Prosperity Fund Business Case

A collaboration between DFID, FCO and DCMS

Budget: £82.5m

Timeframe: 2018 – 2023
(Phase 1 - Diagnostic & Phase 2 - Implementation)

Countries: Brazil

Indonesia

Kenya

Nigeria

South Africa

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List of Abbreviations

ADAMANT - Authority; Documentation; Accuracy; Maturity; Acceptability; No previous payment; Timing
CNI - Critical National Infrastructure
CSO - Civil Society Organisation
cVAWG - cyber Violence Against Women and Girls
DAC - Development Assistance Committee
DCMS - Department for Culture, Media and Sport
DAP - Digital Advisory Panel
DFID - Department for International Development
DIT - Department for International Trade
EAIF - Emerging Africa Infrastructure Fund
EQUALS framework - Evaluation Quality Assurance and Learning Service
FCO - Foreign and Commonwealth Office
FDI - Foreign Direct Investment
FY - Financial Year
GDP - Gross Domestic Product
GDS - Government Digital Service
GHG - Greenhouse Gases
GSMA - GSM Association
HDIF - Human Development Innovation Fund
HMG - Her Majesty's Government
HQ - Headquarters
IADB - Inter-American Development Bank
IBMs - Inclusive Business Models
ICAI - Independent Commission on Aid Impact
ICT - Information and Communication Technologies
IDI - International Development Index
ITU - International Telecommunications Union
M & E - Monitoring and Evaluation
MOU - Memorandum of Understanding
MREL - Monitoring, Reporting, Evaluation, Learning
NAO - National Audit Office
NPV - Net Present Value
NSC - National Security Council
ODA - Overseas Development Assistance
OJEU - Official Journal of the European Union
PCD - DFID Procurement and Commercial Department
PFDU - Prosperity Fund Delivery Unit
PFMO - Prosperity Fund Management Office
PIDG - Private Infrastructure Development Group
PwD – Persons with disabilities
RDEL - Resource Departmental Expenditure Limit
SDG - Sustainable Development Goals
SMART - Specific, Measurable, Actionable, Realistic, Timely
SMEs - Small and Medium Enterprises
SRO - Senior Responsible Owner
ToR - Terms of Reference
TVWS - TV Whitespace
UNDESA - United Nations Department of Economic and Social Affairs
VFM - Value For Money
WDR - World Development Report
WEF - World Economic Forum

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Summary Sheet

Title: Digital Access Programme	Countries/Region: Brazil, Indonesia, Kenya, Nigeria, South Africa,	Programme Value: £82.5 million

Programme Summary

The Sustainable Development Goals include an ambition to provide universal and affordable access to the Internet for least developed countries by 2020. Meeting this goal is vitally important in ensuring that poor and vulnerable people are able to benefit from the significant development impact of the Internet and digital technologies, and to avert the substantial risk of widening inequalities resulting from digital exclusion.

The Internet and digital technologies are powerful catalysts for economic growth and development for all. This is especially true for poor and excluded people[1], provided they are digitally included in an accessible, affordable, safe and secure manner. The impact of digital inclusion can be profound and wide-ranging, as Internet access for marginalised communities and households can bridge the gap in crucial services and information for their fundamental needs. Basic digital channels (e.g. for maintaining records, contacting beneficiaries, managing payments, accessing market information) are now essential in key sectors such as health, education, e-governance, as well as entrepreneurship and job creation. For example, they can allow people in slums to obtain online information on jobs and economic opportunities, or women in rural areas to access healthcare advice and medical assistance from their phones. Children from poor households can benefit from affordable education delivered through digital tools. People with disabilities who may be unable to travel long distances can access critical government digital services such as birth registration, social security or voter identification.

Digital access has become a key enabler of development. However, in practice, developing countries and poorer regions of emerging markets are struggling to realise the development benefits of digital inclusion, because of significant constraints on affordable, safe and secure Internet connectivity, lack of digital skills, ineffective governance of the Internet and inappropriate regulation of the ICT sector. There is therefore the need to test innovative and inclusive ways to widen digital access in order to harness the power of Internet to tackle poverty, build prosperity and enable many more people - especially the poor and the excluded - to benefit from digital services and opportunities.

Traditional models of Internet access (the combination of mobile networks and underground cables used, for example, in the UK) are too expensive to be viable for poorer populations or in rural settings in lower-income countries. However, promising new inclusive models are emerging (e.g. using technologies including lower-

[1] Defined as but not limited to: the bottom 40% of national income distribution, with an emphasis on women, girls, children, elderly persons, people with disabilities, marginalised communities in informal settlements, rural and remote areas - or a combinations of these characteristics.

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cost solar power, smart pricing and community-led management) which provide much more affordable basic access for the poorest and most marginalised populations. These innovations are on the 'tipping point' – they show promise of scalability, but require greater testing and support before they can be taken to scale by the private sector.

As a leader in digital technology and development, the UK has a clear role to play in testing and validating these emerging technological innovations and business models, and in strengthening the wider enabling environment to support them – including more appropriate regulatory frameworks. This is what the programme presented in this business case aims to do, in countries that have been selected on the basis of both development needs and potential returns: Nigeria, Kenya, South Africa, Indonesia and Brazil.

The Digital Access Programme will facilitate the market validation and roll-out of inclusive business models that adopt emerging innovations to widen basic Internet connectivity for poor and excluded people. The Programme will take an *integrated* approach, testing the application of the World Bank's holistic model for the achievement of digital dividends[2] . It will address issues of affordable basic connectivity, cyber-security, digital skills and inclusion, the regulatory and policy environment, and digital ecosystems. It will involve three HMG departments (DFID, FCO and DCMS) in three pillars of activity, harnessing cross-HMG expertise into a concerted effort to promote better digital access for development and prosperity.

The diagram below (Figure 1) provides an illustration of the Programme's components, intervention areas and expected outcomes.

Figure 1 – Overview of the Digital Access Programme

[2] Presented in the World Bank's World Development Report 2016: Digital Dividends

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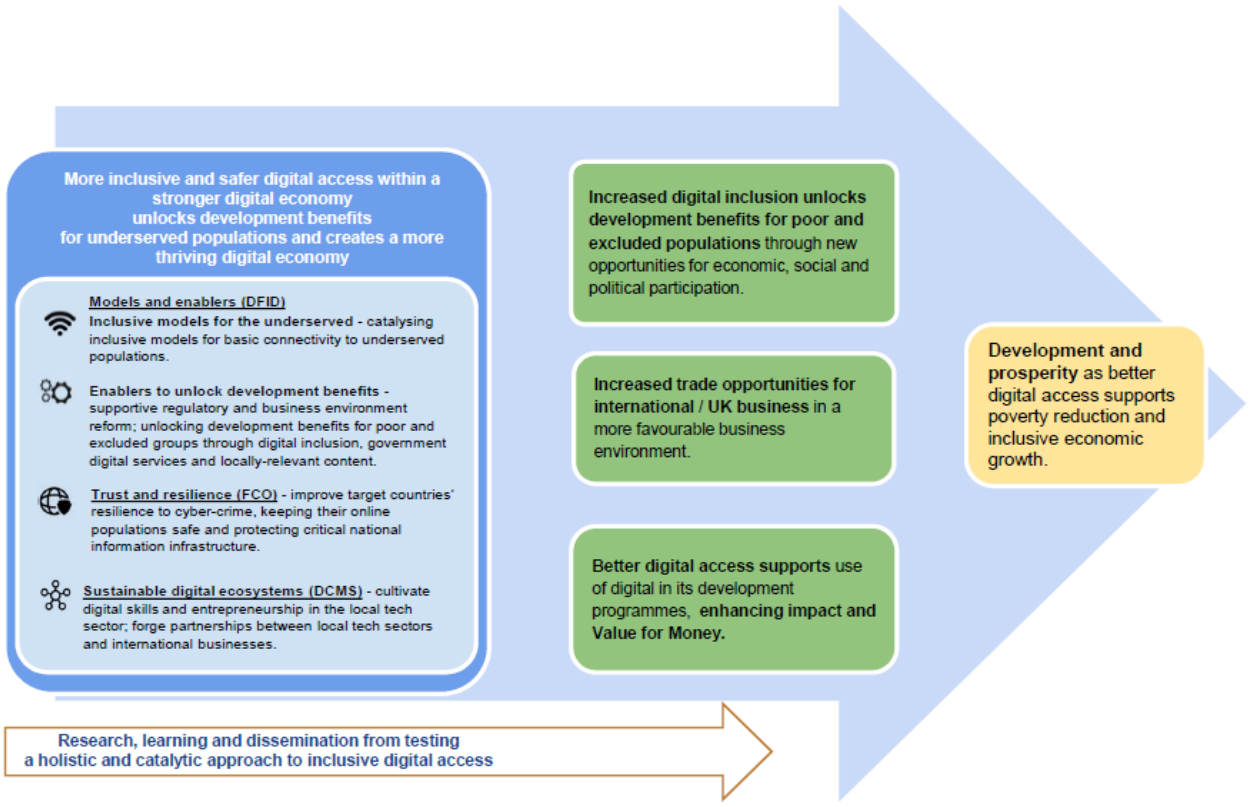

