National Climate Change Action Plan
NDCF	National Drought Contingency Fund
NDMA	National Drought Management Authority
NKIF	Northern Kenya Investment Fund
O&M	Operation and Maintenance
PDNA	Post-Disaster Needs Assessment
PPP	Public-Private Partnership
PV	Photovoltaic
REA	Rural Electrification Authority
REP	Rural Electrification Programme
WASH	Water, Sanitation and Hygiene
WESCOORD	Water and Environmental Sanitation Coordination
WSB	Water Service Board
WSP	Water Service Provider
WSTF	Water Services Trust Fund

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- Kenya Rural Roads Authority
- Ministry of Environment, Water and Natural Resources
- World Bank

1 Executive summary

This is the second of six common programme frameworks that have been developed to operationalise the Ending Drought Emergencies (EDE) Medium Term Plan, which is an integral part of the Kenya Vision 2030 Second Medium Term Plan for 2013-17.¹

One of the key findings of the Post-Disaster Needs Assessment of the 2008-11 drought was that, besides the sheer size of its socio-economic impact, resilience to future droughts would require a multi-sectoral approach in which infrastructure played a key role. Further, a mapping of donor programmes against the six pillars of the Ending Drought Emergencies Medium Term Plan (EDE MTP) in 2012 revealed a bias towards investments in livelihoods and risk reduction, ignoring the need to address the infrastructure deficit.

The rather abstract notion of ‘climate-proofed’ infrastructure was given practical form by the county governments in their County Integrated Development Plans (CIDPs). First, the CIDPs vision of county infrastructure is one that facilitates the socio-economic integration of all communities, as well as being on a scale which allows investments to withstand climate impacts. Second, the CIDPs reveal the sheer size of the infrastructure deficit in the arid and semi-arid lands (ASALs), as well as the challenge of ending drought emergencies in ten years without investing in the critical medium-sized infrastructure that links and expands pockets of development at the community level with county and national initiatives.

In developing this common programme framework, the counties thus emphasised the important spatial development role of climate-proofed infrastructure. They also reinforced the importance of strong synergy and partnership between national and county initiatives if the EDE goal is to be attained.

First, the counties cannot do this alone. There is a gross funding deficit of approximately Kshs. 170 billion for gravelled roads and medium-sized water retention structures alone. The national government, development partners and, where possible, the private sector should pool their resources alongside county resources so that this deficit is addressed in a coherent manner and contributes to county resilience and growth. A survey of county budgets suggested that Kshs. 33 billion has been secured for the next five years – a substantial amount.

Second, counties want to play a lead role but recognise both their capacity limitations and the need to develop an inter-county response. Therefore while the infrastructure deficit is being progressively addressed during the ten-year lifespan of this common programme framework, progressive capacity transfer should also take place, facilitated by a support unit in which county and national expertise is pooled.

Finally, if the deficit of county climate-proofed infrastructure is to be addressed, county-level development must be closely connected with national economic planning. Kenya Vision 2030

¹ The others are on peace and security, human capital, sustainable livelihoods, drought risk management, and institutional development and knowledge management.

flagship programmes such as the Lamu Port South Sudan Ethiopia Transport (LAPPSET) Corridor and other projects in the ASALs should be well advanced within the next five years. For this reason the framework also includes a strong advocacy component.

This is a Kshs. 53 billion programme with an expected 43 per cent contribution from development partners.

2. Situation analysis

2.1 Sector analysis

The EDE MTP states that ‘better infrastructure is key to opening up the region but it must be climate-proofed. This requires that current and future climate risks are factored into its design and implementation in order to ensure that the anticipated life-span of infrastructure investments is achieved’.

‘Climate-proofed infrastructure’ is a relatively recent concept and is yet to be mainstreamed in the project cycle. Five measures may be identified which will ensure that infrastructure is climate-proofed:

1. **Engineering:** integrating specifications in the design that enable infrastructure to withstand the predictable adverse effects of climatic events.
2. **Planning:** developing synergies between different types of infrastructure that facilitate socio-economic integration and the timely delivery of aid in crisis.
3. **Long-lasting:** ensuring that the operation and maintenance (O&M) requirements are defined, planned and executed.
4. **Environmental soundness:** ensuring that upstream and peripheral environmental protection measures are integrated in the design, either as part of the project or as a parallel project, such as river basin protection measures or greening road embankments.
5. **Economic viability:** ensuring on the one hand that the maintenance formulae integrate realistic parameters and on the other that the infrastructure is fiscally feasible.

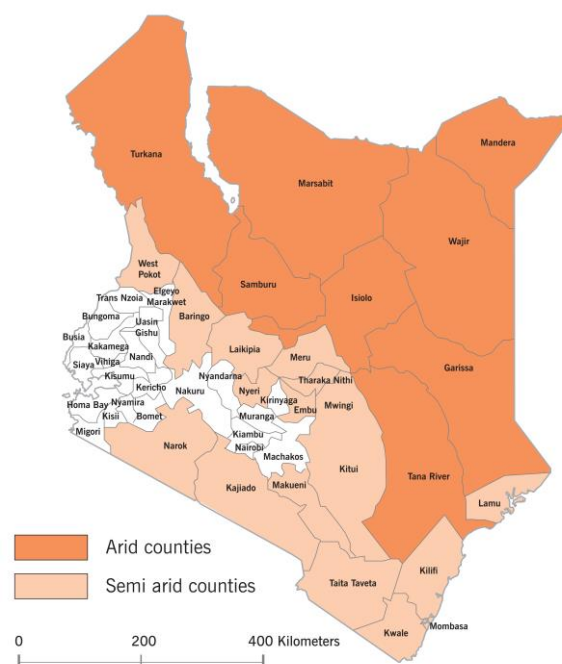
The devolution of government to counties since March 2013 has had a deep impact on the allocation of responsibilities for planning and implementing rural and urban infrastructure. While centralised bodies were once in charge, the 47 counties are now empowered to act, but without the same level of planning capacity. The preparation of the CIDPs for 2013-18 was the first planning exercise fully conducted at the county level.² Despite the short time allocated to the process, the plans reflect the new county governments’ ambitions to transform their economies and expand the delivery of services to their people.

In consultative meetings for this framework in November/December 2013, the counties ranked climate-proofed infrastructure, especially roads and water harvesting, as among their

² The CIDPs have a standard format with sectors that follow the Medium Term Expenditure Framework. For the infrastructure sector, this includes energy, roads, information and communication technology (ICT), and water.

highest priorities. Being the first of their kind the CIDPs are aspirational: they are not yet objective-oriented, with budgets determined by financial capacity. Almost all desired infrastructure projects in all wards are included. However, since they were developed in a broad consultative manner from the ward-level upwards, the plans reflect the aspirations of communities which have been marginalised for many years. They were also prepared with little knowledge of national plans, resulting in weak links between the two levels.

A reading of the CIDPs paints a grim picture of the status of infrastructure in ASAL counties, which lag far behind the rest of the country in terms of the coverage of their road network, average distance to water, household electricity connection rate, and mobile phone coverage. Further details are in Annexes 3a, 3b and 3c, compiled from the CIDPs.



By reviewing comparable data, three categories of county determined by the profile of their infrastructure coverage can be established; these are set out in Table 1. The first two categories of arid counties are also those historically most neglected in terms of national resource allocations.

Table 1: Infrastructure coverage in the ASALs

Indicator	Arid northern counties	Arid intermediary counties	Semi-arid counties
Land mass	Large	Medium	Medium / small
Average population density (inhabitants per km ²)	13	12	65
Road density (km ² per km of gravelled road)	130	82	11
Average distance to water (km)	23	4	2
Number of counties	5: Turkana, Marsabit, Mandera, Wajir, Garissa	4: Isiolo, Tana River, Baringo, Samburu	14: West Pokot, Laikipia, Nyeri, Kajiado, Narok, Makueni, Meru, Tharaka Nithi, Embu, Kitui, Lamu, Kilifi, Kwale, Taita Taveta
Population (million, 2009) ³	3.5	1.2	10

³ With one of the highest population growth rates in the country, driven by a high birth rate but also by population transfer from areas of higher agro-ecological potential where access to land is a constraint, the 14.7 million people in the ASALs in 2009 could exceed 18 million by 2014.

The following sections describe the situation in more detail, specifically the four sub-sectors of the EDE MTP infrastructure pillar: transport, energy, water and irrigation, and ICT. Further information is in Annexes 4, 5 and 6.

2.1.1 Transport: Roads

Given the size of the ASAL counties, their road infrastructure is very poor and road density very low. Table 2 illustrates this with reference to two counties, but a similar situation prevails in many others.

Table 2: Road infrastructure in ASALs

Indicator	Garissa	Marsabit
Total land area (km ²)	44,175.1	70,961
Total road network (km), of which:	1,804	2,431
Earth (km)	1,479	2,034
Gravel (km)	304	397
Bitumen (km)	21	0

Until now, three government authorities have been the key players in the roads sub-sector:

- Kenya National Highways Authority (KeNHA), responsible for the development and management of main roads (Class A, B and C).
- Kenya Rural Roads Authority (KeRRA) responsible for the development and management of rural roads (Class D, E and others). With devolution, its role should become more limited as responsibilities are transferred to the county governments.
- Kenya Urban Roads Authority (KURA), responsible for the development and management of roads in cities and municipalities.

The situation differs for the various classes of roads.

Main roads (Class A, B and C)

The ASAL Policy and the EDE MTP only focus on developing trunk roads (Annex 4), with a budget of Kshs. 208.9 billion for these in the EDE MTP. Significant process is being made:

- As part of the LAPSSSET project, which aims to open up northern Kenya and provide a reliable transport corridor for Ethiopia and Southern Sudan, as well as link with the Northern Corridor transport project:
 - Isiolo-Moyale construction is ongoing in four sections with different funding partners:
 - Isiolo-Merille River is complete (136km)
 - Merille River-Marsabit (121km), Marsabit-Turbi (121.5km) and Turbi-Moyale (127km) are all contracted and in progress.
 - Designs for Nginyang-Lokichar-Lokichogio (527km) are at an advanced stage.
 - Lamu Port-Garissa-Isiolo-Lokori has not moved from the planning stage.

- Designs for the Leseru-Marich Pass, Marich Pass-Lodwar and Lodwar-Nadapal sections are complete.
- Construction of Rumuruti-Maralal has been launched.
- As part of the Lake Turkana Wind Power Project, a 200km gravel road will be rehabilitated through Marsabit County to drivable standards.

Synergies between road developments and other socio-economic investments are rarely explored in a coordinated manner, although the design of the Nginyang-Lokori-Lokichar road integrates ICT infrastructure (fibre optic), basic social infrastructure for future settlements (primary school, police post) and associated water points. In the context of devolution, coordinated planning of major road developments becomes an even higher priority so that counties can align their infrastructure investments accordingly. It is worth noting that a minimum three-year period is needed to develop technical studies, secure finance and tender for these complex projects; it may take up to five years between the design of a road and construction starting. Therefore as counties realign their plans with these national projects, these timeframes need to be factored into their planning.

KeNHA has only considered high standard asphalt concrete for Class A and B roads. Given the need to complete the intermediate Class C roads as well, the use of alternative design standards such as otta seal should be explored for Class C roads, particularly given the limited fiscal space in coming years (given recurrent costs and commitments for major infrastructure works). Otta seal costs approximately US\$ 160,000 per km, compared with US\$ 1,300,000 per km for asphalt concrete.

County roads (Class D and E)

KeRRA has been an important player in the ASALs given the predominance of rural roads. Its guiding policy is the Kenya Roads 2000 Strategy, and one of its objectives is to ‘provide an employment-based social protection mechanism for the marginalized population’. The Strategy favours the use of local labour and contractors. The Roads 2000 Programme has improved several roads in the ASALs in the North Rift (993km), South Rift (1,339km) Coast and Eastern (837km) and Eastern (935km), but none in North Eastern.

