Department for International Development

UKaid from the British people

Connecting people, creating wealth

Infrastructure for economic development and poverty reduction

September 2013

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Foreword by the Secretary of State

For many of the world's poorest people, basic services of energy, water and sanitation, transport and communications are out of reach.

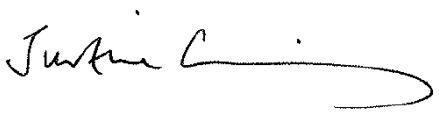
Helping countries to develop sustainable infrastructure is crucial if we are to end aid dependency through jobs and growth. Affordable, sustainable infrastructure allows people and businesses to participate in the global economy, access new markets, boost trade and drive economic growth. It enables even people living in the most remote communities to access opportunities like jobs, healthcare and education. Well-planned infrastructure is also crucial if cities are to fulfil their potential as centres of growth and opportunity and absorb their growing populations, instead of urbanisation leading to more people living in slums. In the aftermath of conflict, infrastructure is one of the most urgent needs as people try to rebuild their homes and lives and well designed infrastructure can increase a community's resilience to potential climate change or natural disasters.

All this is recognised in the High Level Panel Report on the post-2015 development agenda which proposes stretching targets on increasing access to energy, water and sanitation, transport and information and communications technologies.

This paper provides an overview of the Department for International Development's infrastructure portfolio. It explains how we spend UK aid on infrastructure, who we work with and how we are ensuring our work will help to create jobs and growth that can end aid dependency in some of the world's poorest countries.

By 2015, UK aid will:

- Provide sustainable energy services to more than 10 million people.
- Improve cross border trade in Africa, directly benefitting three million people.
- Reach 60 million people with our water, sanitation and hygiene programmes
- Build or upgrade more than 6,000 km of rural roads in Nepal, the Democratic Republic of the Congo and Afghanistan.



Rt Hon Justine Greening

Secretary of State for International Development

September 2013

Executive summary

DFID focuses on developing infrastructure that **supports economic development** and **provides poor people with opportunities to escape poverty**. The High Level Panel Report on the post-2015 development agenda recognises the importance of improved infrastructure and proposes stretching targets on increasing access to energy, water and sanitation, transport and information and communications technologies. DFID is achieving significant results in infrastructure through both our bilateral programmes and work with multilateral partners.

The UK supports major regional connectivity programmes designed to promote trade and economic development in Africa and Asia. DFID supports the development of urban infrastructure that enables cities to become centres of growth and opportunity and to absorb their growing populations. DFID supports the expansion of sustainable service delivery in water and sanitation, roads, energy and water resources. Infrastructure is a critical element of many DFID programmes that aim to promote stability and economic development in fragile and conflict-affected states. DFID also works to mobilise finance for low carbon investments and to provide the infrastructure that protects poor people from the risks associated with climate change.

DFID targets its funding through innovative programme design to achieve best value for money, for example by mobilising **private sector** finance in ways that benefit the poor and through high-impact technical assistance. DFID's work with the private sector involves a range of partnerships, including with the Private Infrastructure Development Group (PIDG) and the International Finance Corporation (IFC) as well as many smaller funds and initiatives. **Multilateral organisations** (MOs), through which DFID channels around 50% of infrastructure spend, are key partners as they provide large-scale loans to governments for capital-intensive infrastructure programmes, a financing modality in which most bilateral donors are not well-suited to engage. DFID also directly finances infrastructure that reaches the poorest, including water and sanitation and rural roads, working through a broad range of partners. In the 26 country programmes which have infrastructure components all work is carried out in close liaison with **developing country governments**.

DFID also supports a range of programmes that are designed to **enhance the impact of every pound spent** in infrastructure. DFID works with developing country governments to support evidence-based policy making, build capacity and enhance governments' ability to mobilise private sector finance. DFID engages emerging powers and the international community to share knowledge, mobilise finance and support good policy internationally. **Corruption** is a major challenge in the sector, and as well as working to enhance transparency in developing country infrastructure delivery, there is full transparency in DFID aid delivery.

Building an improved global evidence base for infrastructure decision making is challenging but of great importance to improve sector outcomes. DFID supports high impact research programmes, ranging from appraising groundwater reserves in Africa to reducing the life cycle costs of rural roads.

1. Why DFID works in infrastructure

First and foremost, DFID works in infrastructure because of the sector's key role in supporting **economic development**. Well-planned and maintained infrastructure supports increased productivity, facilitates trade and creates an environment in which business can flourish. This in turn creates a platform for growth that creates productive jobs and puts countries on a path to transition from aid dependency. Evidence suggests that improved infrastructure has contributed significantly to Africa's recent improved growth performance[1] and there is strong evidence that growth is the principal enabler of long-term poverty reduction[2].