The Programme will be *catalytic* in nature, as it will *facilitate* key processes to address market failures and to induce *systemic* improvements. It will focus on interventions that can have a *multiplier* effect, in particular through future *scale-up* of viable innovative models for affordable access; and through its emphasis on *research and learning* that will build *evidence* and lessons for the UK to influence policy and practice on 'digital for development' in the international arena.

By testing new models of affordable and safe access, the Programme will pave the way for many more unserved people to be reached. In this way it can make a contribution to achieving the global goal on universal Internet access, and ensure that key groups such as the disabled, girls and women, youth and the rural poor, stand to benefit fully from the economic and social opportunities of a digital world.

While there is limited data to quantify the impact of such benefits, there is a well-documented correlation between connectivity and GDP growth. The World Bank estimates that a 10% increase in Internet connectivity leads to a 1.38% increase in GDP growth. A quantitative estimate of programme benefit[3] based on this correlation and the estimated number of people that will become digitally included as a consequence of programme interventions, is calculated at between £6.7 billion and £15.1 billion in GDP growth[4]. Secondary

[3] This estimate is limited to the quantitative value of increased economic growth brought about by the Programme's direct support to digital inclusion models. However, this estimate does not capture the multiplier effect resulting from opening up new markets, which will enable millions more to benefit from affordable Internet access as tested innovations are taken up at scale.

[4] The World Bank estimate of a 1.38% increase in GDP per additional 10% of the population connected, and the Inter-American Development Bank estimate of 3.29% increase in GDP per additional 10% of the population connected. The difference

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benefits in terms of UK exports, as modelled with currently available data, are valued at between -£16.1 million and £65.0 million[5]**.** The programme is expected to crowd-in additional finance to the sector and improve the regulatory environment to deliver higher impact. This additional funding and the benefits of improved regulatory environments could have an indirect impact (via non-HMG investment) of £57.5 billion to £137.1 billion in primary benefits to the five countries, and between £282.7 million and £674.0 million in terms of international business opportunities.

The Digital Access Programme will also play to the UK's strengths in three sectors - digital services, cyber security and telecoms - where our competitive advantage means we can add development value and expand markets for increased prosperity. However, the Programme will comply rigorously with ODA rules and will not accord preferential treatment to UK companies in its delivery.

Programme Code:	**Start Date:**	**End Date:**
Overall programme risk rating:		
Vault Number:		

between these, when multiplied over a ten-year period, explains the disparity between the high and low estimates of primary and secondary impact respectively.

[5] The low-end figure indicates increased exports are insufficient to justify the costs of the programme alone, but that significant gains for British business are likely to be accrued through programme activity, especially in the higher range of potential programme impact.

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Intervention Summary

What support will the UK provide?

The UK will provide up to £82.5m from the Prosperity Fund over five years (including a diagnostic and stakeholder engagement phase of up to one year, and up to four years of implementation)

Why is UK support required?

Developing economies have often struggled to realise the benefits of the digital economy, because of limited Internet connectivity, lack of digital skills, and ineffective governance and regulation. If these barriers are reduced, countries could stand to realise huge benefits. The Internet and digital technologies are powerful catalysts for economic growth, increasing commerce, jobs, services, transparency, innovation and efficiency. However, in developing countries only 31% of people have access to the Internet. A second digital divide exists within countries with poor and excluded groups facing particular challenges to accessing the Internet. These challenges must be addressed through targeted programming to ensure everyone can share in the benefits of a digital economy. External assistance can help greatly, and in some cases may be essential, in enabling developing countries to address the barriers holding back Internet connectivity and digital-enabled inclusive growth. Removing the required barriers requires technical and policy experience and cooperation across private and public sectors, including across multiple government departments. This process can be accelerated through assistance from a country that has been through a digital expansion already and has a strong digital economy, public-private partnerships and cross-government cooperation from which to draw support and solutions.

The UK is particularly well positioned to deliver this support with the largest Internet economy in the G20 by proportion of GDP [6] and significant industry and government expertise in delivering digital policy, services and products for both the private and public sector. The UK also has strong cross-government cooperation on digital issues and inclusive development which allows us to pull together the sort of multi-disciplinary intervention that enabling digital access requires. We would be the first country to implement an integrated programme of this kind, to demonstrate how progress in reaching the Global Goal of universal Internet access can be made.

What are the main programme activities?

Programme activities will be delivered in three 'pillars', providing in every country a tailored mix of well-targeted technical assistance and funding in order to address supply- and demand-side barriers as well as systemic constraints to inclusive digital access:

- **Pillar 1 - Models and Enablers (led by DFID)**
  This programme component will focus on catalysing the development, market validation and roll-out of innovative and inclusive models for basic connectivity to reach currently underserved populations. Country-level diagnostics will identify the most marginalised groups and communities at risk of exclusion to ensure the Programme benefits the poorest and most disadvantaged. In each country, the Pillar 1 intervention will include a combination of well-targeted technical assistance and - in some selected cases - innovation grant funding. **On the supply side**, this will deliver a tailored mix of support to business including technical capability, product/service development and facilitation of access to finance/investment. **On the demand side**, Pillar 1 will work with organisations and initiatives that address skill gaps, social and physical barriers to

[6] Boston Consulting Group, The Internet Economy in the G20

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digital access, including gender stereotypes as well as mobility constraints for girls, women or people living with disabilities. The intervention will focus on models and organisations that facilitate access to locally-relevant content as this enhances the developmental outcome of wider digital inclusion, e.g. through information or services related to health, education, employment or e-government. **At the systemic level**, Pillar 1 will foster an enabling environment for digital inclusion, by focusing on strategic improvements of the legal and regulatory framework relevant to the supported business models for affordable connectivity, as well as broader ICT sector-wide reform and policies for better governance of the Internet. Additionally, support will be provided to governments for accountable digital service delivery, for example by harnessing GDS expertise. The diagrams in Figure 21 and Figure 22 (see para 85 in the Appraisal Case) provide an illustration of the DFID-led Pillar 1 work and specifically on the support to inclusive business models development.

- **Pillar 2 - Trust and Resilience (led by FCO)**
  Building on FCO expertise in cyber-security capacity building, tailored technical assistance will improve target countries' resilience to cyber-crime, keeping their online populations safe and protecting critical national information infrastructure. A review will be conducted to assess the baseline capabilities cyber-security capabilities for each country, against internationally-recognised capacity and maturity models. Having identified areas that require improvement, capacity building projects (primarily at government/national agency level) will be supported and funded, based on existing FCO expertise on what works in this field. FCO will also work with the UK Government Communications Service (GCS) to support governments of partner countries in relation to awareness-raising on cyber-security issues.

- **Pillar 3 - Sustainable Digital Ecosystems (led by DCMS)**
  Sustainable digital ecosystems, needed to enable digital growth, will be promoted through tailored interventions to cultivate digital skills and entrepreneurship, responding to the needs and opportunities for inclusion in the local tech industry. For example, promoting women's active participation and leadership in technology and digital; and forging partnerships between local tech sectors and international businesses (including those from the UK) in each country. A network of UK Tech Hubs (small locally-engaged teams based within the UK missions) in each partner country will act as the HMG delivery mechanism for Pillar 3, and will be modelled on DCMS experience in this field.