KeRRA’s future role vis-à-vis the county roads departments needs defining. The Constitution of Kenya 2010 vests the mandate of county roads to the county government, but KeRRA is still in existence. Even as counties take on this mandate their capacities to finance and implement new roads projects and maintain existing ones are uncertain. There is a high risk of losing KeRRA’s capacity, particularly in road sector governance and road network management. A transfer of capacity between KeRRA and the county governments is therefore necessary. Some of the considerations at county level are as follows:

- More attention in the CIDPs to prioritising between roads that need attention and the feasibility of financing them. Repairs of critical sections should also be considered.
- Complementing road investments with other socio-economic investments.

- Climate-proofing specifications are not yet well integrated in technical designs at either national or county levels. This may lead to underspecified contracts, resulting in high maintenance costs and rapid deterioration, particularly of sensitive sections such as waterlogged and deep clay areas, seasonal river crossings, high gradients and steep slopes.
- The possibility of a supervisory unit covering clusters of counties could be explored, given the difficulty in staffing and training construction and maintenance personnel, the inadequate capacity of contractors, and the feasibility of setting up a fully functional infrastructure supervisory unit in every county.

Road maintenance

Since the early 1990s, the level of road maintenance has been insufficient to address the permanent backlog and keep up with the growing number of roads. A combination of poor governance in managing resources for road maintenance, insufficient funding, and weak road maintenance capacity has prevailed at all levels. This is not a uniquely Kenyan situation.⁴ Road maintenance in the ASALs has generally been suboptimal, if carried out at all. A recent Road Inventory Condition Survey for 2012-13 revealed that only 34 per cent of the country's unpaved classified roads are in good or fair condition while the rest are in poor condition.⁵ However, even this low figure conceals wide disparities; the ASALs have a much lower percentage of roads in good or fair condition. The backlog of maintenance and rehabilitation requirements is thus extremely important to consider in programming.

Until now, KeRRA has been responsible for road maintenance in the ASALs with funding mainly from the Kenya Roads Board Fund (KRBF), which is financed from the Road Maintenance Levy, transit tolls and agricultural cess. The KRBF allocates monies for maintenance as follows:

- 40 per cent for Class A, B and C roads (through KeNHA).
- 22 per cent for constituency roads, and 10 per cent for critical linking rural roads (through KeRRA).
- 15 per cent for urban roads (through KURA).
- 1 per cent for National Parks and Reserves (through the Kenya Wildlife Service).
- 2 per cent for administration by the Kenya Roads Board.
- 10 per cent for the Road Sector Investment Programme.

The relevant funding for ASAL roads has been the 32 per cent administered by KeRRA, but this is usually inadequate for the required level of maintenance.⁶ Moreover, the capacity for maintenance is low. While KeRRA retains overall responsibility, actual maintenance has been outsourced to private contractors, most of whom have inadequate personnel and

⁴ Heggie, I. (1995) 'Management and Financing of Roads: An Agenda for Reform', World Bank Technical Paper No. 275

⁵ Kenya Roads Board Annual Public Roads Programme FY 2012-2013

⁶ In its Annual Report for 2012-2013, KeRRA observed that 'the funding required for these interventions is currently estimated at Kshs. 25 billion for paved roads and another Kshs 30 billion for unpaved improvement link roads. Currently the available funding from the Development Budget is about Kshs 2.5 billion per year and the Authority requires additional Kshs 3.5 billion to save some critical roads from complete failure.'

resources. The government has tried to improve maintenance by using labour-based approaches and locally available resources under the Roads 2000 Strategy, and by training local contractors' personnel at the Kenya Institute of Highways and Building Technology.

2.1.2 Energy

The most relevant actors for the ASALs are the Rural Electrification Authority (REA) and the Kenya Power and Lighting Company (KPLC).⁷ The REA aims to have all households connected by 2030. It has a three-phase plan to achieve this through the Rural Electrification Programme (REP). The objective of the first phase (2008-12) was to connect all public facilities and one million customers, thereby increasing connectivity for households from approximately 12 per cent to 22 per cent and connectivity for public institutions to 100 per cent. The objective of the second and current phase (2013-22) is to increase household connectivity from 22 per cent to 65 per cent, and in the third and final phase (2022-30) to achieve universal connectivity.

The first phase did not realise its objective of connecting all public facilities, reaching 23,167 out of 25,873 by June 2013.⁸ This is a connection rate of 89% but still a commendable achievement given the challenges in rural electrification which include:

- Scattered population settlements leading to long distribution lines, exacerbated by lack of control over the sub-division of arable land.
- Harsh terrain and inaccessibility due to under-developed infrastructure, which in turn increases the cost of REA projects.
- High operating cost of grids in rural areas due to low population density.
- Acquisition of way-leaves due to high compensation demands by public institutions and land owners.
- Vandalism of power infrastructure.

By June 2011 the REP had installed solar PV systems in 476 schools and health centres in the ASALs and mobilised funds to connect a further 380 facilities by June 2013.⁹ However, the situation of household connections is much poorer. The connectivity rate ranges from a low of 0.2 per cent in Garissa to a high of 40 per cent in Kajiado (which may be misleading given its proximity to Nairobi). Most ASAL counties have a household connection rate of less than 20 per cent, with 13 counties less than 10 per cent (Annex 3c). A further challenge specific to household connections is their affordability. While the connection cost had been subsidised at Kshs 35,000 it has since been increased to Kshs. 75,000, far beyond the reach of many rural households and particularly those in the ASALs.

The proposals for the energy sector in the ASAL Policy and EDE MTP are in Annex 4. The biggest of these is the Lake Turkana Wind Power project, one of the largest private investments in Kenya's history. This is in the final stages of approval and will produce

⁷ See Annex 5.

⁸ Republic Of Kenya (2013) 'National Energy Policy', Ministry Of Energy And Petroleum, November 2013

⁹ Republic of Kenya (2012) 'Vision 2030 Development Strategy for Northern Kenya and other Arid Lands'

310MW for the national grid. In addition to those in the EDE MTP, the following planned national programmes will also increase access to energy in the ASALs:

- ***Continuation of the REP:*** The REA is targeting 6,304 public facilities, which include the remaining 2,600 main public facilities (trading centres, secondary schools, health centres and dispensaries) and others such as primary schools, tea-buying centres, water supply systems, and places of worship.¹⁰
- ***Development of new and renewable sources of energy:*** The government will promote the development of renewable energy from solar, wind and biogas and the development of bio-energy, including bio-ethanol and diesel value chains. It will also promote improved cooking stoves and charcoal kilns and the re-forestation of water towers. A National Renewable Energy Master Plan and updated renewable energy database will be developed.

The CIDPs include rural electrification, including renewable energy projects, but assign the bigger role of rural electrification to the REA through the REP. As with transport, strategies to establish synergies between different infrastructure components and with other sectors are generally not considered.

The KPLC provides most electricity connections and is responsible for O&M of the infrastructure, which it handles fairly efficiently as a commercially oriented organisation. Responsibility for O&M of institutional or household connections through renewable energy sources is the responsibility of the respective owners.

2.1.3 Water and sanitation

Water service provision is carried out through contracted Water Service Providers (WSPs). WSPs are licensed to provide water in a defined geographical area on condition that the provision of the service is commercially viable. However, low population density in the ASALs makes it difficult to meet this condition, with the result that WSPs are only found in urban and peri-urban areas, leaving service provision in rural areas to community groups and NGOs. The Water Service Boards (WSBs) and the Water Services Trust Fund (WSTF) have also been carrying out water supply projects. Data on investments is difficult to obtain; even the sub-sector regulator, the Water Services Regulatory Board, only reports on the performance of WSPs. However, it is generally acknowledged that access to water services in the ASALs is far lower than in the rest of the country.

The counties appear to have no consistent reporting format on access to safe water. Some report on the water supply infrastructure, others on the numbers of households with access to potable water, and others on the percentage of the population with access to potable water. Access to potable water is low in most ASAL counties but varies: some, such as Mandera, Marsabit, Tana River, Isiolo and Wajir, have very low rates of access, possibly below 10 per cent, while others, such as Taita Taveta (58 per cent), Kilifi (65 per cent) and Nyeri (the

¹⁰ Republic of Kenya (2013) 'Kenya Vision 2030 Second Medium Term Plan 2013-2017'

highest at 79 per cent), are relatively better.¹¹ However, these figures aggregate the situation for the whole county thereby hiding wide disparities between urban/market centres and rural populations. As Annex 3a shows, the average distances to water are longer in arid counties (ranging from 3km in Isiolo to 30 km in Wajir) than in semi-arid counties (ranging from 1.25km in Taita Taveta to 11km in Laikipia).

Since 2008 a number of major dams have been constructed which aim to increase storage capacity by 30 million cubic metres. Some are in ASAL counties, although none is in the north-east (Table 3). Another 19 dams earmarked for construction during the Kenya Vision 2030 Medium Term Plan 2008-12 are at various stages of planning and design. In addition, since 2008, 731 boreholes have been drilled, equipped, rehabilitated and operationalised and 399 small dams/pans constructed, creating an additional storage capacity of 15 million cubic metres. Most of these are in the ASALs. Annex 6 lists other national-level projects that should improve access to water, funded by both government and development partners.¹²

Table 3: Construction of major dams

Dam	County	Status
Maruba Dam	Machakos	Completed in 2010
Kiserian Dam	Kajiado	Completed and awaiting commissioning
Badasa Dam	Marsabit	75.4% complete
Chemususu Dam	Baringo	90% complete
Umaa Dam	Kitui	68.5% complete

Like the major road projects, these are large investments which can only be undertaken using a project-based approach. Moreover, the design process may be lengthened by the need for comprehensive river basin and hydrological studies that require comprehensive and reliable data over a medium-term period.

Annex 4 lists the water sector proposals in the ASAL Policy and the EDE MTP. Those in the EDE MTP are not fully aligned with the Policy in two respects:

- While the Policy recommends *'strategic assessment of the most appropriate locations & technologies'*, the EDE MTP provides only for mapping groundwater in six counties. Given the difficulties that counties experience in water resources assessment, it would be prudent to provide for this as per the Policy, rather than only groundwater assessment. This could be taken further and include an assessment not only of the water resources but of the potential sources for under-served areas in the counties.

¹¹ The uncharacteristically high rate for Nyeri is derived from the reported figure of 187,087 households with access to potable water out of an estimated 235,670 households in the county.

¹² One example is the African Development Bank's Drought Resilience and Sustainable Livelihood Programme in the Horn of Africa (Phase I) which is supporting six counties: Turkana, West Pokot, Marsabit, Samburu, Isiolo and Baringo. The programme will construct/rehabilitate 24 water pans, 24 boreholes, 18 shallow wells, and 12 sub-surface dams, rehabilitate/expand seven existing small-scale irrigation schemes to a total area of 1530 hectares, and help communities improve the management of water and irrigation infrastructure.

- While the Policy proposes ‘*promoting low-maintenance water technologies*’, the EDE MTP provides for construction of multi-purpose dams which are not low-maintenance. Given the lack of conventional water sources in ASAL areas, low-maintenance water harvesting technologies have an important contribution to make and it would be prudent to provide for their development.

Another important aspect is provision for innovative water supply approaches. The areas that remain without access, particularly in the ASALs, are those where water solutions are more challenging. The private sector has the ability to craft innovative solutions through social entrepreneurship. A good example, which would be applicable in the ASALs, is the community-based infrastructure model by Grundfos, a pump supplier.¹³

The CIDPs have earmarked substantial budgets for dams and other water retention structures, including the acquisition of earth-moving equipment to carry out the work themselves. Once again the link with the national-level projects was unclear. The counties have proposed an inter-county task force to conduct broad and transparent consultation among existing and future water users of a river basin, and ensure that detailed technical and socio-economic feasibility studies, including of future access to water and land rights and water basin management, are conducted. The counties also prioritise the mapping of existing and potential water resources.

Operations and maintenance

O&M of rural water supply is dogged by numerous challenges, particularly in ASAL counties. It is difficult to create commercially viable arrangements in remote areas, thus the responsibility for water service provision is usually left to communities. However, this is a specialist field that requires organisational, managerial and technical skills and knowledge that are not readily available within communities. Further, national or regional-level organisations often plan and implement water supply projects with minimal involvement of the users, and on completion, the projects are handed over with inadequate preparation for O&M.