Well-planned and maintained urban infrastructure puts cities in a position to be centres of growth, job creation and innovation. The world today is more than half urban and this proportion will rise to nearly two-thirds by 2030[3]. DFID supports urban infrastructure, recognising the potential that cities have to contribute to economic development, but also that urbanisation without good planning and management can create acute challenges.

DFID aims to support a form of growth that enables people to exit poverty in large numbers. Providing poor people with access to infrastructure services connects them to product and labour markets and to information flows and financial services. This in turn creates opportunities to find jobs, set up businesses, generate sustainable livelihoods and exit poverty[4].

Access to infrastructure also enables people to lead more productive, healthy lives. Access to clean water, adequate sanitation and modern forms of energy could save several million lives every year by preventing illness associated with drinking unsafe water and inhaling smoke from cooking on an open fire[5]. Access to transport enables people to access health and education services. Infrastructure services have the potential to enable poor people to become more connected to the state and therefore able to use their "voice" to hold governments and other decision makers to account.

No country can properly develop if half of its population is being left behind. Infrastructure access empowers girls and women. Access to water and modern forms of energy close to, or in, the home frees up time for girls and women, enabling girls to attend school and women to engage in productive activities including paid employment[6]. Where there is access to safe transportation, girls are more likely to attend school and childbirth is more likely to take place in the presence of a health professional or in a hospital, thus potentially decreasing rates of maternal mortality[7].

If action is not taken, increasing emissions from infrastructure sectors as countries develop could threaten development progress. Over 60% of greenhouse gas emissions originate from energy use in transport, buildings and industry[8]. Reducing infrastructure-related emissions plays a central role in preventing irreversible damage to the global climate and ecosystems. Enhancing the resilience of the built environment is an important step in reducing the vulnerability of those affected by extreme weather events and climate change impacts.

In a context of growing economies, incomes and wealth, huge demands will be placed on the world's natural resources. Infrastructure plays a role in averting the impact of resource shocks through improved water storage and management; by developing more reliable and diversified sources of energy; and through faster, more affordable transport of foodstuffs.

More than 1.5 billion people live in countries affected by fragility or conflict. No country can develop properly if it is at war, and the wider costs of conflict and fragility can easily end up on Britain's shores. A civil conflict costs the average developing country roughly 30 years of GDP growth[9]. Rebuilding infrastructure and reinstating basic service provision make an important contribution to the regeneration of society and the

economy[10].The role of infrastructure in supporting economic development and opportunity is clear, but **infrastructure is severely underprovided in low-income countries**[i]**.** Worldwide more than one billion people lack access to all-season roads[11], over 780 million do not have access to clean water, 2.5 billion do not have access to adequate sanitation[12] and 1.3 billion are without access to electricity[13].

DFID and other donors have an important role to play in **overcoming barriers to infrastructure development**. Levels of infrastructure **financing** in many developing countries are inadequate compared to need, especially in the poorest countries. Spending on infrastructure in sub-Saharan Africa has been estimated by the World Bank to fall short of the level required by $48 billion a year[14]. Reducing the financing gap will require innovative approaches to mobilising private sector finance as well as increased and more efficient public spending. Donors play an important role in driving the changes needed to close the financing gap.

Enhanced **capacity and accountability in institutions** responsible for infrastructure investment and management is needed. Areas for reform include: improved capacity to develop investment strategies that support economic development and poverty reduction; better maintenance of infrastructure assets; and, reducing currently high corruption through improved accountability and transparency. Donors can play a role by providing support for country-led reform and capacity development.

Infrastructure programming has often focused on delivering hardware without due consideration of **whole-life costs and sustainability.** DFID's approach is to deliver long-lasting services that are affordable for the poorest at an appropriate level of quality.

[i] Infrastructure as defined here includes: energy, transport, water and sanitation, information and communications technology (ICT), water management (such as water storage, flood defences and irrigation), housing and public buildings (including schools and health clinics).

2. Delivering infrastructure that drives economic development

This section sets out **how** DFID works to deliver results in infrastructure. It covers the sectors in which we work and our key partners.

Promoting trade through regional connectivity

Trade between nations creates growth, jobs and prosperity for both countries and people – ending aid dependency and creating the UK export markets of the future. Infrastructure connecting regions and economic centres is crucial to opening up opportunities for trade and associated economic development. The UK Government has programmes in two of the regions of the world in which poor connectivity is a major barrier to development progress: sub-Saharan Africa and South Asia. There is a strong role for development partners in overcoming challenges in implementing major regional programmes, including achieving cooperation between bordering countries and sourcing finance for very large investments.

Africa

Africa accounts for just 3% of global trade and African countries trade just 10% of their goods with each other, compared to 65% between European countries[15]. Land-locked countries are hit particularly hard by poor infrastructure, paying up to 84% more to export their goods than a coastal country[16]. Improving regional markets in Africa would have a significant impact on economic development and poverty reduction.