A DFID-led work-stream on *research and learning* will underpin the three pillars. Systematic capture of evidence and lessons will be used for continuous programme improvement, policy influencing and further investment into digital inclusion from stakeholders in the private and public sectors. The cross-government approach of the programme will provide the appropriate expertise and policy leadership needed for the three pillars.

The programme will take a flexible and needs-driven approach. It will use an initial *diagnostic phase* to tailor programme activities to each country context, identify and mitigate risks, and shape programme activity for maximum impact on prosperity and inclusion.

The programme will benefit poor and excluded people in particular. Context-specific success criteria, focused on inclusion, reach, affordability of access, scalability and particular needs of user groups will ensure that poor and excluded people are the real beneficiaries of programme outcomes. In order to ensure programme quality and robust targeting of the most marginalised, an indicative set of criteria has been developed. This will be further tested and refined following country diagnostics exercises overseen by the HMG programme team. These criteria are detailed in the Appraisal Case (Figure 14) and in Annex 10.

What are the expected results?

Quantitative results are presented as a range calculated using a high and low estimate for the effect of increased

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Internet access on GDP[7]. Estimates are based on data from comparable connectivity initiatives, as the best benchmark of outcomes delivered by the programme (see data in Intervention Summary above and also below under primary benefits).

From the *qualitative* perspective, the flagship result of this catalytic programme will be three-fold:

- the ***learning*** from the testing of a unique holistic approach to promoting affordable and safe digital access for development, based on the World Bank model and potentially useful also for other donors and development banks intervening in this sector;
- the validated inclusive business ***models*** that will scale up and deliver digital access in innovative ways; these may become viable in other markets and expand to other geographies;
- the ***enabling and amplifying effect*** of digital access for the cost-effective large-scale delivery of information and services that are crucial to marginalised populations' development outcomes in education, health, employment, participation, etc., leading to *better value for money* of government interventions and aid programmes.

Additionally, the programme will seek to crowd-in private/impact investment and development finance to the validated inclusive models for affordable connectivity. It will also leverage other further donor funding and government support for additional improvements in the business environment (including on regulatory reforms). This will amplify the impact of the intervention.

The Programme will also build and disseminate evidence about the effectiveness of an integrated, multi-pronged approach to digital access, which takes account of technical, economic, social and institutional barriers. This will fill an existing gap and play a role in encouraging key stakeholders to invest in similar interventions.

Primary purpose

The inclusive business models validated with the support of the Programme will increase basic digital access in marginalised communities and for disadvantaged groups. The previously-excluded individuals and communities will then benefit from more development-relevant information and knowledge, services, expanded choice, as well as reduced transaction costs. This could, for example, allow people in slums to find jobs and employment opportunities, women in rural areas to access healthcare information and medical assistance from mobile phones, or people with disabilities to access digital government services online without the challenge of travel.

It should be noted that the programme will not invest in the provision of high-speed broadband or large-scale telecoms infrastructure, but in *innovative, low-cost models that provide basic connectivity to poor, excluded populations, and those living in rural and isolated areas*, often without reliable electricity supplies and with low levels of literacy, speaking less widely spoken languages. The economic appraisal (in the Appraisal Case) suggests that this could potentially yield a net benefit due to GDP growth of between £6.3 billion and £15.1 billion over a 10-year time period. In addition, primary benefits through crowding in private finance and improved regulation and its impact on GDP could range between an estimated £57.5 billion and £137.1 billion over a 10-year period.

[7] The World Bank estimate of 1.38% increase in GDP per additional 10% of the population connected, and the Inter-American Development Bank estimate of 3.6% increase in GDP per additional 10% of the population connected. The difference between these, when multiplied over a ten-year period, explains the disparity between the high and low estimates of primary and secondary impact.

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Secondary benefits

This programme will play to the UK's strength and comparative advantage in ICT by harnessing UK expertise to unlock development benefits and support UK prosperity. In accordance with ODA rules the programme will not grant any privilege to UK companies in delivery or activities. However, we expect UK businesses to benefit from partner country GDP growth and expanding digital markets, given the UK's competitive advantage in these sectors. The conditions for UK companies will be enhanced by the programme reducing barriers to entry such as poor local understanding of cybercrime and sub-optimal regulatory environments. Tech Hubs can help local tech sectors to value UK expertise, whilst the leadership this programme will demonstrate should showcase the UK expertise in the tech sector. Parallel activities (undertaken by DIT and others) in promotion of opportunities within the UK can enhance this effect.

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Figure 2: Primary & Secondary Benefit Summary table: Model Outputs, 10 year Discounted Net Present Value

	Low	High
Direct Primary Benefits	£6.3 billion	£15.1 billion
Primary Benefits: Leveraged finance to grantees and improved regulation	£57.5 billion	£137.1 billion
Direct Secondary Benefits	£-16.1 million[8]	£65.0 million
Secondary Benefits: Leveraged finance to grantees and improved regulation	£282.7 million	£674.04 million

Does the Programme fit with Prosperity Fund guidance on primary and secondary benefits; and HMG and DFID strategic	The Programme aligns with the Prosperity Fund's primary purpose by catalysing the growth of domestic markets to strengthen economic growth and poverty reduction. It aligns with secondary purpose by creating

[8] See paragraph 63 for explanation of this negative figure

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architecture?	opportunities internationally that the UK digital sector, and other relevant business sectors, will be in a strong position to compete for and benefit from. The Programme supports the NSC's and UK Aid strategy's development, prosperity and national interest priorities. It supports UK Digital Strategy, UK Government Transformation Strategy, DFID Digital Strategy and UK National Cyber-Security Strategy, as well as policy objectives for various departments including DFID, FCO, DCMS, GDS, and DIT. It will align with and complement other Prosperity Fund programmes (such as Future Cities), and HMG priorities at post in each of the countries.
What are the key risks to the success of the Programme?	Key risks include: 1. Complexity of programme architecture raises the transaction costs of programme management and coordination across departments and countries. 2. Innovative, integrated approach does not deliver the expected digital inclusion outcomes across the partner countries. 3. Inclusive economic growth opportunities are not realised in partner country.
Is the Programme coherent with the wider international community and partner government response? Has the Programme set out a sustainable exit strategy?	The programme draws on recommended responses made in the 2016 World Bank's World Development Report on 'Digital Dividends'. A number of other international bodies, including the World Economic Forum have also been consulted and are supportive. The input of DFID's country offices and of cross-HMG Prosperity Fund committees in relevant UK missions has been regularly sought to ensure the Programme aligns with partner government priorities and activities. The catalytic nature of the Programme will spark organic growth of digital markets that can self-sustain after programme end.
Has the Programme considered working with HMG Departments and accessing cross-HMG funds?	The Programme is being designed and delivered by DFID, in collaboration with FCO and DCMS. The Prosperity Fund has approved an £82.5m concept note.

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Is there sufficient flexibility to learn and adjust to changes in the context? What level of flexibility is there to shift this and future commitments?	The Programme is designed to work in a needs-driven way and builds in flexibility through adaptive programming to deliver bespoke interventions in each country which respond to local context. Detailed country-level diagnostics will be carried out in preparation of the Programme's inception phase in order to orient design and adaptation of specific activities.
Does the proposed level of risk fit Prosperity Fund's portfolio and risk appetite?	Yes. Risks are consistent with other programmes in the portfolio and ambitions for the Prosperity Fund, and are within the PF's and DFID's risk appetite.
Is there a clear communications strategy to reinforce our objectives? Will the Programme be branded with the UK aid logo and recognise UK Government funding – and, if not, why not?	This business case has already been shared with DFID Comms Dept. A clear communications strategy will be worked up in close collaboration with DFID Comms, with the relevant teams in partner departments FCO and DCMS, the Prosperity Fund and DFID guidance on ODA communications and branding. The programme will develop a coherent comms strategy to ensure appropriate messaging and manage proactively any reputational risk.
Has the Programme been quality-assured? How confident are we that the skills, capability, resources and political will exist to deliver the programme?	The programme has been cleared by DFID's Quality Assurance Unit and has been designed with significant input from international business leaders, academic experts, connectivity specialists (see Annex 7) and potential delivery partners. There has been close engagement throughout the design process with the country offices where the programme will be delivered. We have a high degree of confidence that the capacity, resources and political will exist to deliver.
Do the SRO and team have the capability and resources to deliver the Programme?	Yes. Departmental SROs, Lead Advisers and respective teams are well placed to oversee and quality-manage the delivery the programme. Dedicated staffing resources in UK and partner countries are being put in place to ensure robust programme management and effective delivery and impact.