Medium-sized dams constructed by national or regional bodies are meant to service several communities but also usually lack clear O&M arrangements. Prior to devolution their maintenance was neglected. The county governments are expected to be more responsive to this despite their limited maintenance budgets.

2.1.4 Information and Communication Technology (ICT)

Access to ICTs in the ASALs is comparatively poor, although the infrastructure for the fibre optic cable has now reached several locations in the north (Lokichoggio, Lodwar, Marsabit,

¹³ This supplies safe groundwater for domestic, agricultural and productive uses. It works ‘by combining proven pump technology, renewable energy (solar) and an innovative service platform with unique solutions for revenue management and remote monitoring.’ <http://www.solutionsforwater.org/solutions/grundfos-lifelink-sustainable-and-transparent-water-solutions-for-the-majority-world> ‘The users tap the water from an automatic water dispenser using a smart card with water credit loaded through Mpesa.’ <http://www.revolve-magazine.com/home/2013/05/14/sustainable-m2m-water-solutions/>

Moyale, Mandera, Wajir, and Garissa). For the most part the region remains reliant on expensive satellite communication systems. The CIDPs report that mobile coverage is fairly good in most counties with only a few, including Turkana, West Pokot, Mandera, Wajir, Marsabit and Isiolo, reporting coverage of less than 30 per cent. Other counties have higher coverage with some, such as Kwale, Kilifi, Meru, Nyeri, Tharaka Nithi and Embu, reporting coverage of more than 70 per cent. As with water, coverage is higher in the urban/market centres and along highways but low or non-existent in rural areas. While mobile phone coverage is relatively better, other ICT services such as cyber cafes are hindered by the low rate of electricity connections in rural areas.

The Communications Commission of Kenya (CCK) has established a Universal Service Fund to complement private sector initiatives towards meeting the objective of universal access. Its objectives include the promotion of communications infrastructure and the roll-out of services in rural, remote and under-served areas such as the ASALs. ICT development can support the education, political participation and market integration of ASAL communities, but the exact nature of the government's role should be clarified in this private sector-dominated domain. The counties also have plans to improve ICT and are progressively working towards aligning their service delivery with the e-government strategy.

Annex 4 lists the ICT provisions in the ASAL Policy and EDE-MTP. Neither the EDE-MTP nor the CIDPs include innovative ways to increase access to ICT services. Given the globally recognised position of Kenya as a leader in ICT innovation, this is a glaring omission. Private sector players are developing innovative concepts to bridge the digital divide but are constrained financially to carry out field tests. It is desirable that this framework and the county CIDPs include some mechanisms to stimulate innovative approaches.

With regard to O&M, the principal providers of ICT services are private sector companies which ably manage the O&M of their infrastructure.

2.2 Critical issues to address

2.2.1 Medium-term predictability for national projects

The major projects planned for the ASALs in 2013-17 under the EDE MTP amount to US\$ 10.2 billion.¹⁴ This high budget poses a challenge of fiscal feasibility, given the current fixed level of government borrowing at 60 per cent of GDP, the low level of development partners' grants for infrastructure, and the financial commitments to implement three Kenya Vision 2030 flagship projects: the Mombasa-Kisumu standard gauge railway, and the road expansion and Lamu port under LAPSSET. Even with 10 per cent GDP growth, planning predictability of major ASAL infrastructure projects is difficult to achieve. This predictability is particularly important for the county planning process and to ensure synergy between national, county and community investments.

¹⁴ Roads Kshs. 208bn; energy Kshs. 165bn; water Kshs. 52.7bn. Flagship projects for water not included in the EDE MTP amount to an additional US\$ 5.1 bn.

2.2.2 Integrated design and specifications for national projects

In the past, infrastructure design was carried out at the national level with little local consultation. Devolution now creates the potential for local consultation that delivers a more integrated design, as well as synchronised national/county investments. Consultation and planning should also have an inter-county dimension, in which upstream and downstream interests can be considered in order to prevent future conflict.

2.2.3 Private sector participation in productive investment projects

Public-private partnerships (PPP) are not being systematically explored. Given the recognition by the national government of the potential of PPPs in infrastructure development, and the establishment of a PPP Unit at the National Treasury, the counties could encourage PPPs in developing their planned infrastructure. This will require closer collaboration with the private sector, including their participation in the county planning process.

2.2.4 County capacity

a) Counties' financing capacity and financing gap

Only a broad estimate of the financing gap is possible given the difficulties in assessing the situation from the CIDPs:

- With just one year into devolution, several CIDPs or first-year budgets were still in preparation, with no clear indication of the secured county funding for infrastructure projects.
- Some counties prioritised infrastructure for the 2013-17 planning period while others indicated all possible projects without considering funding feasibility. As a result the budgets vary widely – in some counties in excess of Kshs. 30 billion for the five years, and in other counties much lower.
- The costing of infrastructure also varies greatly across the counties, with some costing a similar unit two or three times higher than others. The assessment in this framework is based on costings within a reasonable range.
- Counties also differ in their infrastructure strategy (particularly for water), with some putting more emphasis on rehabilitation and others opting almost exclusively for new projects.

Given the above, and in order to gather information on comparable types of infrastructure, the counties were given a questionnaire to provide their CIDP budgets and expected secure funding for a) gravelled roads and b) medium-to-large water retention infrastructure with the capacity to withstand drought. The main findings are as follows.

1. County infrastructure needs are massive and well beyond the five-year period of the CIDP.
2. The counties' secure funding represents approximately 20 per cent of their infrastructure budgets, with the priority given to water (25 per cent) above roads (18 per cent).

Budgeting for infrastructure was therefore ambitious, with a funding gap of 80 per cent for just these two items. When the tarmacking of important road sections is also considered, for which nearly no county finance is available, the funding deficit for roads could triple; and if water systems and urban sewerage are also considered, the funding deficit for water could increase by 50 per cent.

3. Based on the two types of infrastructure, the funding deficit is approximately Kshs. 170 billion, of which 40 per cent is for only the five northern arid and very large counties (Table 4). Of this deficit, 70 per cent is for roads and 30 per cent is for water.

Table 4: Estimated funding deficit per county profile (Kshs. m)

Category (ref Table 1)	Gravelled road	Water retention	TOTAL
Category 1: Turkana, Marsabit, Mandera, Wajir, Garissa			
Average for Turkana, Wajir, Garissa	8,277	4,578	12,855
Estimated deficit for category 1	41,383	22,892	64,275
Categories 2 and 3: all remaining ASAL counties			
Average for Samburu, Isiolo, Tana River, West Pokot, Laikipia	4,666	1,128	5,794
Estimated deficit for categories 2 and 3	83,984	20,300	104,285
Total estimated funding deficit	125,367	43,192	168,560

b) Access to specific knowledge and tools to plan climate-proofed infrastructure

Specialist technical knowledge in infrastructure planning is not easily available at the county level. Technical design standards and guidelines to prepare climate-proofing specifications are also not available. Since the county planners are not aware of national-level plans, the CIDPs have not created synergies with infrastructure projects planned by national or regional bodies, thus creating the risk of duplication. For example, the Lake Turkana Wind Project involves the reconstruction of a major road which is not considered in the relevant CIDPs.

c) Weak technical competence in the new counties and loss of competencies in authorities formerly in charge of rural roads and water

The Constitution vests the mandates for water and sanitation and rural roads to the county governments, which therefore need qualified and experienced engineers and technicians. Given the current shortage of qualified staff and the difficulty of attracting qualified personnel to work in areas where living conditions are difficult, those recruited often lack the desired level of competence. Moreover, counties have been recruiting similar staff with no mechanism for inter-county sharing of service provision. Finally, the possibility of a transition phase to transform national or regional institutions into technical service providers

to counties as the counties build their own competencies has not been considered. These gaps will affect the quality of planning, contracting and supervision of infrastructure projects.

d) Transparency in procurement and local contractor capacity

The inadequate capacity of local contractors is a long-standing concern. It is even more problematic when the size of the contract spans different counties. Under devolution, the preference is to contract county works to local contractors within the county, irrespective of their real capacity. Counties also require strong governance arrangements to manage county procurement effectively.

e) Weak enabling environment for contractors to operate

National and county governments appear to lack the political will to ensure that contractors can operate freely in a secure environment. In the roads sub-sector the main challenge is the demands placed on contractors, such as for employment of local people regardless of their skills, or for prohibitive quarry rights and water charges from boreholes drilled for the purposes of road construction.

f) Weak coordination leading to poor coverage of infrastructure

Where the potential for water harvesting or borehole drilling is high, there can be competition on site selection between implementing agencies, especially NGOs. While WESCOORD (the Water and Environmental Sanitation Coordination mechanism) has been coordinating water, sanitation and hygiene (WASH) activities in the counties, it does not have the necessary capacity to manage county and sub-county coordination effectively.

g) Inadequate consultation on the adoption of user fees and alternative modalities

There are two examples of this: first, even where a discount is provided, the individual connection cost to the electricity grid is still beyond the capacity of most households in ASAL counties; second, the water user fees that pastoralists and households are expected to pay may also be unrealistic.

2.3 Justification for the common programme

The Constitution has devolved key functions in infrastructure development and management to the county governments. This is meant to improve service provision and achieve the goals of Kenya Vision 2030. A systematic approach to infrastructure development is therefore required, both between sectors and between actors in a sector. This is fully in line with the call by the Ministry of Devolution and Planning for the counties to develop spatial plans.¹⁵ Other policy documents, such as the Agricultural Sector Development Strategy, also call for better coordination between sectors and actors.

¹⁵ These spatial plans are meant to ‘display the necessary coordination between various sectors, e.g. transport networks and their relationship to agricultural production and markets; industrial areas and energy projects that supply them; zoning of urban-versus-rural areas; public facilities and private home developments, etc.’ The Presidency, Ministry Of Devolution and Planning (2013) ‘Guidelines for Preparation of County Integrated Development Plans. June 2013’

This common programme framework will therefore map all actors within the infrastructure sector to align their proposals into a focused implementation matrix, as well as coordinate with other sectors to align infrastructure investments with areas where they can leverage the development of other services or products. This will minimise the challenges that have previously been encountered, for example where road contractors are pressurised by local communities to provide for services beyond their original contracts.

2.4 Contribution to relevant policies and sector priorities

The Constitution of Kenya 2010 vests in the counties the mandate to deliver a wide range of services. Since infrastructure is an enabler for effective service delivery, the commitments in this programme framework will enable the counties to perform their constitutionally mandated responsibilities.

The emphasis of the Constitution on equalisation measures is reflected in specific sector policies. For example, the road sector's draft policy on aligning the roads sub-sector with the Constitution refers to the Equalisation Fund, which is designed to bring the quality of basic services in marginalised areas to the level generally enjoyed by the rest of the nation. Similarly, the draft Water Bill, 2013, proposes the establishment of a Water Sector Trust Fund to help finance water resources management and the development of water services for poor and other underserved areas. The new constitutional dispensation has also had an impact on the legal framework because of the restructuring of the central government and the responsibilities devolved to counties. The various ministries with infrastructure mandates have been reviewing their legislative frameworks, particularly those, such as water and sanitation, where functions have been transferred to the county governments. None of the sectors has yet completed this process.

Kenya Vision 2030 anchors its three development pillars on world-class infrastructure whose implementation is a prerequisite for attainment of the Vision 2030 goals. The various organisations responsible for infrastructure development have been aligning their sectoral plans with Kenya Vision 2030. The second Medium Term Plan (2013-17) puts great emphasis on infrastructure development.¹⁶ This framework strengthens these commitments by proposing that they also be climate-proofed.

The Vision 2030 Development Strategy for Northern Kenya and other Arid Lands recognises that poor infrastructure in ASALs increases vulnerability to drought by reducing access to markets and basic services and by deterring the investment needed to expand and diversify the economy. It also notes that, given the large size of the region, infrastructure investments in different sectors should be well coordinated in order to reinforce each other and deliver maximum benefits. This is a particular focus of this framework.