The Trade Mark programmes: reducing transport costs and promoting trade in Africa

Trade Mark East and Southern Africa (TMEA and TMSA) are multi-donor initiatives set up by DFID. DFID invests relatively little grant funding itself, but helps countries attract investment resources from multilateral and bilateral institutions and the private sector. Results to be achieved by 2015 include:

- 1,340 km of regional transport corridor trunk roads built, rehabilitated and/or under construction along the two main transport corridors in the region.
- Transit times and transaction costs along major transport corridors reduced by 20%.
- A 10% increase in average annual real growth in total trade.

Malaba border post between Kenya and Uganda. Trade Mark are constructing One Stop Border Posts at six locations in East Africa to reduce cross border transit times and reduce the cost of regional trade.
Photo credit: Trade Mark East Africa

South Asia

In South Asia, weak infrastructure, in particular in the transport and energy sectors, combined with logistics, regulatory and business environment challenges are binding constraints to growth[17]. The share of intra-regional trade only marginally improved from 2.5% to 4.8% between 1995 and 2010[18], compared to 50% in East Asia.

DFID's new South Asia Regional Trade and Integration Programme (SARTIP) will support the Asian Development Bank, World Bank and International Finance Corporation to increase regional trade and economic integration. The programme will reduce the time and cost of trading goods across four key border posts and increase electricity connectivity.

Supporting sustainable urbanisation

Well-managed urbanisation creates cities which are centres of economic development, innovation and opportunity, and which make a significant contribution to poverty reduction[19]. Rapid urbanisation in the developing world, however, is fast outstripping the capacity of most cities to provide adequate services to its citizens. DFID urban programs across Asia and Africa seek to address this challenge.

DFID supports the **Community-Led Infrastructure Financing Facility** (CLIFF). CLIFF enables organisations of the urban poor to access the resources they need to provide better housing and basic services for slum dwellers. During the year ending March 2012, CLIFF supported the construction of 1,376 low cost houses for 6,800 beneficiaries. 70% of loans went to women[20].

DFID has supported a portfolio of urban work in India over more than twenty years with significant results such as improved water supply and sanitation to 2.5 million urban poor people. The nature of UK Aid to India is now changing to technical assistance and returnable capital, rather than financial aid. But urban programming will continue. For example, DFID India are developing a returnable capital programme to mobilise private sector financing for affordable housing, working with India's National Housing Bank.

New owners next to their near-completed house in Kohalpur, Nepal.
Photo credit: CLIFF

Connecting poor people to infrastructure services

The poor are disproportionately excluded from access to infrastructure services[21]. DFID sees connecting these excluded groups as important to extending the benefits of economic growth to the poor[22].

Water, sanitation and hygiene (WaSH)

DFID's recent WaSH Portfolio Review[23] found that investing in WaSH represents good value for money and is aligned with UK priorities on child health and gender equality.

In 2012 the UK Government announced a doubling of our results ambition in WaSH, to reach 60 million people by 2015. This will be achieved through scaling up country programmes, working with UNICEF and challenging the private sector and civil society organisations to compete for support on the basis of the value for money that they offer.

DFID's WaSH programme in Zimbabwe provides a good example of work at country level. UK aid is helping UNICEF to provide sustainable access to a safe water supply for 2.4 million people, improved sanitation to 1.1 million people, and to improve the hygiene practices amongst the rural population in 30 districts in five provinces. **The project will improve conditions for over 30% of Zimbabwe's rural population** and help to prevent a repeat of the 2008 cholera outbreak, which caused over 4,000 deaths[24].

WaSH sector work demonstrates DFID's support for **innovation**. For example, UK aid is currently supporting a team of researchers from Oxford University to pilot 'smart hand pumps', which have been fitted with a newly-designed data transmitters that automatically send a text message to mechanics if the devices break down so they can be fixed quickly. Studies indicate that, at any one time, between 20 and 70% of handpumps in Africa are not working[25], preventing people gaining access to clean water.

Smart Handpump developed by researchers at Oxford University.
Photo credit: Dr. Rob Hop, Oxford University

Water resources

Investing in water infrastructure and water resources management (WRM) enables individuals, communities and nations to harness the productive potential of water for drinking, sanitation, cooking, irrigating crops, industrial processes, transport and producing energy.

DFID supports the **Nile Basin Initiative**, an inter-governmental organisation dedicated to the equitable and sustainable management and development of the shared water resources of the Nile Basin. Work carried out by the initiative has recently succeeded in mobilising finance for the $340 million Rusumo Falls hydroelectric scheme[ii] that will provide energy to Burundi, Rwanda and Tanzania. The power plant could bring an extra 80 megawatts of renewable power to an area where only 2% of households have access to electricity[26].

DFID's **Adaptation for Smallholder Agriculture Programme** through the International Fund for Agriculture Development will help over six million smallholder farmers to build their resilience to climate change, including through improved irrigation infrastructure.