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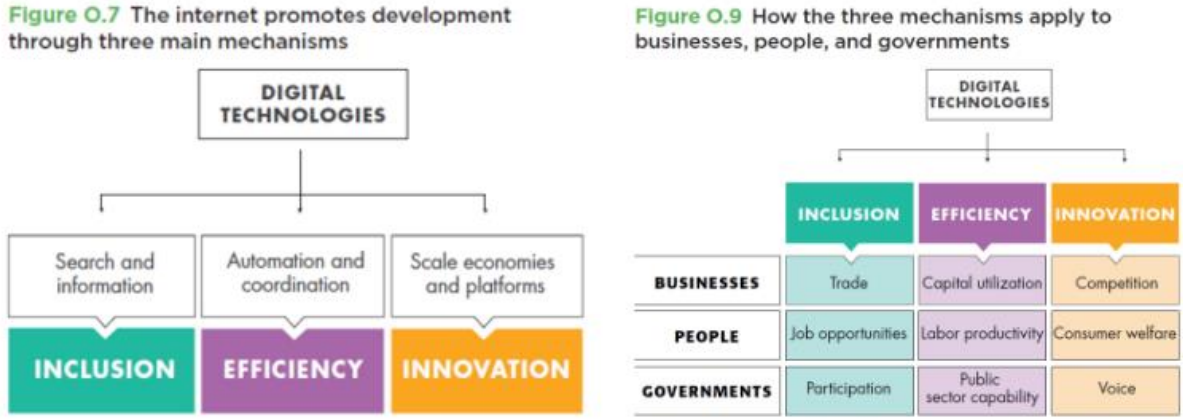
Strategic Case

The opportunity: digital technologies and access can unlock development and prosperity

1. **It is well recognised that Internet access helps unlock economic growth for emerging market economies by enhancing productivity, increasing access to information and driving efficiency and inclusion. Internet access acts across an economy unlocking various economic and social benefits for firms, individuals and governments** (see ***Figure*** 3).

Figure 3: How does the Internet promote development?



(Reproduced from World Bank, World Development Report 2016: Digital Dividends)

2. The World Bank's World Development Report 2016, entitled 'Digital Dividends', sets out a theory of change for how Internet access helps both growth and development. In summary, **improving Internet connectivity** can:
   a) **Increase efficiency and reduce transaction costs for information and exchange of goods and services,** enabling small firms and people to participate more easily in global markets, stimulating competition, and encouraging innovation and productivity;
   b) **Increase employment -** in developing countries, the ICT sector accounts for only 1% of jobs, compared to 3-5% in OECD countries, highlighting the potential for growth;
   c) **Improve the quality of public and private service provision** through digital services;
   d) **Benefit individuals** through time saved, convenience, expanded choice, and access to more knowledge/services, with a high social value (estimated to be worth between $450-630 to individuals in the developing world[9]) not always captured in GDP data;
   e) **Increase transparency and reduce corruption** by giving people tools to hold authorities to account;
   f) **Increase inclusion (also for girls and women) by providing access to services and information** previously out of reach.
3. **There is a well-documented relationship between Internet access and increases in GDP growth** (***Figure*** 4). There is a strong association between economic growth (GDP) and ICT development, with least developed countries at a particular disadvantage. The World Bank found that a 10% increase in Internet connectivity delivers a 1.38% increase in GDP growth through the channels identified above[10]. Other estimates are higher, for instance the Inter-American Development Bank estimated that the increase in GDP of Internet access could be as high as 3.29%[11]. The scale of the impact of ICT is significant as it is estimated ICT capital can increase productivity three to five times more than non-ICT capital. McKinsey estimated that if Internet access in Africa achieves the same scale as mobile phone penetration by 2025, it could increase the

[9] Deloitte, 2014. Value of connectivity: economic and social benefits of expanding Internet access.

[10] World Bank, 2016. World Development Report: Digital Dividends.

[11] IADB, 2012. Socio-economic impact of broadband in Latin American and Caribbean countries.

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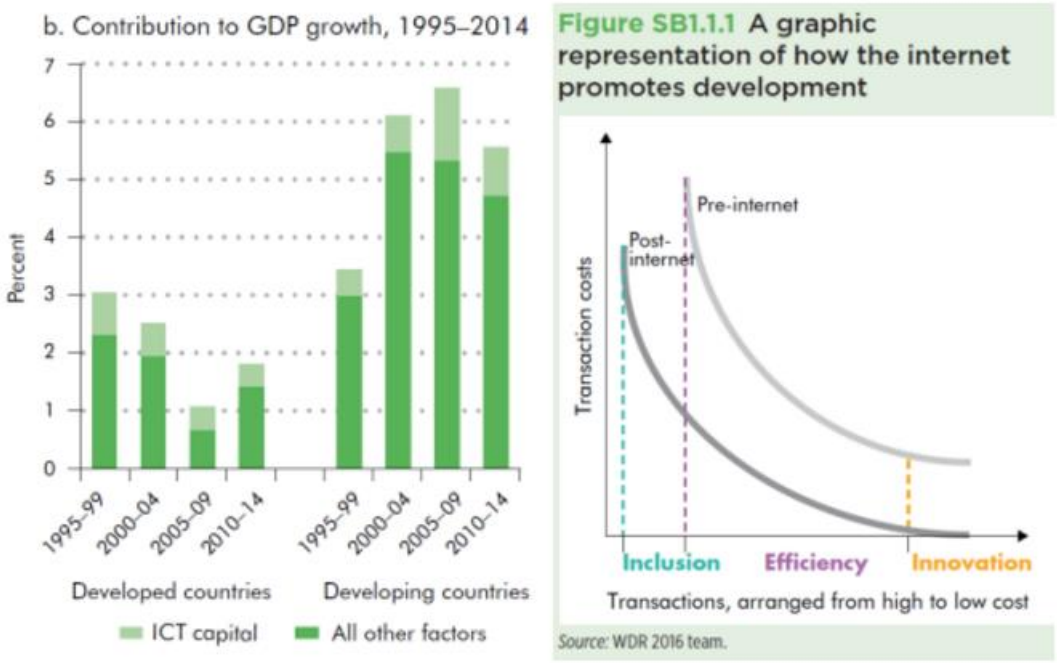
continent's annual GDP by US$300bn[12].

4. However, it should be noted that while there is a broad consensus that Internet access has an effect on GDP growth, due to lack of robust data and difficulty of constructing appropriate models, the magnitude of that effect is contested. The extent to which these figures might be influenced by reverse causality and feedback loops is unclear. It is also unclear whether connection between Internet access and growth is subject to threshold effects - whereby the impact only becomes significant after penetration reaches a certain base (threshold) level. The linearity of the correlation is also contested: some evidence suggests that due to network effects, the marginal benefit to GDP growth of each new connection is an increasing function of the number already connected[13]. These issues could indicate that the World Bank and IADB estimates of the effect of Internet access on GDP could be too high for developing countries where baseline levels of connectivity are lower. They are used throughout the rest of this business case as a best estimate of potential impact of the programme, given available data.

Figure 4: Contribution of Internet to economic growth



(Reproduced from World Bank, World Development Report 2016: Digital Dividends)

5. **Significant economic gains are also accumulated at an individual and firm level across sectors.** Deloitte estimates that gaining Internet access is worth between $450 and $630 per year to individuals in the developing world[14]; in Africa, where personal income levels are the lowest and the increases in penetration have the potential to be the highest, that translates into an increase in per capita income of 21%. Gains are also accrued at firm level, across sectors. Developing world SMEs with Internet access have been found to have experienced 11% productivity gains[15]. Likewise, farmers with Internet connectivity have seen profits increase by up to 33%.
6. **In addition, a host of non-economic benefits have been identified from increased digital access**. Emerging empirical evidence also links increased Internet access, and digital transformation more broadly, with socio-political benefits in education, political participation and governance transparency - creating net gains in the

[12] McKinsey, 2014. Off-line and falling behind.