¹⁶ 'To further enhance efficiency and competitiveness of our economy, the government will devote more investment to infrastructure and to the key sectors of the economy that will drive growth, particularly through public private partnership arrangements.' (page ii) 'New investments will include cheaper and adequate electricity; local and regional rail and road networks that provide safe, efficient and cost effective transport; adequate water for households and industry; affordable quality housing and sustainable environmental management.' (page 4)

Climate-proofed infrastructure is also one of the priorities of the *National Policy for the Sustainable Development of Northern Kenya and other Arid Lands* (the ‘ASAL Policy’), launched in February 2013, which aims to accelerate ASAL development.¹⁷ The Policy notes that a more robust infrastructure will stimulate investment and growth, lower the cost of doing business, and improve the security and stability of the region. It prioritises major infrastructure projects which promote the integration of the ASALs with the rest of Kenya and the wider region. Implementation of the commitments in this framework will therefore help actualise the commitments in the ASAL Policy. However, the ASAL policy documents were prepared before the first round of county planning and before the magnitude of the infrastructure deficit at the county level was apparent, and at some stage should be reviewed to reflect the potential synergy between national and county infrastructure planning.

By implementing this infrastructure framework the government and its development partners will also contribute to the following policy documents:

- *National Climate Change Response Strategy (NCCRS), 2010, and National Climate Change Action Plan (NCCAP), 2013*: The NCCAP introduces the concept of climate-proofing infrastructure as a way of preparing for disasters. This programme framework therefore directly contributes to the attainment of the NCCAP.
- *The Agricultural Sector Development Strategy 2010-2020* is unequivocal that infrastructure is a precondition for agricultural development. Thus, the infrastructure proposed in this framework directly contributes to agricultural development in the country.
- *The National Disaster Management Policy, 2012*, proposes that disaster risk management be integrated into critical sectors including, but not limited to, health, construction, infrastructure, agriculture, environment and natural resources, county economic planning and physical planning. By providing for climate-proofed infrastructure, this framework will support the integration of drought and disaster risk management in the counties.

¹⁷ Republic of Kenya (2012) ‘Sessional Paper No. 8 of 2012 on the National Policy for the Sustainable Development of Northern Kenya and other Arid Lands’

3 Programme framework

This common programme framework clearly contributes to the objectives of the ASAL Policy, and particularly the goal statement of the Policy: ‘To facilitate and fast-track sustainable development in Northern Kenya and other Arid Lands by increasing investment in the region and by ensuring that the use of those resources is fully reconciled with the realities of people’s lives.’

The overall outcome of this programme framework is: ‘The deficit of climate-proofed productive infrastructure and its maintenance is identified, planned and progressively addressed in a coordinated and comprehensive manner at national, county and community level.’

The framework has two levels of focus:

- At national level, the programme has more of an advocacy and coordination role to inform the climate-proofed specificities of national infrastructure projects in ASALs and to increase the predictability of their planning and implementation.
- At county level the programme will fill the deficit in climate-proofed infrastructure.

The programme does not address climate-proofed infrastructure at community level since this is provided for under the EDE drought risk management pillar, through mechanisms such as Food for Assets and Cash for Assets programmes, and the National Drought Contingency Fund.

Based on the experience of similar infrastructure programmes, the proposed timeframe for this framework is ten years, with an initial phase of six years and an extension phase of four years. The initial six-year phase includes an inception phase during which the feasibility of the first tranche of investments will be determined, the institutional arrangements put in place, and the first consolidated work plans agreed.

Table 5 describes the expected results of the common programme framework.

Table 5: Description of the expected results

Justification	Key interventions	Beneficiaries	Partners	Geographical focus
<i>Result 1: Prioritisation of national infrastructure projects in ASALs improved.</i>				
National infrastructure projects are by their nature project-based and require complex financing and contractual architecture. The counties and the NDMA have a critical role to play in convincing others that prioritising infrastructure in the ASALs will have not only an economic return but also a social and ‘resilience to drought’ return.	<ul style="list-style-type: none"> ▪ Establish and maintain permanent dialogue between counties and relevant national bodies, including development partners and international financing institutions. ▪ Produce position papers, analysis and strategy to facilitate this dialogue. ▪ Complete the establishment of a PPP Northern Kenya Investment Fund that targets productive infrastructure. 	All ASAL populations	National government and its relevant agencies County governments Private sector Development partners International financing institutions	All ASALs
<i>Result 2: Standard guidelines for climate-proofed design of ASAL infrastructure produced and integrated in current and future infrastructure projects at national, county and community levels.</i>				
The concept of climate-proofed infrastructure needs elaborating and integrating at all levels.	<ul style="list-style-type: none"> ▪ Facilitate consultation, expertise and working groups to produce operational guidelines and specifications. ▪ Facilitate multi-level dialogue to integrate these guidelines in all current and future infrastructure projects at all levels. 	Planners Implementing departments and agencies Tendering units Contractors Communities	Technical agencies and departments Communities	All ASALs
<i>Result 3: County capacity to plan, contract and supervise implementation of climate-proofed infrastructure is progressively built.</i>				
County capacity in infrastructure planning and implementation needs to be enhanced in a comprehensive and efficient manner. There are various options: each county does everything itself, or a group of counties builds a common service delivery mechanism, or former national bodies (such as Water	<ul style="list-style-type: none"> ▪ Define standard modules for infrastructure feasibility studies, PPP integration, planning, linkages with other sector plans, tendering, contract management (including supervision of contracts), maintenance, local regulation and supervision, monitoring and evaluation, etc. ▪ Develop and support a dialogue framework on infrastructure planning and future access to infrastructure benefits, including access or user fees and tariff setting. 	Planners Implementing departments and agencies Tendering units Contractors Communities	Technical agencies and departments Communities	All ASALs

Justification	Key interventions	Beneficiaries	Partners	Geographical focus
Service Boards) become service providers to counties.	<ul style="list-style-type: none"> ▪ Provide on-the-job training. ▪ Build the capacity of the players (within each of the agreed construction arrangements) to manage the construction process and the tendering and contract management, including the supervision of contractors and hired supervision consultants where applicable. ▪ Develop and support a dialogue framework on the potential for inter-county common services and/or externalising services to a common service provider. ▪ Create and operate the support unit for the programme. 			
<i>Result 4: County capacity for infrastructure operation and maintenance is progressively built.</i>				
The capacity for infrastructure development and management in the ASALs is relatively weaker than in other counties. Given the expected increase in funding as a result of devolution, and given other affirmative action measures such as the EDE-MTP and the Equalisation Fund, there is need to build the capacity of the counties to manage both the construction process and O&M once construction is complete.	<ul style="list-style-type: none"> ▪ Create awareness in the counties on the standard modules developed under Result 3 for O&M. ▪ Support the counties in operationalising O&M arrangements developed at the planning stage, such that by the time of completion these arrangements are ready to commence. An overlap is ideal, where the contractor and the O&M team work together during the defects liability period so that the O&M team has full knowledge and control of the infrastructure by the time the contractor fully disengages from the site. ▪ Build the capacity of the counties to effectively monitor the progress of construction and, when complete, evaluate its effects and impacts. 	Implementing departments and supervising agencies Contractors Communities	Technical agencies and departments Communities	All ASALs
<i>Result 5: The deficit of county climate-proofed productive infrastructure is progressively addressed in a coordinated and comprehensive manner.</i>				
Synergies need to be built between community-level infrastructure and national projects that connect the ASALs to national and regional economies. County-level infrastructure facilitates the	<ul style="list-style-type: none"> ▪ Define and create a fund with a 10-year scope to cover the deficit of county climate-proofed productive infrastructure. Facilitate a process of consultation to develop the qualitative, funding and operational criteria for the management of the fund, and develop its operating 	Counties and communities	National and county budgets Development partners Private sector	All ASALs

Justification	Key interventions	Beneficiaries	Partners	Geographical focus
<p>agglomeration of settlements, access and opportunities, and builds the resilience of the population to future climatic shocks. Given the challenges of providing infrastructure in underserved areas, innovative approaches are required. The focus of the infrastructure to be financed will be water for human consumption and agriculture, and rural roads. Example include:</p> <ul style="list-style-type: none"> ▪ Water retention structures of 100,000 cubic metres and above that serve a large population and have enough capacity to hold water through the dry season. ▪ Gravelled roads and Otta® sealed rural roads. ▪ Critical rural road rehabilitation in areas at high risk of deterioration, such as river and swamp crossings, black cotton soil, and high gradients. 	<p>manual.</p> <ul style="list-style-type: none"> ▪ Mobilise the fund, initially under the County ASAL Climate-proofed Infrastructure Support Programme. ▪ Implement county ASAL infrastructure consolidated plans, with infrastructure investments selected according to the agreed qualitative, funding and operational criteria. 		Communities	

4 Cross-cutting issues

4.1 Gender and diversity

In every arena, including infrastructure, unspoken gender norms shape the way decisions get made, resources allocated, and people interact. Hence the need to understand the gender dimensions of infrastructure development at both the development and operational stages.

During the development stage, the implications for women and men of all planned projects should be assessed and addressed. For instance, planners must understand the challenges for women's participation in labour-based road construction and maintenance, such as under the Roads 2000 programme, or women's expectations of a water supply facility. This will enable the concerns of each gender to be included in the design and implementation arrangements.

Similar considerations are needed during the operational phase, particularly for roads and water supply. The general policy direction in roads is for labour-based maintenance. As for construction, measures are needed that enable women to participate. Gender is an even more critical consideration in water supply given that women and children are traditionally the main drawers of water. They have a higher stake in the continuous functioning of the facilities and hence need a bigger role in their management.

Successful implementation and functionality of infrastructure projects has a positive impact on both genders and in some instances, such as water supply projects, a more positive impact on women and children. Reduced time and drudgery and improved health, which arise from improved water services, give women and children more time for productive endeavours, leisure, study and play. Better access to facilities such as schools and health centres as a result of improved roads has a positive impact on the lives of men, women and children.

4.2 Sustainability

A sustainable infrastructure project is one that continues to deliver its intended benefits in an environmentally and socially acceptable manner for its entire design life. For this to be assured, sustainability considerations must be factored across the entire project cycle. In this programme framework, sustainability considerations are particularly critical for the roads and water projects, given that it is in these two sub-sectors that challenges have been encountered, especially around the management of O&M. Some of the factors that need to be considered to improve on the chances of sustainability include the following.

- *A clear and supportive legal and institutional framework.* For the two sub-sectors of water and roads, the current institutional framework is fluid. The process of aligning their legal frameworks to the Constitution is underway but not yet complete. In the absence of a clear legal framework there has been push and pull between the counties and KeRRA (in the case of roads) and the WSBs (in the case of water).

- *Consideration given to issues such as the institutional arrangements for O&M in project design.* For projects such as water, where O&M may be the responsibility of the community, these issues may include the capacity of the community to manage the O&M, the capacity of water users to pay the required user fees, the availability of technical skills to undertake necessary repairs, and the availability of spare parts for repairs. This calls for early dialogue with the community so that their particular circumstances are factored in at this early stage including, where necessary, informing the choice of technology.
- *Consideration given to the environmental factors that will contribute to sustainability during the design stage.* In the case of both roads and water, this will include environmental protection measures, such as afforestation of catchments. These help to lower the quantity and velocity of runoff, thereby reducing the erosion of road embankments and siltation of dams as well as improving ground water recharge.
- *Involvement of the community during construction,* since it is through their participation that they gain the necessary skills for O&M. Ideally, the construction process will involve systematic skills transfer so that by the time the community takes over the responsibility for O&M, they already have the necessary skills.
- *Adequate funding and organisational capacity at the operational stage.* In the case of roads, this means funds to hire contractors for all roads and their capacity to undertake labour-based road maintenance. In the case of community water projects, this means the organisational capacity to manage the day-to-day operations of the scheme, to set and collect users fees, and to manage routine maintenance and repairs. For both roads and water there are challenges in raising sufficient funds for O&M.