Roads

Lack of road infrastructure makes accessing markets and basic services difficult or impossible, it limits progress on many of the MDGs and prevents poor people accessing social and economic opportunity. An estimated 40% of the rural population in the world's poorest countries lack direct access to an all-season road[27].

Maintaining rural road networks is a daunting challenge for many countries. In Madagascar, Malawi, Mozambique, and Niger, the value of the road network exceeds 30% of gross domestic product (GDP)[28]. DFID has been leading on innovation and obtaining better value-for-money in delivery of rural road solutions over the last 30 years through its **transport research commitment**, as described later in this Paper.

DFID established, and funds, the **Rural Access Programme (RAP) in Nepal**[29]. Between 2002 and 2015, 4,323 km of roads will be built, upgraded, maintained or rehabilitated through RAP. During the last decade the programme has created 13 million days of employment for about 24,000 poor and disadvantaged households.

[ii] Funding will be provided by the World Bank (IDA), African Development Bank, European Investment Bank, KfW and the Netherlands.

Employment-intensive road construction under RAP creates jobs for poor and disadvantaged people in Nepal. Photo credit: RAP

Road safety

Road accidents kill an estimated 1.3 million people each year and injure up to 50 million more. DFID supports the Global Road Safety Facility (GRSF), a partnership program administered by the World Bank that provides funding, knowledge, and technical assistance that leverage road safety investments. Advisory services from GRSF have influenced a new $300m National Urban Transport Improvement Project in Kenya, leading to significant improvements in the road safety component. Between 3,000 and 13,000 Kenyans lose their lives in road traffic crashes every year[30].

Energy access

1.3 billion people worldwide live without electricity access[31]. Expanding sustainable access to energy is a priority for DFID due to the wide-ranging benefits to the health and quality of life of children, women and men and the key role of energy in creating a good environment for business. DFID seeks to help developing countries expand their energy access whilst simultaneously developing low carbon development paths.

The UK Government's support to energy includes the development of 'backbone' infrastructure such as regional electricity interconnectors and grid-connected renewable generation through the Multilateral Development Banks, as well as the development of innovative and market-based approaches to the provision of energy access to poor people via off-grid technologies.

Results-based financing (RBF) for low carbon energy access

Smoke from indoor cooking on biomass and coal is estimated by the WHO to cause up to two million deaths per year, mainly of women and children. In 2012, the UK Government announced a new results-based financing (RBF) facility which will support companies that provide innovative clean energy products and services. 2.5 million people in some of the poorest countries in Africa and Asia will be able to access clean energy as a result of this facility, saving the equivalent of at least **900,000 tonnes of Carbon Dioxide** per year. RBF funds will be matched by private sector investment in the schemes.

Children studying in a classroom constructed with DFID support.
Photo credit: DFID Malawi

Health and education infrastructure

Many of DFID's country programmes work in partnership with governments to improve health and education infrastructure. For example, in Malawi, DFID played a key role in setting up and funding a health Sector Wide Approach (SWAp). In an evaluation of the SWAp, District Health Officers said improvements in infrastructure were a key factor behind the significant improvement in their services and the associated decline in Malawi's maternal mortality ratio[32]. With DFID support, Malawi's Ministry of Education has constructed 4,000 classrooms since 2001 and will construct another 2,000 between now and 2015.

Working with the private sector to mobilise finance and encourage innovation

DFID works with the private sector to mobilise finance that has the potential to help close the infrastructure financing gap, to improve efficiency in service delivery and to extend the reach of private service delivery and financing to new sectors and to the most vulnerable. DFID programming has a strong focus on ensuring that services delivered with private sector participation are affordable for the poor, and reach the areas in which the poor live.

In partnership with other donors, DFID works to reduce the risk of investing in infrastructure projects and mobilise private sector finance from both international and domestic investors and lenders. This approach delivers good value for money as every pound of donor money attracts private sector funds which are several times higher than the original donor investment[33]. The private sector has played a central role in developing transformational innovations in the infrastructure sector that have benefitted the poor, such as rapid advances in mobile telephony[34].

CDC is the UK Government's development finance institution and potentially one of DFID's most powerful instruments for engaging with the private sector in infrastructure. In the last decade CDC has invested over £650 million in infrastructure in Africa. CDC was a pioneer investor in telecoms in Africa, where it took a key early stake in Mo Ibrahim's Celtel business which grew to operate in 13 countries. Recognising the developmental potential of infrastructure, CDC will increase its programming in this sector and will focus to a greater extent on the areas with the greatest infrastructure deficit; Africa and South Asia.

The Private Infrastructure Development Group (PIDG)

The PIDG was set up by DFID and three partners in 2002 to overcome market barriers to mobilising private sector finance for infrastructure. Thirty-nine PIDG supported projects are now fully built and are providing infrastructure services to over 97.6 million people in the some of the world's poorest countries[35].