[13] Galperin and Viecens, 2017. Connected for development? Theory and evidence about the impact of Internet technologies on poverty alleviation

[14] Deloitte, 2014. Value of connectivity: economic and social benefits of expanding Internet access.

[15] *Ibid.*

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Human Development Index[16].

7. **There is a tension between harnessing Internet access for macro-level economic growth, and harnessing Internet access for economic and non-economic inclusion of poor and excluded people.** The largest economic benefits of Internet access require populations with appropriate skills and accompanying firm-level investment in human capital and innovation. Benefits therefore tend to be captured by well-educated individuals and enterprises with innovation capacity and appropriate access to finance. This drives the higher end of Internet-enabled macro-economic growth. Meanwhile, the comparative productivity (and hence employability) of low-skilled workers is reduced, potentially decreasing distributional benefits. For isolated, poor and rural populations there is some evidence of positive effects on employment and wage rates of increased Internet access, while other evidence suggests that for reasons outlined above, benefits accrue to more affluent areas. **Interventions designed to increase Internet access therefore need to be carefully managed and targeted, and holistic in character.** In addition to increasing connectivity, interventions also should take steps to address skills gaps and regulatory issues to ensure that the benefits of increased Internet access are not captured by existing elites, and reach poor and excluded people.
8. **If carefully managed and targeted, the marginal economic and non-economic benefits of digital access are particularly high for poor and excluded groups** by opening new channels of communication, providing access to knowledge and information and enabling new kinds of participation in economic and political processes:
    a) **Productivity and empowerment**: Internet access can have very real impacts on the lives of poor and excluded populations by: generating employment and self-employment opportunities, opening up markets, increasing market pricing transparency, facilitating financial inclusion. In twelve countries surveyed in Africa, 65% of people believe that their family is better off because they have mobile phones, and nearly three quarters say that mobile phones help save on travel time and costs[17].
    b) **Enhancing voice:** Digital communications can help to amplify the voices of geographically or politically remote communities, including by opening opportunities to engage with governments, share grievances, and raise instances of malpractice and fraud.
    c) **Improved information flows: Access to information is also a key way in which technologies can support poor** and excluded populations, for example by providing access to educational tools and healthcare advice. Empirical evidence shows this access to information can lead to reduced mortality rates in rural populations, increased educational outcomes and improved secondary education attendance rates, increased political good-will at local levels, increased civic engagement and community-level advocacy, and better safety.
    d) **Unlocking services:** New business models and efficiencies driven by digital technologies are allowing the private sector to deliver services like water, electricity and financial services to informal settlements and poor rural communities for the first time, with significant economic and social multiplier effects. Connectivity is increasingly seen as a key constraint facing the roll-out of these services and for communities accessing government services available online.
    e) **Enhancing agency:** Technology can be a tool for enhancing the agency of those who face traditional constraints on their mobility. Digital financial tools, e-commerce and e-work platforms are helping women, girls and people with disabilities gain a degree of financial independence, overcoming the social norms, mobility or time constraints that can confine them to their homes and exclude them from many economic activities.
9. **Despite these benefits, the spread of Internet access has been sporadic and uneven. 3.9 billion people, 53% of the world's population, do not have access to the Internet[18].** The vast majority of these people live in developing countries. 60% of people in developing countries do not have access to the Internet, rising to 85% in Least Developed Countries[19]. This is a purely quantitative measure of the number of people who use the Internet; however, quality and affordability of access are also important, and are further areas where developing countries are disadvantaged (see ***Figure 6*** 5 and 6). Furthermore, the digital divide within

[16] PwC, 2016. Connecting the world.

[17] World Bank, 2016. World Development Report: Digital Dividends.

[18] ITU, 2016. ICT facts and figures.

[19] *Ibid.*

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countries can be as high as that between countries. Worldwide, 71% of households in the bottom 40% of their countries' income distribution have no access to the Internet, a gap which is increasing[20]. Divides are similarly large along other demographic splits, in particular rural/urban, women/men and people aged over 45/youth aged 15-24, as illustrated in Figure 7[21]

Figure 5: Percentage of population using the Internet by country[22]

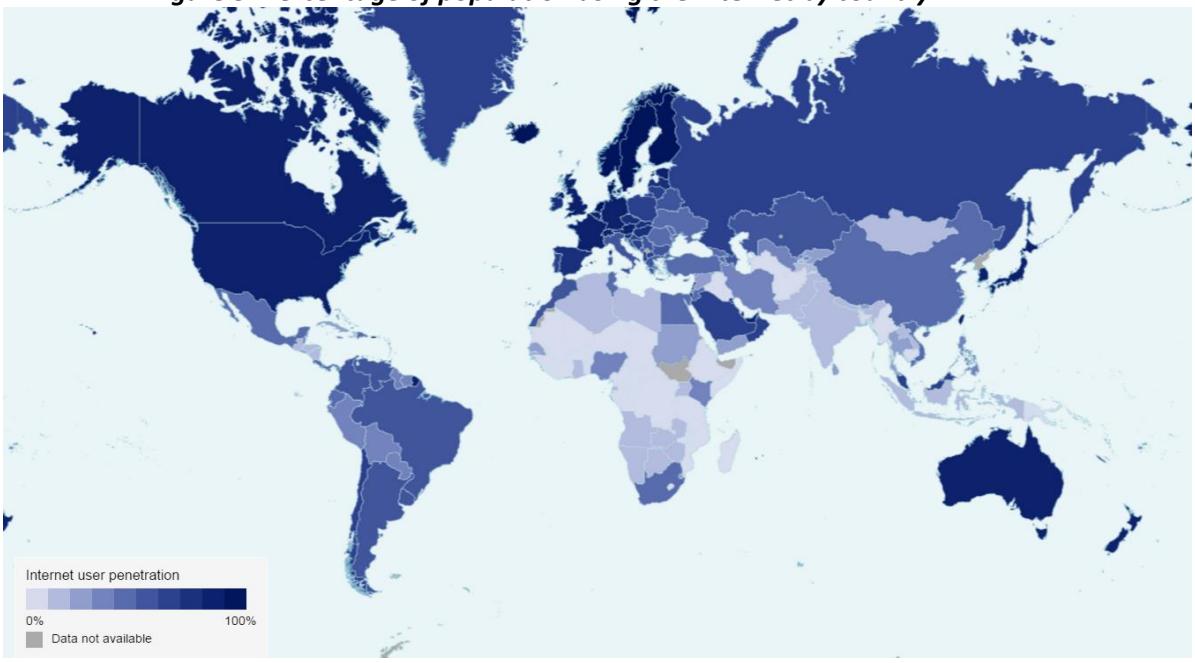

Figure 6: Status of digital access in programme countries

	Kenya	Nigeria	South Africa	Brazil	Indonesia
Broadband subscribers per 1000 *(ITU Digital Access Index)*	**0.0**	**0.0**	**3.1**	**10.1**	**1.3**
3G Coverage (% of population) *(GSMA Connectivity Index)*	**68**	**51**	**97**	**88.7**	**85**
Mobile Broadband Connections (% penetration) (*GSMA Connectivity Index)*	**11**	**10.1**	**58.5**	**51.5**	**24.3**
Gender Gap in mobile phone ownership *(GSMA Mobile Women)*	**7%**	**1%**	**-2%**	**No Data**	**10.1%**
Gender Gap in Internet usage *(GSMA The Mobile Economy, Africa, 2016)*	**56%**	**39%**	**8%**	**No Data**	**No Data**
(Note: further detail on context in programme countries included in Annex 4)					

[20] World Bank, 2016. World Development Report: Digital Dividends.