4.3 Links with other EDE pillars

Most policy documents and development strategies produced by other sectors recognise that economic development, including in the ASALs, is anchored on infrastructure. Indeed, development in the ASALs has been hampered by the lack of infrastructure. With the expected increase in infrastructure development in the ASALs as a result of the EDE MTP proposals and the CIDPs, there is even more urgency to create strategic links with other programmes to leverage potential synergies.

The development of climate-proofed infrastructure will strengthen drought risk management by improving accessibility to scattered communities. The construction of a road to a remote area makes it easier and cheaper for other infrastructures (such as water supply or ICT) to be provided. These will, in turn, make that area more accessible and hospitable and hence more attractive for other investments. Investments in security or productive infrastructure improve stability and livelihoods and make it easier to deliver aid in times of crisis. Generally, improved county infrastructure will impact on all pillars of the EDE: peace and security, human capital, sustainable livelihoods and drought risk management.

5 Risk management

Certain risks can be foreseen which could affect the successful implementation of the programme. The key ones include the following.

- *Political stability:* Successful implementation of the programme can only happen in a politically stable environment.
- *Confusion over devolution:* The devolution process started in 2013/14 and has seen serious struggles between the governors and the legislature. It is still unclear how these will develop, but the time and effort in debating devolution has a negative impact in slowing project implementation at the devolved level.
- *Legislators being implementers:* Related to the above is the legislators' continued insistence on managing Constituency Development Funds, with further calls for County Women Representatives to be allocated a similar budget. Given the constitutional separation of implementation and oversight, this mixing of roles will affect the rate of implementation of county plans. It is also likely to affect the legislators' oversight role.
- *Macroeconomic stability and growth:* Some projects proposed by the national government, particularly the flagship projects, are large-budget projects. For them to be financed, the macroeconomic environment must be stable and the projected economic growth rates achieved. Similarly, for counties to raise enough revenue for their proposed projects there must be economic growth in the ASALs as well.
- *Continued donor commitment:* A sizable portion of the programme finance could be contributed by development partners. Their continued commitment is therefore a prerequisite for successful implementation. Further, this commitment will need to remain predictable, despite the unsynchronised funding cycles of different partners.
- *County commitment to the programme:* Implementation of the programme will require new and stringent methods of project implementation. The county governments will need to commit to this, including embracing the proposed County ASAL Climate-proofed Infrastructure Support Programme.
- *Improved governance:* Even with allocations to the counties assured, the programme will still be at risk if the operating environment is opaque. This calls for political will to enforce transparency in contract management at the county level.

Most of these risks and assumptions are beyond the control of the programme. However, given that they could be a real threat to its successful implementation, there will be a need to develop a sufficiently strong governance structure for the overall EDE common programme framework that can interact with the relevant institutions.

6 Institutional arrangements

6.1 Programme management and implementation

In line with the programme's two levels of focus, there will be two levels of responsibility for its implementation.

1. At the national level, the NDMA will have the lead role in implementing the first two results. This role will be largely advocacy and coordination, including establishing a structured dialogue with the counties on specific national infrastructure issues. To support this, specific studies, expertise, and forums for dialogue will be generated during the ten-year life of this programme. An indicative costing of these is given for development partners to support. All recurrent costs incurred by the NDMA or other government institutions will be met by the government.
2. At county level, the county authorities will have the lead role in implementing a **County Climate-Proofed Infrastructure Support Programme (CCPISP)**, which will deliver the three results that address the deficit of county infrastructure and related capacity needs.

The management of the CCPISP will be as follows.

1. Implementation belongs to the county governments, who will constitute a team in each county to implement the CCPISP. The implementation scope of the county governments will include:
 - Contributing to the programme management guidelines
 - Prioritising proposed climate-proofed infrastructure
 - Establishing the feasibility of each proposed infrastructure
 - Securing part of the funding from the county budget
 - Contracting
 - Paying for infrastructure work underway against certified progress.
2. A County ASAL Infrastructure Support Unit will be created to guarantee adequate implementation of the high-intensive infrastructure-building component. This Unit will have a programme/fund manager and technical experts drawn from existing qualified staff at the county level, from existing qualified staff present in national bodies such as KeRRA, and external technical expertise when required. The Unit will be present during the entire period of the programme. The Unit will:
 - Establish programme/fund management guidelines that include criteria relating to feasibility, technical specification, funding, management of O&M, contractor capacities, synergy with other counties or pillars, and county contracting track record, and any others relevant to the scale and type of the proposed infrastructure.
 - Establish the feasibility and technical standards for climate-proofed infrastructure.
 - Advise on the prioritisation of proposed infrastructure.

- Provide standard and ad-hoc technical capacity to counties in developing the feasibility of projects and assist in the final selection of projects to be contracted.
- Consolidate into a yearly work-plan all ASAL climate-proofed infrastructure to be contracted and provide a consolidated budget for development partner and national government funding.
- Participate as a guarantor of the fund in the procurement process and endorsing its outcome.
- Ensure the efficiency of the control framework during construction, including the conduct of technical audits.
- Oversee the quality of certification and endorse the interim and final payments.
- Ensure efficient county domestication of the maintenance framework.
- Advise on the overall infrastructure management in place at county level.

To ensure maximum ownership at the county level, but also to promote the synergies foreseen in the ASAL Policy, the Unit will operate from three to four County Cluster Support Offices, liaising with the relevant county departments. County staff attached to these support offices will ensure effective links with their respective county governments.

3. A County CCPISP steering committee will oversee the execution of the programme and will be made up of representatives of the county government, the national government (including the National Treasury and relevant line ministries), and development partners. It will be chaired by the Governor, with a secretariat provided by the NDMA. Its role will be to:
 - Review and approve periodic work plans and a consolidated budget for fund mobilisation.
 - Review progress according to national and county priorities.
 - Advise further on programme orientation and address governance issues.

6.2 Coordination mechanisms

Figure 1 illustrates the institutional arrangements for the EDE common programme framework. Within this, there will be one steering committee, one planning and implementation coordination structure at the national level under the Support Unit, and the county-level coordination.

For development partners with programmes aligned to this framework, and for development partners with funds specifically earmarked for a particular type of infrastructure or county, the national planning and implementation coordination structure under the Support Unit will be the venue to plan with other donors in order to achieve equitable coverage across ASAL counties and a balanced coverage between the different types of infrastructure. The criteria established in the programme management guidelines will facilitate the allocation of resources between different donors.

6.3 Monitoring and evaluation

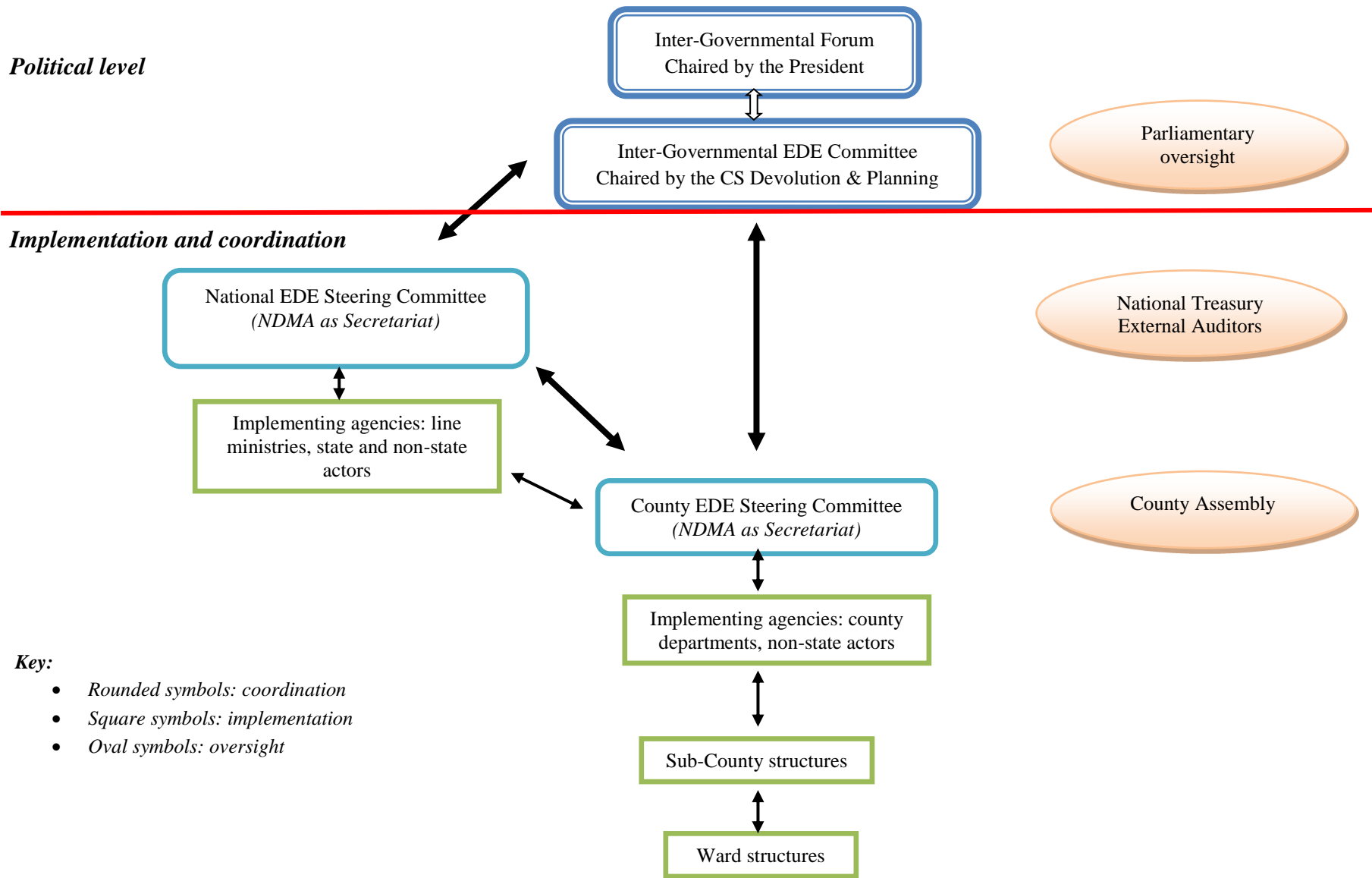
The County ASAL Infrastructure Support Unit will support counties in monitoring climate-proofed infrastructure within the wider EDE Common Programme Framework. To enable the monitoring system to function within the government monitoring and reporting systems, indicators and their base-line information will be extracted from the CIDPs and from the relevant sector policies. The targets and timeframes for each indicator in the results framework (Annex 1) will be agreed with partners within the first six months of implementation.

There will be two interim evaluations and one final evaluation of the programme's performance in addressing the infrastructure gap and building drought resilience at county and community levels. Lessons from these evaluations and from other sources will be periodically incorporated in the standard climate-proofed guidelines for the county and national governments, as well as the programme management guidelines.

Reporting arrangements for all parties will be detailed in the financing agreements and management guidelines.

The results framework is in Annex 1.

Figure 1: Institutional framework



7 Resources

7.1 Funding level

The climate-proofed infrastructure programme aims to reach a funding level of Kshs. 53 billion for the initial six-year phase. This amount is a compromise between a) the sheer magnitude of the funding requirement for county infrastructure (Kshs. 168 billion); b) the need for investment to be large enough to have an impact on ending drought emergencies within the next ten years; c) the expectation that funding needs may be reduced with better specified and better budgeted projects; and d) the expectation that, based on performance, phase two of the programme's funding could be met.

7.2 Sources of funding

Given the magnitude of the deficit in county infrastructure, but also recognising the fiscal capacity at national and county level, it is proposed that the programme receive funding contributions from:

- County governments, from their county secured funding for climate-proofed infrastructure.
- National government, from specific allocations and/or from existing or future programme resources addressing rural infrastructure.
- Development partners, from existing and future programmes funded by grant or loan finance.
- Private sector institutions willing to contribute to the programme, or to fund individually according to their investment plans, or through the Northern Kenya Investment Fund once established.¹⁸

A summary of the budget is in Table 6, and a detailed budget in Annex 2.