Uganda has one of the lowest rates of per capita energy consumption in the world, barely 6% of the rural population have access to electricity and industry is held back by power shortages and high costs. The PIDG's 'Emerging Africa Infrastructure Fund' (EAIF) played a significant role in raising the finance needed to construct a hydropower dam, Bugoye, in Uganda, providing a $US33 million, 15-year loan. Bugoye was completed in 2011 and, together with four other small private hydro plants nearby, now supplies green energy that meets most of Western Uganda's electricity needs[36].

Bugoye Pump House.
Photo credit: DFID Private Sector Department

Infrastructure for climate resilient development

Infrastructure choices will play a major role in defining how society meets the linked challenges of growth, climate change and resource scarcity in order to create resilient growth.

Low-carbon development

Around 60% of global carbon emissions originate directly from the infrastructure sectors[37]. This presents a significant opportunity to design better infrastructure solutions that meet the needs of the poor and support economic growth without exacerbating climate risks. Examples include developing clean energy grids, planning for mass transport systems and developing low-energy buildings.

This action is urgent, as infrastructure assets have a long life span and rates of infrastructure investment are high in many developing countries. Inaction could lead to countries becoming 'locked-in' to high-carbon development paths during a period which is critical for the climate[38]. Climate finance, such as that provided through the UK's International Climate Fund, can help offset short term cost trade-offs where they exist (e.g. the higher upfront costs of renewable energy, compared to fossil fuels), as part of the global transition towards cleaner and more resilient infrastructure services.

Climate Public Private Partnership (CP3)

New forms of private finance are urgently needed to fund low carbon projects in infrastructure sectors. CP3 aims to demonstrate that climate friendly investments in developing countries, including in renewable energy, water, energy efficiency and forestry are not only ethically right but also commercially viable. It aims to attract new forms of finance such as pension funds and sovereign wealth funds into these areas, creating track records of investment performance which should in turn encourage further investments and accelerate the growth of investment in climate. **The CP3 programme as a whole is expected to mobilise private finance (equity and debt)** at all levels of the funds and projects, resulting in up to **3,500 MW of renewable energy** and preventing the equivalent of up to 130 million tonnes of carbon dioxide emissions over the projects' lifetime. The projects supported will make an important contribution to climate change mitigation, but will also support economic development in countries where infrastructure is a binding constraint to growth.

Adapting to climate change impacts

The impacts of climate change are now inevitable, and are already manifest in many parts of the world[39]. The world's poorest people are likely to suffer most from the impacts of climate change and have the least capacity to adapt[40].

Ensuring infrastructure is resilient to the impacts of climate change is critical to the achievement of sustainable development benefits. Well-constructed, appropriately designed and well-maintained infrastructure is better able to withstand extreme weather events and reduces the economic and social cost of disasters associated with climate change. Furthermore, developing a country's infrastructure creates new livelihood opportunities for its population, helping people to diversify their income sources and reduce their vulnerability.

In addition to specific adaptation programmes (see the box below for an example) DFID carries out rigorous environmental assessments of all our country programme infrastructure projects, which include integrating resilience to future climate impacts.

Bangladesh cyclone shelters

Bangladesh is highly vulnerable to extreme weather events which are becoming increasingly frequent as a result of climate change[41]. In 2007, Cyclone Sidr killed an estimated 3,500 people in Bangladesh and caused damages and losses amounting to US$1,675 million[42]. With the support of the UK Government and other partners, the Government of Bangladesh is constructing 63 new cyclone shelters and rehabilitating 40 existing shelters in coastal areas. This will protect over a million people from future cyclones.

Cyclone shelter built under the DFID supported Bangladesh Climate Change Resilience Fund.
Photo credit: DFID-Bangladesh

Infrastructure development in fragile and conflict-affected states

In 2010/11, 36% of the UK Government's bilateral infrastructure spend went to fragile and conflict-affected states (FCAS). Fragility and conflict create severe challenges to development, illustrated by the slow progress of FCAS in achieving the Millennium Development Goals. In early 2013, only about 20 percent of FCAS had met the MDG target to halve the number of people living in extreme poverty[43]. Infrastructure development plays an important role in the reinstatement of basic services post-conflict, as well as job-creation; directly, by employing people (including ex-combatants) in construction[44], and indirectly through creating opportunities for economic activity.

Democratic Republic of the Congo (DRC) "Roads in the East"

The "Roads in the East" project will reconstruct transport infrastructure destroyed by conflict and lack of maintenance in the conflict-affected area of Eastern DRC. Project results include: the building or upgrading of 628 kilometres of roads; a system to ensure the long-term maintenance of the roads; and equitable employment generated by road works and maintenance. Ultimately, the project aims to reduce income poverty and improve security in North and South Kivu, thus making a significant contribution to Eastern DRC's rehabilitation.