[21] *Ibid.*

[22] Internet Society, 2017

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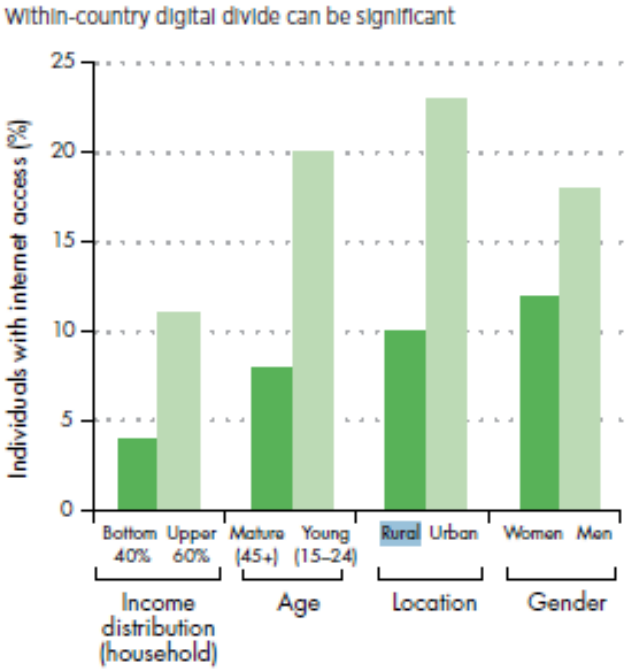
Figure 7: Digital divides among different demographic groups in Africa[23]



The need: addressing barriers to 'digital dividends' for development

10. **Digital divides are caused by sustained barriers that prevent potential development and prosperity benefits** from being harnessed**.** Configuration of these barriers will vary from country to country but common constraints exist (outlined in ***Figure*** 8 and analysed in further detail thereafter).

[23] World Bank, 2016. World Development Report: Digital Dividends.

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Figure 8: Barriers to harnessing 'dividends' of digital access

Barriers	Programme interventions to overcome barriers
Models and Enablers: Gaps in business modelling and capacity, and need for market validation of innovative and inclusive solutions constrain the expansion of affordable access.	Business development support[24] for inclusive models that provide cost-effective ways to expand affordable Internet access for low-income, marginalised communities.
Digital access is also inhibited by the absence of conducive regulatory environments, lack of locally-relevant and development-oriented content, as well as low levels of digital skills and inclusion.	Support improvement of relevant regulatory frameworks, enhance government digital services and increase digital skills and inclusion. Facilitate an environment where government digital services and suitable local organisations become a key source of development-oriented locally-relevant content (e.g. on education, health, employment, etc.)
Trust and resilience: Cyber-crime and cyber-security threats are a brake on governments, companies and individuals using the Internet to its full potential and expanding connectivity	National-level capacity building to help countries protect citizens and critical services/critical national infrastructure (CNI) from cyber-crime and cyber security threats.
Digital ecosystems: Internet connectivity delivers growth best where there is a rich local ecosystem of companies to support and use it.	Exploit existing tech sector networks, grow international linkages, and provide support to local tech companies.

Models and enablers

11. **Market failures hold back connectivity in developing countries.** In developing countries, companies, following commercial incentives, have focused on the easiest-to-reach locations - such as cities - and on the richest segment of the market. As a result, there is a gap in affordability and geographic reach that has meant roughly four billion people globally have yet to adopt the Internet and benefit from its development dividends. These are concentrated in developing countries and amongst poor and excluded populations, including in middle-income countries.
12. The market failure exists because existing technology solutions and the operating models underpinning them lead to firms reaching too rapidly the market frontier for investments in Internet connectivity (this is the point at which economic incentives to expand and deliver access via the current dominant connectivity model fall to zero)[25]. Hundreds of millions of people remain unconnected largely due to this barrier. This occurs where a network operator's predicted average revenue per user in a given population falls below the average cost per user of providing connectivity. In developing countries, average costs per user are often high, due to geographically-remote populations and lack of supporting infrastructure, such as a reliable electricity supply. Meanwhile, poverty and low demand for Internet access caused by a lack of trust, of

[24] Support may include technical assistance to enhance business modelling and capabilities (including technical, management and product/service development skills and systems): well-targeted innovation grant funding; and facilitation of access to suitable finance (debt or equity), i.e. where the development intervention reduces the asymmetry of information and risk perception, thereby making investment into inclusive businesses more attractive for the private sector; and if relevant provides advice on financial product development and investment opportunities – without getting involved directly in the provision of any form of returnable capital.

[25] Caribou Digital and the Digital Impact Alliance, Closing the Gap

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digital skills and of locally-relevant digital content, result in low average revenue per user[26].

13. **The main solutions to the network market failure problem involve harnessing new business models and scaling the use of proven alternative technologies.** New approaches exist that could address network market failure. These innovations, often involve a combination of new business models (e.g. ad-supported, cached, hotspot models[27]) and harnessing of proven technologies. These models are being developed for the lower income markets that exist beyond the market frontier for mobile networks.
14. **There are some key reasons why these technologies and the relevant business models are not being adopted faster – limited business capability of early-stage innovative firms** (including in relation to product/service development to match the needs of the targeted market segment), **the scarcity of suitable financing options and inappropriate regulatory frameworks.** While several such innovations have been successfully piloted in developing country contexts, there remains a scarcity of appropriately matched risk capital to finance commercialisation. Private sector funding sources (including angel investors[28], venture capital, banks) are reluctant to support new technologies and business models due to weak incentives to consider social impact in investment decisions. Other technological solutions (e.g. TV Whitespace) require changes to the regulations or laws of a country before they can be used.
15. **Analysis of the solutions shows that well-targeted innovation funding and accelerator/business development support for young firms can allow them to prove commercial viability of innovative and inclusive technology and models** for affordable digital access. This in turn allows them to access commercial finance sources that are interested in investing or lending once viability is proven. Facilitation of access to finance (debt or equity) at the appropriate stage can then allow the supported inclusive models to expand at scale and significantly increase affordable access for marginalised groups - thereby engendering a positive spill-over effect also for other markets and countries[29].

[26] *Ibid.*

[27] *Ibid.*

[28] Angel investors are wealthy individuals, or an investor network of wealthy individuals, who make very early stage equity investments in start-ups, usually between £100,000 and £1,000,000.

[29] Caribou Digital and the Digital Impact Alliance, 2016. Closing the Gap.

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Figure 9: Potential development interventions to support new technologies and business models for digital access

Changing the connectivity equation: barriers and interventions to support new technologies and business models for affordable digital access in developing countries

A range of private sector and non-profit organisations are developing new models to deliver basic Internet access that can serve excluded populations by reducing costs, extending reach in rural or remote areas and building inclusion for poor and excluded populations. The table below outlines the potential areas of development support for the various emerging models. Analysis of the potential support to digital inclusion innovations is also included in Annex 11.

Innovative model	**Rural Internet Service Provider (ISP) with alternative technology** Harnessing proven technologies to reduce access costs by broadcasting across longer distances and using less energy (examples include TV Whitespace, mesh networks, micro-cells)			
Areas for potential intervention	**Product / service development**	**Business capability**	**Access to Finance**	**Regulation**
	Support to refine the new product or service.	Technical assistance to build business capability (in modelling, planning, management, finance, etc.).	Facilitate links with financial institutions and impact investors. Addressing gap from pilot to commercial viability.	Support for regulatory improvements regarding spectrum licensing and management.
Innovative model	**Community networks** Organisations (both CSOs and for-profits) support to communities to set up and run their own communication networks using cheap, low-power technology - such as light-weight base stations that can be mounted on telegraph poles and powered by solar energy.			
Areas for potential intervention	**Product/service development**	**Business capability**	**Access to Finance**	**Regulation**
	Support to refine the new product or service to meet community needs.	Support to CSOs to develop sustainable community models Technical assistance to build organisational and community capability.	Facilitating links with financial institutions and impact investors. Addressing gap from pilot to sustainable revenue generation, with some potential need for additional funding from other actors.	Support for regulatory change to enable spectrum sharing. Generating buy-in by local power structures.
Innovative model	**Urban WiFi hotspot** The demographics of urban poor populations (particularly high population density) makes provision of WiFi hotspots a potentially viable business model. Made more affordable/free through caching of locally-relevant content, and through subsidies or advertising revenue from interested businesses.			
	Product/service development	**Business capability**	**Access to Finance**	**Regulation**