Table 6: Budget summary (Kshs. m)

Cost description	Counties	National	Private	DPs ¹⁹	TOTAL	%
Soft costs	0	135	0	895	1,030	2
Infrastructure costs	12,500	12,500	5,000	22,000	52,000	98
TOTAL	12,500	12,635	5,000	22,895	53,030	100
%	23%	24%	9%	44%	100%	

The percentages are indicative, but given the size of the Kenyan economy and its ambition to reach middle-income status, the share provided by development partners should remain below 50 per cent so that donor dependency is avoided.

¹⁸ The NKIF is envisaged in the ASAL Policy as one of the instruments to increase private sector investment in the ASALs but is yet to be created. It will be taken forward by the EDE sixth pillar on institutional development.

¹⁹ Development partners: bilateral or multilateral cooperation with grants or concessional loans.

7.3 Funding allocation to counties and selected projects

The allocation of funding across the counties will be guided by macro-distribution criteria such as a percentage allocated to arid lands and to semi-arid lands, or a percentage allocated to different sub-sectors (road, water, irrigation). Allocation of funding to a specific infrastructure project will be based exclusively on the best rating against all selection criteria.

The allocation of funding to capacity building measures will be made in support of county processes to establish the overall feasibility of infrastructure projects, conduct the procurement process and ensure infrastructure operation and maintenance. Standard capacity building solutions applicable to all counties will be sought.

For projects spanning more than one county, an inter-county cluster approach will be compulsory. For projects within the boundaries of a single county, only the competencies of that specific county will be mobilised.

7.4 Accounts and fund flow

Based on the approved consolidated infrastructure budget by the steering committee, the following is expected:

- At national level:
 - Direct funding from development partners and from the national government will be pooled in a single programme account for this framework managed and overseen by the National Treasury upon approbation of the yearly work plan by the steering committee, except for the initial advance that will be mobilised upon signing the financing agreements.
 - Funding from government or donor programmes aligned to this framework will follow their established fund flow. The planning and implementation of activities at the county level will be handled through the coordination mechanism described in section 6.2.
- At county level, the agreed counterpart funding from the county government will be mobilised in a specific county account for this framework at the signature of each infrastructure work contract.
- The movement of funds from the national account to county programme accounts will be made on signature of the contracts by the county for the advance payment and on interim and final acceptance certificates for work in progress. All payment instruments will need the endorsement of the Support Unit's senior accountant.

Funds will be disbursed to the Support Unit's account based on its consolidated budget approved by the steering committee.

7.5 Resource mobilisation strategy

The funding level of Kshs. 53 billion is a fund mobilisation objective that will be refined once its overall feasibility is more clearly ascertained and once implementation capacity is in

place. Two interim evaluations of the programme's performance in addressing the infrastructure gap will be needed in order to re-size funding levels.

In terms of resource mobilisation, the following process is expected for the EDE as a whole:

- Launch by the inter-governmental forum.
- Donor conference on a) existing programme alignment and b) call for support to the common programme frameworks.
- Thereafter the established co-ordination mechanisms for the framework will oversee its implementation.

Given the mixed nature of funding for this framework (concessionary loans and grants), a donor-government dialogue will be required with the National Treasury for the government to assess the overall financial feasibility of the EDE infrastructure pillar within the macro-economic framework.

Contributions from development partners will be structural in:

- Addressing only the deficit.
- Contributing to quality investment by supporting improvements in feasibility assessments, governance of the contracting process, and infrastructure management thereafter.
- Building long-term capacities in the counties.
- Building synergies between different types of investments and between counties.

The contributions of development partners should end once the county and national fiscal capacity is able to address a marginal deficit in building climate-proofed infrastructure and once a reasonable level of capacity is in place at both the county and inter-county levels.

Development partners' contributions will be in the form of grants and concessional loans. Transparency and governance at all levels in the management of the CCPISP fund will be a condition for development partners' funding.

7.6 Financial control and fraud remediation measures

The government will detail the financial control framework at national and county level and will ensure the overall fiduciary risk for development partners' funding during the whole implementation period, including a further two years to close and audit all contractual commitments.

The financing agreements with each contributing development partner will detail their standard terms and conditions on anti-fraud remediation measures.

The programme management guidelines will specify the exact terms and conditions to ensure that internal control, external control and remediation measures in case of non-governance are effective.

Annex 1 Results framework

	OVI	MOV	ASSUMPTIONS
GOAL (BY 2022)			
Communities in drought-prone areas are more resilient to drought and other effects of climate change, and the impacts of drought are contained.	Number of people requiring food assistance as a result of drought emergencies.	KFSSG food security assessments	<ul style="list-style-type: none"> ▪ Investments made across all pillars of the EDE, and functional links established between the pillars. ▪ Alternative sources of finance established and operational, such as the NDCF and ARC, and scalability mechanisms in place. ▪ Adequate economic, political and climatic stability.
	% of children under five stunted in each of the 23 most drought-affected counties.	Health sector MIS	
	Value of livestock lost in drought compared with previous drought episodes.	Post-Disaster Needs Assessment	
	Kenya manages drought episodes without recourse to international emergency appeals. (Yes/No)	GoK and UN documents	
OVERALL PILLAR OUTCOME			
The deficit of climate- proofed productive infrastructure and its maintenance is identified, planned and progressively addressed in a coordinated and comprehensive manner at national, county and community level.	% climate-proofed infrastructure projects completed with reference to consolidated CIDPs.	County annual reports and other data	<ul style="list-style-type: none"> ▪ Continued commitment from the national government, county governments and donors to enhance investment in the foundations for development and implement the EDE MTP.
	% contribution of agricultural cess to county revenue.	County economic data	
	Quantity of safe drinking water available to households per day during dry season.	Drought and food security assessments	
SPECIFIC RESULTS			
1. Prioritisation of national infrastructure projects in ASALs improved.	% national infrastructure projects engaged.	National plans and printed estimates	<ul style="list-style-type: none"> ▪ Macro-economic stability and growth that enables government to finance flagship projects. ▪ Effective links with development partners' national infrastructure programmes
	% national infrastructure projects adequately funded.	National plans and printed estimates	
2. Standard guidelines for climate-proofed design of ASAL infrastructure produced and	Guidelines available and in use at all levels.	County annual reports M&E reports	<ul style="list-style-type: none"> ▪ Acceptance and full ownership of the agreed guidelines at all levels and commitment to apply and maintain them.

	OVI	MOV	ASSUMPTIONS
integrated in current and future infrastructure projects at national, county and community levels.			
3. County capacity to plan, contract and supervise implementation of climate-proofed infrastructure is progressively built.	% county infrastructure projects selected for funding out of the number submitted.	County annual work plans and budgets	<ul style="list-style-type: none"> ▪ County management procedures enable the retention of staff capacity. ▪ Commitment to maintain tools and critical mass of competencies.
	Proportion of counties given top rating in terms of definition and prioritisation of county infrastructure strategic planning.	M&E reports	
4. County capacity for infrastructure operation and maintenance is progressively built.	% county infrastructure completed on time compared with initial plans.	County annual reports	<ul style="list-style-type: none"> ▪ Adequate political will at county level to enforce transparency in contract management. ▪ Effective links with county public financial management programme. ▪ Contractor capacity is not compromised by county aspiration towards affirmative action in contracting.
	Consolidated amount of claims / number of stalled projects.	Periodic surveys	
	% projects with functional O&M arrangements.	M&E reports	
5. The deficit of county climate-proofed productive infrastructure is progressively addressed in a coordinated and comprehensive manner.	% infrastructure projects covered as per yearly consolidated plan.	Sector annual reports County annual reports	<ul style="list-style-type: none"> ▪ Funding remains predictable despite unsynchronised funding cycles of development partners. ▪ Counterpart contribution from government remains effective.

ACTIVITIES	SPECIFIC INPUTS	BUDGET (GoK) Kshs m	BUDGET (DPs & PS) Kshs m	MEANS
Result 1: Prioritisation of national infrastructure projects in ASALs improved.				
1.1 Establish and maintain permanent dialogue between counties and relevant national bodies, including development partners and international financing institutions.	NDMA staff at national and county level Cost of consultation and dialogue Back-up services	Salary & recurrent costs	50	Meetings As part of overall institutional support to NDMA and ASAL institutions
1.2 Produce position papers, analysis and strategy to facilitate the dialogue in 1.1.	Short-term technical expertise and analysis.		50	As part of the County ASAL Infrastructure Support Programme
1.3 Complete the establishment of a PPP Northern Kenya Investment Fund to target productive infrastructure.	Short-term technical expertise and analysis	30	20	
	Sub-total	30	120	
Result 2: Standard guidelines for climate-proofed design of ASAL infrastructure produced and integrated in current and future infrastructure projects at national, county and community levels.				
2.1 Facilitate consultation, expertise and working groups to produce operational guidelines and specifications.	Consultancy studies Consultation with relevant stakeholders		30	As part of the County ASAL Infrastructure Support Programme
2.2 Facilitate multi-level dialogue to integrate these guidelines in all current and future infrastructure projects at all levels.	Cost of consultation and dialogue Back-up services to maintain standards once in use	25	25	
	Sub-total	25	55	
Result 3: County capacity to plan, contract and supervise implementation of climate-proofed infrastructure progressively built.				
3.1 Define standard modules for: infrastructure feasibility studies, PPP integration, planning, linkages with other sector plans, tendering, contract management (including supervision of contracts), maintenance, local regulation and supervision, monitoring and evaluation, etc.	Consultancy studies Consultation with relevant stakeholders Production of documents and website	30	600	As part of the County ASAL Infrastructure Support Programme

ACTIVITIES	SPECIFIC INPUTS	BUDGET (GoK) Kshs m	BUDGET (DPs & PS) Kshs m	MEANS
3.2 Develop and support a dialogue framework on infrastructure planning and future access to infrastructure benefits, including access or user fees and tariff setting.	NDMA staff at national and county level Cost of consultation and dialogue Back-up services			
3.3 Provide on-the-job training.	Training expert			
3.4 Develop and support a dialogue framework on the potential for inter-county common services and/or externalising services to a common service provider.	Consultancy studies Consultation with relevant stakeholders			
3.5 Create and operate the support unit for the programme.	Administrative costs Long-term experts in water, roads and energy Short-term expertise			
	Sub-total	30	600	
Result 4: County capacity for infrastructure operation and maintenance is progressively built.				
4.1 Create awareness in the counties on the standard modules developed under Result 3 for O&M.	NDMA staff at national and county level Cost of consultation and dialogue Back-up services	Salary & recurrent costs	20	As part of the County ASAL Infrastructure Support Programme
4.2 Facilitate dialogue within and between counties on the modalities of project implementation.	NDMA staff at national and county level Cost of consultation and dialogue Back-up services	Salary & recurrent costs	20	
4.3 Build the capacity of the players (within each of the agreed construction arrangements) to manage the construction process.	Short-term capacity building consultants		30	
4.4 Support the counties to operationalise the O&M arrangements.	NDMA staff at national and county level Cost of consultation and dialogue	20	20	

ACTIVITIES	SPECIFIC INPUTS	BUDGET (GoK) Kshs m	BUDGET (DPs & PS) Kshs m	MEANS
	Back-up services			
4.5 Build the capacity of the counties to effectively monitor the progress of construction and, when complete, evaluate its effects and impacts.	Short-term capacity building consultants	10	10	
	Sub-total	30	100	
Result 5: The deficit of county climate-proofed productive infrastructure is progressively addressed in a coordinated and comprehensive manner.				
5.1 Define and create a Fund with a 10-year scope to cover the deficit of county climate-proofed productive infrastructure. Facilitate a process of consultation to develop the qualitative, funding and operational criteria for the management of the Fund, and develop its operating manual.	Consultancy cost and short-term expertise	20	20	As part of the County ASAL Infrastructure Support Programme
5.2 Mobilise the Fund, initially under the County ASAL Infrastructure Support Programme.	Consultation and cost of dialogue			
5.3 Implement county ASAL infrastructure consolidated plans, with infrastructure investments selected according to the agreed qualitative, funding and operational criteria.	Cost of work contracts	25,000 ²⁰	27,000 ²¹	
	Sub-total	25,020	25,020	
TOTAL		25,135	27,895	