DFID supported road reconstruction in DRC.
Photo credit: SOFRECO

Capitalising on the reach and capacity of multilateral organisations

The multilateral system has a critical place in infrastructure financing and programming. Regional and Multilateral Development Banks are able to provide **large-scale loans** and other non-grant financial instruments to governments for capital-intensive infrastructure projects. They have the institutional structures, expertise and relationships with client countries that enable them to do this. These modalities are appropriate for financing large infrastructure projects that will generate significant economic returns for the host country. Others engaged in this area include emerging powers, and particularly China in Africa.

In 2009/2010 DFID channelled £412.9 million of infrastructure funding through Multilateral Organisations (MOs), representing 45% of DFID's total infrastructure spend. The majority of UK aid for infrastructure

through MOs is channelled through the World Bank, Regional Development Banks, the European Development Fund (EDF) and European Commission (EC).

All donor core contributions to MOs are combined. The UK generally relies on the Banks' and EC's systems for tracking expenditure and monitoring implementation. DFID's overall engagement with MOs was reviewed as part of the Multilateral Aid Review (MAR). The MAR assessed MOs in terms of their focus on results, accountability, and the extent to which they are well run and deliver improvements to poor people's lives.

World Bank Group (WBG)

In 2010, the WBG provided a record USD $28 billion in financing for infrastructure, making it the largest multilateral development infrastructure financier. The MAR rated both the WBG's concessional lending arm – the International Development Association (IDA) - and the arm that works with the private sector – the International Finance Corporation (IFC) – as providing good value for money to DFID. While the WBG's priorities are well aligned with UK Governments priorities on development, DFID continues to press for improved performance and reform.

Examples of results achieved by IDA include:

- 46,700 km of rural roads constructed or rehabilitated, and 12,700 km maintained in the last five years, benefiting around 60 million people.
- Helped provide over 113 million people with access to an improved water source over the last decade.
- The joint World Bank/International Finance Corporation 'Lighting Africa' programme aims to provide up to 250 million people in sub-Saharan Africa with non-fossil fuel based lighting products and associated basic energy services by 2030.

African Development Bank (AfDB)

The African Development Bank is of strategic importance to DFID's infrastructure work due to its focus on infrastructure in Africa and its role in supporting regional cooperation and integration. The AfDB's Programme for Infrastructure Development in Africa (PIDA) sets out a common vision of regional integration. It is estimated that through regional projects promoted by PIDA, transport efficiency gains of at least $172 billion have been delivered, with the potential for much larger savings as trade corridors open up.

Asian Development Bank (ADB)

The Asian Development Bank is reducing poverty across Asia, including in the countries where the UK focuses its aid. ADB's core skills are in delivering large-scale infrastructure projects in middle-income countries. In 2011, ADB projects provided access to electricity and modern fuels for 7.7 million households. 27 million people are expected to gain access to improved access to safe drinking water supply and improved sanitation from loans approved in 2011.

European Union (EU)

The EU is an important partner for DFID in infrastructure due to the scale of resources it is able to invest, over long periods and across borders. Since 2004, EU grants have helped build and rehabilitate 7,200 km of road and helped maintain more than 29,000 km of road. Between 2002 and 2007 the EU Water Facility funded projects that provided 14.5 million people with access to safe water, 3.5 million people with access to improved sanitation and provided hygiene promotion to 10.5 million people.

The EU-Africa Partnership on Infrastructure is a cornerstone of the EU's Strategy for Africa. It aims to increase European and African investment in infrastructure and related services. Within this partnership, the EU-Africa Infrastructure Trust Fund (ITF) – managed by the European Investment Bank - promotes regional infrastructure schemes to foster wider African development. ITF supported projects include the Mauritania

Submarine Cable Connection which will provide access to the global broadband network for the first time for seven countries in sub-Saharan Africa and the Eastern Africa Transport Corridor programme which will alleviate transport bottlenecks along the principal transport routes for the eastern and landlocked central African countries[45].

United Nations organisations active in infrastructure

The United Nations (UN) represents every nation in the world. It has a neutrality, legitimacy and credibility which other development organisations cannot match, and this enables it to operate in environments others find difficult. The UN leads on the Millennium Development Goals and has the capacity to deploy a comprehensive approach to peace-building, development and humanitarian situations.

The United Nations Development Programme (UNDP) receives core support from DFID. UNDP's infrastructure focus areas are green energy and post-conflict infrastructure, both priority areas for DFID. Over the last five years, UNICEF support has helped an estimated 100 million people gain access to improved water and 60 million to sanitation. As part of DFID's recently announced water, sanitation and hygiene (WaSH) scale-up, DFID will establish a new global fund with UNICEF which, by 2015, will reach five million people in some of the highest need areas in Africa and Asia.