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Areas for potential intervention	Support to refine the service to meet local needs, including through improving the costing and pricing model.	Support to models providing locally-relevant and development-oriented content. Technical assistance to build organisational and community capability.	Financing gap from pilot to commercial viability. Facilitate links with other investors and donors.	Support where regulatory barriers or restrictive government policies create constraints (e.g. luxury taxation on mobile devices/SIM cards).
Innovative model	**Sponsored / earned data**			
Areas for potential intervention	**Product/service development**	**Business capability**	**Access to Finance**	**Regulation**
	Potential support to develop products/services that use sponsored/earned data to reduce cost to user.	Technical assistance to build organisational and community capability.	Financing gap from pilot to commercial viability. Facilitate links with other investors and donors.	Support where regulatory barriers or restrictive government policies create constraints (e.g. luxury taxation on mobile devices/SIM cards).
Innovative model	**Zero Rating**			
	Discounted as area of focus			

16. **There is strong consensus that investments in connectivity need to be complemented by 'analogue enablers'** (Figure 10 and 11). The World Bank's World Development Report 2016 on 'Digital Dividends' sets out how analogue enablers (including strong institutions, skills and competition) are critical to ensuring that the benefits of Internet access and ICT use are realised and distributed broadly. Without analogue enablers, opportunities may become risks that exacerbate the digital divide and inequalities in-country, rather than promote inclusive growth and development.

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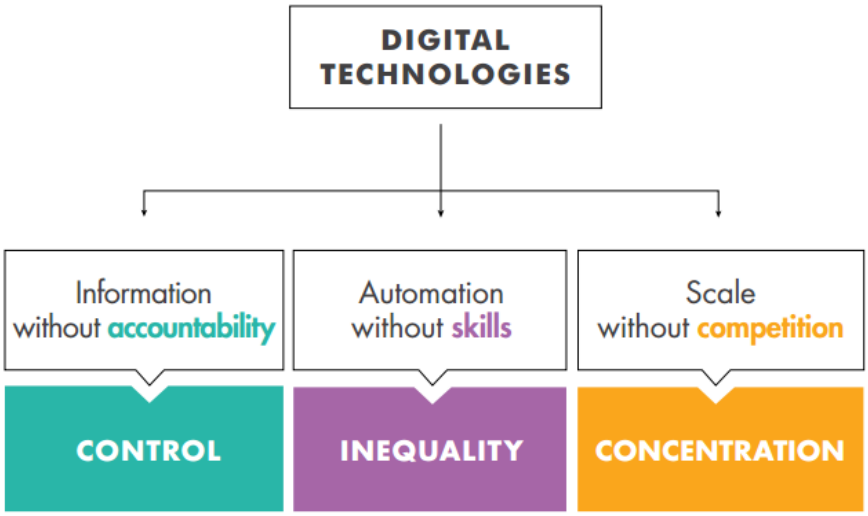
Figure 10: Without analogue complements, opportunities may become risks (i)



(Reproduced from World Bank, World Development Report 2016: Digital Dividends)

Figure 11: Without analogue complements, opportunities may become risks (ii)

ICT growth trend	Ideal outcome	Barrier	Risk	Mitigation
Increased collection and dissemination of digital data	More transparent and responsive public sector	Lack of public institution accountability	Government control	Improve the accountability of public institutions through increased data availability and transparency
Automation of transactions, services, operations, etc.	More efficient business operations	Lack of ICT skills or large skills divide between population segments	Increased inequality	Promote broad and inclusive programmes to develop the skills of marginalized and disadvantaged communities to use ICTs
Delivery of scale economies	Rapidly scaling business through the use of the Internet	Poor environment for competition (e.g. legal/ regulatory environment)	Concentration of market power and monopolies	Craft, implement, and enforce regulations and policies that foster competition in markets

(Adapted from World Bank, World Development Report 2016: Digital Dividends)

17. **The programme will focus on three aspects of the enabling environment for inclusive digital access**:
    a) Governance and regulation
    b) Digital inclusion
    c) Digital services and locally-relevant content

(a) Governance and regulation

18. **Effective regulation creates a level playing field for operators and helps promote market entry, thereby boosting market efficiency.** Appropriate policy and legal frameworks are needed to reduce the risk of governance failures and weaknesses - including regulatory capture, troubled privatizations, inefficient spectrum management, excessive taxation of the sector, or monopoly control of international gateways. Sector-wide reforms in ICT as well as improvements of regulations and guidelines affecting specific business models may both be needed depending on the country context. Suitable competition policy and regulation

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are essential as economies of scale brought by a typically network-based sector where first-mover advantage and lock-in effects play a significant role, could lead to harmful concentration and monopolies, creating divergence rather than catch-up. Inappropriate taxation can also hinder inclusive growth of the digital sector – for example taxes amount to 19% of total cost of mobile ownership, and telecommunications face higher taxes than other sectors. This combines to make adoption of services even harder and operators less likely to expand in less profitable areas.

19. **The principles underpinning regulation and governance of the Internet in each country impact on the level and nature of Internet service available to citizens and on the development dividends that can flow from digital access to marginal or excluded populations.** Good Internet governance based upon the commitment to a free, open, peaceful and secure cyber-space is important if the Internet is to remain accessible, inter-operable and an engine for digital growth and inclusive development**.** The government has a critical role to play in establishing regulatory and legal frameworks to help make this a peaceful and secure space - for example by expanding the legal framework for violence against girls and women to include on-line abuse. Part of good Internet governance is a commitment to a multi-stakeholder model in which the vital roles of the private sector, civil society and academia are recognised and respected.

(b) Digital Inclusion

20. As well as lack of connectivity, **poor and excluded people face additional constraints to digital inclusion**. Social norms may limit who can access the Internet - including how and how often they may do so. Heads of the household may regulate the family's use of mobile phones and the Internet, with particular constraints for girls and women. In such cases, and where individual ownership of computers and smartphones is limited especially by low income levels, public access points are critical. However, social norms also determine behaviours outside of the home and access to public spaces can be restricted for certain groups. For example, an Internet café may not be considered a suitable place for girls and women. It may be harder for girls and women to travel too far from their home due to safety concerns or limits on time due to a high care burden. Public access points need to be in safe and trusted and easily accessible places. They also need to be physically accessible for persons with disabilities. The type of technology used to get on-line matters. Standard text format is not accessible to everyone and assistive technology may be needed to allow people to access the Internet through a form of communication that works for them (for example, devices with a text-to-speech function for blind or illiterate people). Overall, there are several **opportunities to test, validate and scale up the adoption of technology solutions for digital access that are adapted to the needs of people living with disabilities.** These models usually require significant investment by the relevant parties and the technology may need further development, however the expected social return on investment is very high.
21. **Upskilling citizens in digital literacy and addressing social or cultural constraints**, such as physical mobility constraints for girls and women or gender stereotypes, **is essential for participation and equality. Country-specific solutions to give people the skills and incentives to participate in the online world for their own development and to access jobs in the new economy can ease the transition and drive digital benefits.** Poor and excluded people often have gaps in foundational skills, including literacy and language, as well as in basic or more advanced digital skills. Girls and women face particular challenges to education, such as a high domestic care burden or pregnancy often linked to early marriage. There are also specific challenges in digital skills training, including stereotypes about technology not being suitable for women, limitations in where girls and women can go to access the Internet and practice their skills, lack of positive role models, household-level constraints in using technology and a lack of appropriate content in a variety of languages and formats. Examples of potential interventions for digital inclusion and skills development are outlined in Figure 12 below. **Coverage is limited in rural areas and affordability is an issue for those at the lower end of the income spectrum.** The majority of the offline population is rural, poor and isolated, often without electricity and with low levels of literacy, speaking less widely spoken languages. A metered Internet (usage-based pricing) creates a 'metered mind-set' and is disproportionately exclusionary to those who can least afford to be online.
22. **As more government and financial services go online, Internet access becomes a precondition for people to participate in government and society.** Lack of affordable and secure digital access can cause exclusion

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from key services.

23. **When the Internet automates many tasks but workers do not possess the skills that technology augments, the outcome will be greater inequality rather than efficiency.** In developing countries, returns to education are higher and rising faster in ICT-intensive occupations, with downward pressure on wages for lower-skilled occupations. Digital exclusion puts workers at risk of seeing their skills and employability becoming obsolete.