²⁰ Includes Kshs. 12.5bn from county governments

²¹ Includes Kshs. 5bn from private sector

Annex 2 Detailed budget, 2014-20

Activities	Counties	National	Private	DPs	TOTAL
Result 1: Prioritisation of national infrastructure projects in ASAL improved.	0	30	0	120	150
1.1 Establish and maintain permanent dialogue between counties and relevant national bodies, including development partners and international financing institutions.	0	0	0	50	50
1.2 Produce position papers, analysis and strategy to facilitate the dialogue in 1.1.	0	0	0	50	50
1.3 Complete the establishment of a PPP Northern Kenya Investment Fund to target productive infrastructure.	0	30	0	20	50
Result 2: Standard guidelines for climate-proofed design of ASAL infrastructure produced and integrated in current and future infrastructure projects at national, county and community levels.	0	25	0	55	80
2.1 Facilitate consultation, expertise and working groups to produce operational guidelines and specifications.	0	0	0	30	30
2.2 Facilitate multi-level dialogue to integrate these guidelines in all current and future infrastructure projects at all levels.	0	25	0	25	50
Result 3: County capacity to plan, contract and supervise implementation of climate-proofed infrastructure progressively built.	0	30	0	600	630
3.1 Define standard modules for capacity development.	0	30	0	600	630
3.2 Develop and support a dialogue framework on infrastructure planning and future access to infrastructure benefits, including access or user fees and tariff setting.					
3.3 Support feasibility studies and on-the-job training					
3.4 Develop and support a dialogue framework on the potential for inter-county common services and/or externalising services to a common service provider.					
3.5 Create and operate the support unit for the programme.					
Result 4: County capacity for infrastructure operation and maintenance is progressively built.	0	30	0	100	130
4.1 Create awareness in the counties on the standard modules developed under Result 3 for O&M.	0	30	0	100	130
4.2 Support the counties to operationalise the O&M arrangements.					
4.3 Build the capacity of the counties to effectively monitor the progress of construction and, when					

Activities	Counties	National	Private	DPs	TOTAL
complete, evaluate its effects and impacts.					
Result 5: The deficit of county climate-proofed productive infrastructure is progressively addressed in a coordinated and comprehensive manner.	12500	12520	5000	22020	52040
5.1 Define and create a fund with a 10-year scope to cover the deficit of county climate-proofed productive infrastructure, and 5.2 Mobilise the fund.	0	20	0	20	40
5.3 Implement county ASAL infrastructure consolidated plans, with infrastructure investments selected according to the agreed qualitative, funding and operational criteria.	12500	12500	5000	22000	52000
TOTAL	12500	12635	5,000	22,895	53,030
%	23%	24%	9%	44%	100%

Annex 3 Infrastructure status in ASALs

Annex 3a) Infrastructure coverage in ASAL counties by category

ASAL county profiling							
No	County	Land area (km ²)	Population (2009)	Population density per km ²	Gravel roads (km)	Land mass per km of gravel road	Average distance to water (km)
Category 1 Very arid counties and large land mass.							
1	Turkana	68,680	855,399	12	??		10
2	Mandera	25,991	1,025,756	39	394	66	25
3	Wajir	56,686	661,941	12	440	129	30
4	Garissa	44,175	623,060	14	304	145	25
5	Marsabit	70,961	291,166	4	397	179	25
Sub-total category 1		266,493	3,457,322				
Average category 1		44,416	576,220	13		130	23

Category 2 Arid counties and medium land mass.							
1	Isiolo	25,700	143,294	6	214	120	3
2	Tana River	38,862	240,075	6	276	141	4
3	Baringo	11,015	555,561	50	2035	5	5
4	Samburu	21,022	223,947	11	350	60	5
Sub-total category 1		96,599	1,162,877				
Average category 2		16,100	193,813	12		82	4

Category 3 Semi-arid counties							
1	West Pokot	9,169	512,690	56	349	26	5
2	Kajiado	21,900	687,312	31	932	23	10
3	Narok	17,935	850,920	47	840	21	10
4	Makueni	8035	884,527	110	555	14	8

5	Laikipia	9,462	399,227	42	297	32	11
6	Nyeri	3,337	1,221,612	366	1391	2	2
7	Meru	6,936	1,356,301	196	267	26	1.5
8	Tharaka Nithi	2,662	365,330	137	36	74	5
9	Embu	2818	516,212	183	548	5	1.5
10	Kitui	27771	1,012,709	36	1565	18	8
11	Lamu	6273	101,539	16	0		5
12	Kilifi	12,371	1,109,735	90	220	56	5
13	Kwale	8,270	649,931	79	120	69	2
14	Taita Taveta	17,084	284,657	17	138	124	1.25
Sub-total category 3		154,023	9,952,702				
Average category 3		11,002	710,907	65		11	2

Annex 3b) Infrastructure coverage in ASAL counties: detailed information

Arid Counties											
No	County	Land area (km ²)	Population (2009)	Road network (km)	Tarmac roads (km)	Gravel roads (km)	Earth roads (km)	Safe water coverage		H/ hold electricity connection (%)	Mobile phone coverage (%)
								%	Ave. dist (km)		
1	Turkana	68,680	855,399	5,496	488	??	5008	23	5-10	5	25
2	Baringo	11,015	555,561	2912	339	2035	557	35	5	11	45
3	Mandera	25,991	1,025,756	1,884	0	394	1390	Very low (??)	25	Very low (??)	No data
4	Wajir	56,686	661,941	5,280	0	440	4,840	40	30	Very low (??)	20
5	Garissa	44,175	623,060	1804.5	21.5	304	1,479	24	25	0.2	62
6	Marsabit	70,961	291,166	2,431	0	397	2,034	Very low (??)	25	2	20
7	Samburu	21,022	223,947	1,449	92	350	1,007	46	5	10	35
8	Isiolo	25,700	143,294	975.5	34	214	732	27	3	8	7 (?)
9	Tana River	38,862	240,075	3,076	300	276	2,500	?? (poor coverage)	4	3.4	55

Semi-Arid Counties											
No	County	Land area (km ²)	Population (2009)	Road network (km)	Tarmac roads (km)	Gravel roads (km)	Earth roads (km)	Safe water coverage		H/Hs Electricity connection (%)	Mobile phone coverage (%)
								%	Ave. Dist (km)		
10	West Pokot	9,169	512,690	1197	151	349	697	41	5	2	Limited??
11	Kajiado	21,900	687,312	2,344	300	932	1112	Low (??)	10	40	60
12	Narok	17,935	850,920	2,798	260	840	1,698	Low (??)	3-10	6	52
13	Makueni	8,055	884,527	3,203	454	555	2194	35	8	11	45
14	Laikipia	9,462	399,227	1,038	139	297	602	31	11	18	70
15	Nyeri	3,337	1,221,612	3,093	450	1391	1252	80	2	26	91
16	Meru	6,936	1,356,301	1,260	226	267	767	10 (??)	1.5	14	95
17	Tharaka Nithi	2,662	365,330	1670	61	36	1573	29	2-5	5	84
18	Embu	2,818	516,212	914	120	548	246	??	1.5	21	Well covered (?)
19	Kitui	27,777	1,012,709	3,622	210	565	1,847	??	7	4	84
20	Lamu	6,273	101,539	689	6	?	?	?	5	17	Over 90%
21	Kilifi	12,371	1,109,735	3000	30	220	2750	65	5	??	75
22	Kwale	8,270	649,931	2028	212	120	1695	?? (>50%)	2	11	75
23	Taita Taveta	17,084	284,657	1589	199	138	1252	58	1.25	8	41

Source: County Integrated Development Plans, 2013-17

Annex 3c) Status of energy in ASAL counties

No.	County	Fossil Fuels	Electricity	Renewable Energy
1	Turkana	Oil reserves discovered, exploration still ongoing. Poor infrastructure for distribution of petroleum products. County with one of the highest costs of petroleum products.	Isolated grid supplies Lodwar. 3,017 households connected with electricity (2.45% connectivity).	Supply of woodfuel and charcoal from unsustainable sources. Best wind regime in the country. Solar largely unexploited. Solar utilisation: 72.97%
2	West Pokot	Limited infrastructure for distribution of petroleum products.	106MW HPP at Turkwel. Small section of county with national grid. 2,456 households connected with electricity (2.62% connectivity).	Good supply of woodfuel and charcoal. Small hydros, solar and wind largely unexploited. Solar utilisation: 50.1%
3	Samburu	Limited infrastructure for distribution of petroleum products.	Small section of county with national grid. Isolated grid supplies Baragoi township. 2,949 households connected with electricity (6.23% connectivity).	Supply of woodfuel and charcoal from unsustainable sources. Wind and solar largely unexploited. Solar utilization: 60.08%
4	Embu	Well-developed infrastructure for distribution of petroleum products	19,611 households with electricity (14.89% connectivity).	Good supply of woodfuel and charcoal. Small hydros, solar and wind largely unexploited. Solar utilisation: 0.85%.
5	Kitui	Commercially viable reserves of coal in Mui Basin. Reasonable infrastructure for distribution of petroleum products	9,850 households with electricity (4.79% connectivity).	Supply of woodfuel and charcoal from unsustainable sources. Wind and solar largely unexploited. Solar utilization: 5.02%.
6	Machakos	Well-developed infrastructure for distribution of petroleum products	45,067 households with electricity (5.85% connectivity).	Supply of woodfuel and charcoal from unsustainable sources. Wind and solar largely unexploited. Percentage of Solar utilization: 0.21%
7	Makueni	Well-developed infrastructure for distribution of petroleum products	10,912 households with electricity (5.85% connectivity).	Supply of woodfuel and charcoal from unsustainable sources. Wind and solar largely unexploited. Solar utilization: 0.61%
8	Nyeri	Well-developed infrastructure for distribution of petroleum products	53,086 households with electricity (26.32% connectivity).	Good supply of woodfuel and charcoal. Small hydros, solar and wind largely unexploited. Solar utilisation: 0.5%
9	Garissa	Limited infrastructure for distribution of petroleum products	11,405 households with electricity (11.57% connectivity).	Supply of woodfuel and charcoal from unsustainable sources. Solar, and wind largely unexploited. Solar utilisation: 10.4%

No.	County	Fossil Fuels	Electricity	Renewable Energy
10	Wajir	Poor infrastructure for distribution of petroleum products. County with one of the highest costs of petroleum products.	2 isolated grids supply Wajir and Habaswein towns. 3,039 households with electricity (3.43% connectivity).	Supply of woodfuel and charcoal from unsustainable sources. Solar and wind largely unexploited. Solar utilisation: 29.69%
11	Mandera	Poor infrastructure for distribution of petroleum products. County with the highest costs of petroleum products.	Isolated grid supplies Mandera town. 3,198 households with electricity (2.55% connectivity).	Good supply of woodfuel and charcoal. Solar, wind, co-generation and tidal wave largely unexploited. Solar utilisation: 36.05%
12	Marsabit	Poor infrastructure for distribution of petroleum products. County with one of the highest costs of petroleum products.	Isolated grid supplies Marsabit town. Ethiopian grid supplies Moyale, with standby diesel generator sets. 4,238 households with electricity (7.48% connectivity).	Supply of woodfuel and charcoal from unsustainable sources. Best wind regime in the country. Solar largely unexploited. Solar utilisation: 48.04%
13	Isiolo	Limited infrastructure for distribution of petroleum products	Small section of county with national grid. Isolated grid supplies Merti. 5,800 households with electricity (18.51% connectivity).	Supply of woodfuel and charcoal from unsustainable sources. Solar and wind largely unexploited. Solar utilisation: 23.25%
14	Meru	Well-developed infrastructure for distribution of petroleum products	50,004 households with electricity (13.12% connectivity).	Good supply of woodfuel and charcoal. Small hydros, solar and wind largely unexploited. Solar utilisation: 1.84%.
15	Tharaka Nithi	Well-developed infrastructure for distribution of petroleum products	826 households with electricity (3.02% connectivity).	Good supply of woodfuel and charcoal. Small hydros, solar and wind largely unexploited. Solar utilisation: 6.03%.
16	Kwale	Receives bulk of its petroleum products by truck through Likoni Ferry.	No power plant in the county. 12,888 households with electricity (10.56% connectivity).	Good supply of woodfuel and charcoal. Cogeneration, solar, wind, small hydro and tidal wave largely unexploited. Solar utilisation: 1.25%
17	Kilifi	Well-developed infrastructure for distribution of petroleum products with connectivity levels of 16.73%.	1 x 90MW thermal power plant. 33,423 households with electricity (16.73% connectivity).	Good supply of wood fuels and charcoal. Solar, wind, small hydro and tidal wave largely unexploited. Solar utilisation: 1.74%
18	Tana River	Limited infrastructure for distribution of petroleum products	Small section of county with national grid. Isolated grid supplies Hola. 1,184 households with electricity (2.5% connectivity).	Good supply of woodfuel and charcoal. Cogeneration, solar, wind, small hydro and tidal wave largely unexploited. Solar utilisation: 5.87%