3. Enhancing the impact of every pound spent

This section describes how DFID aims to enhance the impact of every pound spent on infrastructure aid by:

- Partnering with governments to support evidence-based policy making and build capacity.
- Engaging emerging powers and the international community to share knowledge, mobilise finance and ensure that the needs of the poorest are met.
- Enhancing transparency and fighting corruption in infrastructure and construction.
- Building the evidence base on infrastructure investment strategies that will deliver economic development and will ensure the delivery of sustainable, affordable services to poor people.

Partnering with governments in developing countries

The majority of infrastructure financing in low income countries is supplied by the domestic public sector[46]. For this reason, DFID attaches great importance to working in partnership with **developing country governments.**

Insufficient capacity amongst national and local government agencies to formulate and implement infrastructure development policy is one of the greatest challenges in the sector. Institutional barriers and misaligned incentives can result in sub-optimal investment strategies and missed opportunities to attract private sector investment. The Nigeria Infrastructure Advisory Facility – described below – provides an example of DFID's capacity building work. DFID also runs capacity building programmes alongside many bilateral infrastructure programmes.

Nigeria Infrastructure Advisory Facility (NIAF)

NIAF is a technical assistance facility fully funded by DFID which supports the Government of Nigeria's programme to improve the efficiency and effectiveness of infrastructure delivery. Results already achieved include:

- An increase in power supplied during 2012 of more than 10% (largely through improved maintenance and management), exceeding the logframe target and taking the increase over 3 years to 40%. This is already saving consumers £1 billion a year.
- Helping ensure that 16 companies split from the power monopoly are sold to capable buyers through a transparent process. NIAF supported bid evaluation and contract negotiation. More than $500 million has already been mobilised from investors, with around $2 billion due later this year.
- Supporting work on the rail network that has resulted in trains running between Lagos and Kano for the first time in around 10 years.

Frameworks for private participation in infrastructure are often under developed in developing countries, due to the historical dominance of the public sector The UK Government, through DFID, was a founding member of **Public-Private Infrastructure Advisory Facility (PPIAF)**. PPIAF provides technical assistance to governments in developing countries to support the creation of an enabling environment conducive to private investment in infrastructure.

Examples of recent PPIAF outcomes include:

- In 2012, PPIAF supported the Government of Ethiopia to set up a public private partnership (PPP) for the operation and maintenance of an irrigation programme in the north of the country that will increase water availability to over 6,000 landholdings[47].
- PPIAF support played a critical role in the development of a PPP that creates a platform for Dutch firm Vitens-Evides to partner with the Government of Malawi to provide 723,000 additional people with access to safe drinking water and 468,000 people with access to basic sanitation by 2014[48].

In some countries, DFID supports government programmes with high potential impact through budget support. For example DFID's 10-year programme of budget support to the road sector in Mozambique has succeeded in supporting the government to implement reforms which are crucial to the sustainability of the road sector, including increasing revenues from road user charges and introducing an improved maintenance regime.

National governments in many developing countries, particularly in Africa, are now working intensively with the private sector to open up access to their natural resource reserves. An estimated 23% of resource deals in Africa now include infrastructure or industrialisation components up from 1% in the 1990s[49]. There is an important role for development agencies such as DFID in working with governments to ensure that the mechanisms for exploiting natural resources and the infrastructure constructed benefit the poorest local populations. This can include measures such as supporting the involvement of local suppliers and incorporating appropriate environmental and social safeguards. DFID's Secretary of State recently approved an ambitious programme on extractives and DFID is already supporting partner governments and institutions to manage extractive resources in the DRC, Ghana, Mozambique, Nigeria and Sierra Leone.

Recent research suggests that lack of engineering capacity in sub-Saharan Africa is an obstacle to the development of national and regional infrastructures[50]. DFID works to build the capacity of engineers in our focus countries, for example through the African Community Access Programme, described later in this Paper.

Engaging emerging powers and the international community

Concessional finance flows for infrastructure from **emerging economies** to sub-Saharan Africa are now comparable in scale to traditional official development assistance from OECD countries or to capital from private investors[51]. The importance of countries such as China, Brazil, India and South Africa in supporting infrastructure development continues to grow.

DFID is seeking stronger engagement with the Emerging Powers and has developed a strategy for this engagement which will include infrastructure programmes. For example, DFID's work with South Africa prioritises regional integration in the transportation and power sectors in low income countries in Africa.

The G8 and G20 bring together the largest economies in the world to discuss global issues. DFID works closely with G8 and G20 countries to overcome barriers to infrastructure development. The Infrastructure Consortium for Africa (ICA) was launched at the G8 Gleneagles Summit in 2005 with support from the UK. ICA has catalysed an increased investment commitment to infrastructure in Africa, up from $7 billion in 2005 to $29 billion in 2010. Under the G20, a High Level Panel on Infrastructure was set up to examine the barriers to attracting increased financial flows to infrastructure. The High Level Panel recommendations include a range of measures to improve the supply of projects able to attract private sector finance and to improve the performance of the multilateral organisations.