No.	County	Fossil Fuels	Electricity	Renewable Energy
19	Lamu	Some prospects for gas. Limited infrastructure for distribution of petroleum products.	2 isolated grids at Lamu and Mpeketoni. 3,767 households with electricity (16.98% connectivity).	Good supply of woodfuel and charcoal. Cogeneration, solar, wind, small hydro and tidal wave largely unexploited. Solar utilisation: 2.52%
20	Taita Taveta	Well-developed infrastructure for distribution of petroleum products.	No power plant in the county. 10,653 households with electricity (14.99% connectivity).	Good supply of woodfuel and charcoal. Cogeneration, solar, wind, small hydro and tidal wave largely unexploited. Solar utilisation: 0.58%
21	Baringo	Reasonable infrastructure for distribution of petroleum products.	10,583 households with electricity (9.56% connectivity).	Good supply of woodfuel and charcoal. Huge potential for geothermal, small hydros, solar and wind largely unexploited. Solar utilization: 27.78%
22	Laikipia	Well-developed infrastructure for distribution of petroleum products.	18,222 households with electricity (17.67% connectivity).	Good supply of woodfuel and charcoal. Small hydros, solar and wind largely unexploited. Solar utilisation: 5.12%
23	Narok	Reasonable infrastructure for distribution of petroleum products.	9,903 households with electricity (5.85% connectivity).	Good supply of woodfuel and charcoal. Solar and wind largely unexploited. Solar utilisation: 7.67%
24	Kajiado	Reasonable infrastructure for distribution of petroleum products.	Much of the existing wind power plant capacity in the country is in this county. 69,098 households with electricity (39.83% connectivity).	Supply of woodfuel and charcoal from unsustainable sources. Huge potential for wind, small hydros and solar, largely unexploited. Solar utilisation: 2.19%

Source: Republic Of Kenya: Ministry of Energy and Petroleum, National Energy Policy, November 2013

Annex 3d) Budget and budget deficit for selected climate-proofed infrastructure in ASAL counties

In Million Ksh		Etimated county infrastructure funding deficit - rural road and water						
No	County	Gravelled Road			Water			Combined deficit
		Total Budg	Available	Deficit	Total Budget	Available	Deficit	
1	Turkana	10.358	820	9.538	4.976	1.275	3.701	13.239
2	Baringo			-			-	-
3	Mandera			-				-
4	Wajir	10.200	1.845	8.355	12.766	3.232	9.534	17.889
5	Garissa	9.718	2.781	6.937	1.260	760	500	7.437
6	Marsabit	1.269		1.269	225		225	1.494
7	Samburu	3.505	1.040	2.465	1.700	410	1.290	3.755
8	Isiolo	14.942	1.712	13.230	244	117	127	13.357
9	Tana River	2.650	692	1.958	980	177	803	2.761
10	West Pokot	5.200	1.470	3.730	1.630	440	1.190	4.920
11	Laikipia	2.181	235	1.946	2.256	27	2.229	4.175
	Sub-total 9 counties	60.023	10.595	49.428	26.037	6.438	19.599	69.027
Deficit per county profile								
Profile 1 - Very Arid - large land-mass (Turkana-Marsabit-Mandera-Wajir-Garissa)								
			Gravelled Road		Water retention		TOTAL	
	Average on Turkana-Wajir-Garissa		8.277			4.578	12.855	
	Estimated deficit for profile 1		41.383			22.892	64.275	
Profile 2: Arid and medium land mass and Profile 3: Semi Arid (18 counties)								
	Average on Samburu+Isiolo+Tana+West Pokot+Laikipia		4.666			1.128	5.794	
	Estimated deficit for profiles 2 and 3		83.984			20.300	104.285	
	TOTAL Estimated funding deficit		125.368			43.192	168.560	

Annex 4 Infrastructure commitments in the ASAL Policy and EDE MTP

	ASAL Policy	EDE MTP
Transport: Roads	Develop & maintain an integrated, safe & efficient road, rail & air transport network in the region, prioritising the development of transport corridors linking Kenya to key markets in Ethiopia, South Sudan and Somalia and beyond them to the Middle East, such as the Lamu Port-South Sudan-Ethiopia (LAPSSSET) transport corridor.	Construct, upgrade or rehabilitate 2,209 Km of priority roads to enhance connectivity and markets. These roads are: <ul style="list-style-type: none"> ▪ Kitale-Marich Pass-Nadapal (534 km) ▪ Malindi-Bura-Madogo (331 km) ▪ Rumuruti-Maralal (120 km) ▪ Modogashe-Wajir-Elwak (346 km) ▪ Isiolo-Garbatulla-Modogashe (195 km) ▪ Garissa-Daadab-Liboi (209 km) ▪ Marsabit-North Horr-Loiyangalani (274 km) ▪ Nginyang-Lokori-Lokichar (200 km)
Energy	Expand access to power and ICTs for the people of the region. Harness renewable energy, such as wind and solar, for the benefit of the nation.	Harness the region's energy potential through the construction of various wind farms in Marsabit, Isiolo, Turkana, Wajir, Mandera, Ngong Hills & Lamu. Budget of Kshs 165 bn
Water	Improve the water & sanitation infrastructure in line with a strategic assessment of the most appropriate locations & technologies. Invest in water harvesting, water supply & irrigation infrastructure. Increase access to the skills & technologies needed for irrigated agriculture, particularly when community-managed. Promote low-maintenance water technologies, with an emphasis on water harvesting, which (given likely climate change impacts) can deal with both abundance & scarcity.	Construct and/or rehabilitate nine water supply systems and ensure quality management of water systems in well-established permanent settlements in the arid region (Ministry i/c Water). Budget of Kshs 18 bn Construct nine waste water treatment plants and nine solid waste management projects in well-established permanent settlements in the arid region (Ministry i/c Water and Sanitation). Budget of Kshs 3 bn Map groundwater in Turkana and Marsabit, Isiolo (by WRMA), and four other counties selected on the basis of their water stress indices, to assess groundwater potential and its distribution and guide the sustainable development of this resource. Budget of Kshs 760 m Construct one large and 11 medium multi-purpose dams. Budget of Kshs 31.7 bn
ICT	Expand access to power and ICTs for the people of the region. Promote the use of ICTs and other technologies in service delivery.	Construct 20 solar-powered ICT centres (Maarifa Centres) (Ministry i/c ICT). Expand mobile phone coverage by fully operationalising the Universal Fund (CCK): Budget Kshs 200 m

Annex 5 Summary of key stakeholders by sub-sector

Roads

Until now, three government authorities have been the key players in the roads sub-sector:

- Kenya National Highways Authority (KeNHA), responsible for the development and management of main roads (Class A, B and C).
- Kenya Rural Roads Authority (KeRRA) responsible for the development and management of rural roads (Class D, E and others). With devolution, its role should become more limited as responsibilities are transferred to the county governments.
- Kenya Urban Roads Authority (KURA), responsible for the development and management of roads in cities and municipalities.

Energy

The Rural Electrification Authority was established under Section 66 of the Energy Act of 2006 as a body corporate with the principal mandate of extending electricity supply to rural areas, managing the Rural Electrification Fund, mobilising resources for rural electrification, and promoting the development and use of renewable energy.

KPLC is a State Corporation with government shareholding of 50.1% and private shareholding of 49.9% as at December 2011. It purchases electrical energy in bulk from KenGen (the main power generating company) and other power producers, and carries out transmission, distribution, supply and retail of electrical power.

Water

The provision of water is characterised by a host of actors with government being the key one. Government operates through the ministry in charge of water development (currently the Ministry of Environment, Water and Natural Resources) and government agencies, especially those created by the Water Act 2002 (expected to be reorganised under the Water Bill, 2013). The Government is also the key player in sanitation and hygiene through the ministry in charge of public health services, currently the Ministry of Health.

Other actors include other government ministries and parastatals, such as the National Water Conservation and Pipeline Corporation and the Regional Development Authorities, county governments, multilateral and bilateral international development organisations with some bilateral cooperation focusing on water, civil society organisations and the private sector.

In terms of the provision of water and sewerage services to the public, the main actors are the regional Water Service Boards (WSBs) created by the Water Act 2002. These carry out their mandate through contracted Water Service Providers (WSPs). The WSBs relevant to the ASALs include the Northern Water Services Board, Rift Valley Water Services Board, Coast Water Services Board, Tanathi Water Services Board, and Tana Water Services Board.

The Water Act 2002 also created the Water Services Trust Fund (WSTF) to help finance water supply projects in areas of inadequate provision with a particular focus on poor locations, most of which are in the ASALs. Regional Development Authorities are also key players in water supply development, both for drinking and for irrigation. The relevant authorities in the ASALs include the Coast Development Authority, Ewaso Nyiro Development Authority, Ewaso Nyiro North Development Authority, and Tana Development Authority. Civil society organisations also play a role, but to a lesser extent.

ICT

The key players in the ICT sector are the government through the regulator, the Communications Commission of Kenya (CCK), and the ICT Authority (formerly the ICT Board), but mostly the private sector service providers. Among the key private sector players in the provision of voice services are the four mobile service providers Safaricom, Airtel, Yu Essar and Orange networks. In the provision of data services there are more players, including the four mobile voice services and others such as Liquid Telecom (formerly Kenya Data Networks), Jamii Tecom, Zuku, Access Kenya, Tangerine and Jambo Telekom.

Annex 6 Ongoing and planned water projects in the ASALs

Project	Budget	Notes
Mwache multipurpose dam	25bn	Implemented by the Coast Development Authority. 77m dam, reservoir capacity of 133m m ³ . Will provide 230,000 m ³ water to Kwale & Mombasa, generate 34MW of power to the national grid, & provide water for domestic and industrial use and for irrigation.
Twake multipurpose water development programme	62bn	To increase water storage for domestic use, irrigation & livestock, and hydropower production, focusing on the rural populations of Kitui & Makueni and the urban population of Konza city.
High Grand Falls multipurpose dam	150bn	Implemented by the Tana River Development Authority. Will provide 453-800MW for the national grid, and expand irrigation by up to 150,000 hectares.
Lake Challa multipurpose water project	9bn	Located in Taita Taveta.
Lower Ewaso multipurpose dam	28.5bn	
Tana Delta rice irrigation project	92.5m	
Tana Delta sugar cane irrigation project	14bn	
Rural water supply	19.4bn	Implemented by the National Water Conservation & Pipeline Corporation. Infrastructure for 300 rural water supplies; 400 boreholes; 600 small dams & pans in ASALs.

The government also plans to review six catchment management strategies, prepare 200 sub-catchment plans, and construct 50 sand dams and sub-surface dams along seasonal rivers in the ASALs. A national water allocation plan, national rainwater harvesting strategy and water storage investment plans will be developed. The sector will coordinate the implementation of water storage and harvesting programmes to increase the national water storage capacity by 18.97 million cubic meters.²²

²² Republic of Kenya, Environment, Water And Sanitation Sector: Second Medium Term Plan 2013-2017