Enhancing transparency, reducing corruption

The nature of construction projects and their organisation make the sector **highly vulnerable to corruption**. The 2011 Transparency International Bribe Payers' Survey ranks public works and construction as the most corrupt sector[52]. Some estimates put potential losses from corruption in infrastructure as high as $2.5 trillion per year[53]. Following the 2011 report of the Independent Commission on Aid Impact (ICAI) on DFID's approach to anti-corruption, DFID has strengthened its focus on and strategic engagement in corruption[54].

Corruption in infrastructure delivery is a significant disincentive for investment and can result in badly constructed works. Collusion in the market place leads to higher prices and significant cost overruns. This reduces the resources available to governments for other public services[55]. Corruption may lead to firms constructing below specified quality standards, resulting in poor quality infrastructure with higher maintenance costs, a shorter life expectancy and that may present a danger to human life. Corruption on the supply side of the construction industry can also have serious impacts, for example cartels in cement manufacture that increase prices. Institutional reforms and capacity building to improve public financial management (PFM) are critical approaches to reducing levels of corruption and attracting money for investment.

DFID supports increased transparency in developing country infrastructure delivery as described below, and also works hard to protect UK programming from corruption risks. In addition to the independent scrutiny provided by ICAI, DFID has introduced a transparency guarantee on UK aid so any interested party can see where our money is flowing[56]. Processes are in place to ensure all DFID staff have a good understanding of the UK's Bribery Act 2010 and are able to recognise acts that are illegal under UK law.

Construction Sector Transparency Initiative (CoST)

CoST aims to improve the value for money spent on public infrastructure by increasing transparency and accountability in the delivery of public sector construction projects. It was launched in October 2012 following a three year DFID funded pilot project (2008-2011). Although still a relatively new programme, significant impacts have been achieved. In Ethiopia for example, the disclosure of information on a 33km rural road identified unusually high cost estimates. A subsequent decision to redesign the road secured a cost saving of US$3.7million. In Guatemala the disclosure of information on a contract to rehabilitate the Belize Bridge identified irregularities in the procurement procedures and led to the cancellation of the contract. The CoST programme has identified and supported the implementation of governance improvements within procuring entities in Malawi, Guatemala and Ethiopia.

Building evidence for effective policy making

Infrastructure spending is vast, absorbing between 2- 6% of GDP in most developing countries[57]. Yet large infrastructure spending decisions are often made with an inadequate base of evidence, almost certainly leading to poor or inefficient decisions. By developing high quality evidence through research and rigorous project evaluations, DFID is improving the impact of UK programmes and those of others.

DFID's broad infrastructure portfolio provides us with an opportunity to develop the knowledge base through more systematic **impact evaluation of DFID programmes**. Examples of rigorous evaluation include the commitment to a 10 year evaluation programme linked to the new 'Roads in the East' programme in the Democratic Republic of the Congo and DFID's commitment to carry out impact evaluations of each of the new programmes established under the WaSH scale-up. In future DFID aims to carry out impact assessment on a wider range of infrastructure programmes, to systematise evaluations and to put mechanisms in place ensure that the learning is incorporated in future designs.

Examples of DFID research programmes are given below:

The **Africa Community Access Research Programme** (AFCAP) was established by DFID in 2008 and is fully funded by DFID. AFCAP is working with governments in six countries to reduce the life-cycle cost of rural roads. Innovative use of local materials and low cost sealing of roads will contribute to the improved provision and maintenance of over 200,000 km of rural roads by 2020[58].

Road improvement works in Bagomoyo, Tanzania following AFCAP guidance.
Photo credit: Crown Agents

DFID funded a recently published study on **groundwater resilience to climate change in Africa**. This was the first attempt to define at a continental scale the resilience of groundwater to climate change. The study concludes that groundwater has a high resilience to climate change in Africa and should be central to adaptation strategies. The Bill and Melinda Gates Foundation and Water Aid are considering this evidence for their programme design.

DFID's **Infrastructure Knowledge Programme** is providing evidence and developing tools to improve design, management and implementation. Three guidance notes have been produced to date: "Supporting infrastructure development in fragile and conflict-affected states"[59], "Measuring and Maximising Value for Money in Infrastructure Programmes" [60] and a DFID How To Note on Reducing Corruption in Infrastructure Sectors[61].

DFID is funding the five year **Sanitation and Hygiene Applied Research for Equity (SHARE)** consortium. Amongst other programmes, SHARE is currently engaged on a large, rigorous evaluation of sanitation impact in Odisha, India. The project will further understanding of the health impact of improved sanitation and thus support the design of more effective programming.

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Front cover: DFID supported road reconstruction in DRC. Photo credit: SOFRECO