Figure 12: Potential digital inclusion and skills development interventions

	Digital skills training to target populations	**Support digital inclusion/skills models to scale**	**Support to combined digital inclusion/skills and connectivity IBMs**	**Ecosystem support for digital inclusion actors**
Areas for potential intervention	Support* to skills development for target beneficiaries through proven intermediaries	Support* for digital skills/inclusion models building required digital skills/inclusion with evidence of sustainable scale-up and replicability of model **	Support* to connectivity IBMs that combine effective digital skills/inclusion delivery - e.g. by bundling relevant development (health, education, employability, etc.) content and training in business model.	Support for digital skills/inclusion ecosystem through technical assistance, convening, regulatory support and fostering new partnerships.
Examples of relevant organisations	Mobile Network Operators, community centres, libraries, local institutions.	Andela, Livity, AkiraChix, Good Things Foundation.	Project Isizwe, Avanti, Mawingu.	Ecosystem-level support.

* *Through technical assistance, facilitation of access to finance, and - where required - grant support*

** *Note - These would either i) build digital skills as a primary objective, or ii) build them for previously underserved populations as a result of broader skills training (e.g. for employability).*

(c) Government digital services and locally-relevant content

24. **Accountable public institutions that use the Internet to improve the delivery of services are important to empower and include populations. E-Government services** can **promote sustainable development** through three pathways[30]:
    a) More efficient and joined-up service *delivery* channels across government, including integrating various government services in online 'one-stop shops' via designated online portals/webpages.
    b) *Transparency and accountability* through open data and increased data availability.
    c) *Citizen engagement* through e-participation and digital service provision.
25. **There has been a sharp rise in the number of countries that are using e-government to provide public services online through one-stop platforms** – an approach that makes it easier to access public services. In 2003, only 45 countries had a one-stop-platform, and only 33 countries provided online transactions. According to the 2016 UNDESA[31] Survey, 90 countries now offer one or more single-entry portals on public information or online services, or both; and 148 countries provide at least one form of online transactional services. These include increased-government services for marginalised populations such as youth, migrants

[30] UNDESA, 2016. E-Government Survey

[31] UNDESA, 2016. E-Government Survey

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and people with disabilities. Figure 13 outlines key priorities and government appetite in programme countries.

26. **Government digital services can provide highly useful locally-relevant content that increases citizen engagement and developmental outcomes** (for example, provision of information and services related to education, health, employability, etc.).
27. In developing nations, e-government services have often played an active role in driving Internet adoption and use. Although still nascent in many countries, the proliferation of such offerings is changing the way citizens engage with government and access critical services, driving ICT uptake and incentivizing demand-side interest.
28. However, citizen use of e-government services has lagged behind supply. Uptake is related to income, age, education and urban residence. Only 5% of individuals in 12 African countries had used the Internet to obtain information from or interact with the government32. Internet based e-services will therefore be biased against poor and marginalised groups in developing countries. Support needs to be given to make citizens aware of such services, build their capacity to use them and ensure that content is truly relevant to their needs and priorities.
29. Additionally, **locally-relevant content can also be provided by the non-profit sector** (organised civil society, NGOs, community-based organisations focusing for example on social or economic development) as well as by the **private sector** (especially if content provision is bundled within the relevant inclusive business model). However functional **networks and partnerships** need to be established in order to facilitate the flow of useful information and services to the poorer and more marginalised communities.

Figure 13: Edited key findings from expert and post interviews on government roles in digital service delivery

Government digital services

Key findings from expert and post interviews include:

a. Supporting government digital services has high local political priority as well as significant state and bilateral investments to date, specifically in Nigeria and Brazil.
b. HMG staff in both South Africa and Nigeria indicated the need to consider both national and provincial government roles in digital service delivery to ensure investments and advisory are targeting appropriate levels of government.
c. While there is significant interest in e-government service provision, both Brazil and South Africa were identified as suffering from a lack of coordination and leadership in this area to drive forward coordinated reform initiatives.
d. While Nigeria has seen an increase in digital services and a growing uptake of those services, they are still constrained by to the relatively limited support to digital financial services such as e-banking (which is needed to enable the effective delivery of digital services).

(Adapted from DFID-commissioned DAI Research Report)

Trust and Resilience

30. **Cybercrime and cyber security threats act as a brake on development and prosperity gains.** The Internet has reached an inflection point at which coordinated and sustained efforts to govern and secure the Internet are becoming critical to maintaining public trust in and ensuring the future openness, freedom and security of the most powerful information infrastructure the world has ever seen[33]. In 2015, the FBI recorded over $1

[32] World Bank, 2016. World Development Report: Digital Dividends.

[33] The Global Commission on Internet Governance.

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trillion in reported losses due to cyber-crime in the United States (FBI, 2015), while the National Crime Agency confidently put the loss to the UK in the billions of pounds. The countries supported by this programme are also affected. Brazil ranks second globally in online banking fraud and financial malware - and the problem is rapidly worsening: banking fraud grew by 40% in 2015 in Brazil. This heavily constrains the digital and non-digital economies and increases the vulnerability of the poorest in developing countries - as they are least able to respond to an economic shock or failure of critical national infrastructure caused by a cyber-security incident.

31. In addition, **cyber Violence Against Women and Girls[34](cVAWG)** is a growing problem with potentially significant economic and societal consequences. This includes inhibiting women's use of the Internet and limiting its value for increasing voice and agency and enjoying other benefits of being on line. Cyber laws are often gender-blind and governments, and the private sector can be slow to respond to online violence. Child protection is also an increasingly important issue. This includes helping children navigate their online expression safely and tackling child abuse material. The Internet has transformed the scale and nature of risks to children. Criminals who seek to exploit children both on- and off-line prefer to do so in countries without legislation or strict enforcement. Countries need appropriate legislation against the misuse of ICT and, to meet the global nature of the challenge, internationally harmonised legal frameworks to protect children online.
32. The **primary benefit** of Pillar 2 will be that these brakes on growth and vulnerabilities to the poor will be reduced.
33. **Weak capacity, especially at the national level means cybersecurity is under-prioritised and economies left vulnerable.** A lack of board- and cabinet-level knowledge, alongside other factors, means that cyber security is not considered a priority by many governments. Mitigating the threat requires action and collaboration between government, law enforcement, judiciary, companies, civil society, the media and individuals. Increasing national cyber-security capacity is key to building resilience. This action is best prioritised and coordinated by a national cyber-security strategy, informed by a thorough cyber-security threats and capabilities analysis.
34. **The UK is a thought-leader in cyber policy and international cyber-security capacity building, helping governments design and implement national strategies.** The UK was one of the first countries to establish an international cyber-security capacity building programme to do this, five years ago. The team in the FCO that oversees that capacity building programme will lead on the Trust and Resilience work, drawing on experience from across government, a network of cyber officers at programme posts and strong relationships with private sector, academia and civil society. The Home Office supported 'End Violence Against Children Fund', which tackles on-line child violence, will be an important reference point and we will work closely with the Home Office to learn lessons and ensure the two programmes are complementary.
35. The secondary benefit of working to reduce these barriers will be the expansion of the cyber-security services market in the five partner countries, driven by a better understanding of cyber risks and a political commitment to address them. By taking the lead in providing this support HMG will strengthen the UK cyber brand in these countries and increase the likelihood that UK cyber security companies are contracted to provide solutions. Additionally, the interconnections between the economies and ICT networks of the UK and the five partner countries, especially in the financial sector, mean that their increased cyber-security will result in a reduction in cyber-crime losses to the UK economy.
36. **Effective strategic communications are an essential component of implementing major improvements in cyber security.** Increasing awareness across government, businesses and the wider public sector requires building a strategic communications capability that can use multiple communication channels and coordinate across other government departments, to drive meaningful behaviour change. The FCO will partner with Government Communications Service (GCS) and look to develop the strategic communication capacity of each of the five partner countries, awareness raising on cyber-security issues.

[34] cVAWG already exists in many forms, including online harassment, public shaming, the desire to inflict physical harm, sexual assaults, stalking, murders and induced suicides. The Internet is also used as a tool for prostitution and trafficking.

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Digital Ecosystems

37. **Thriving diverse local digital ecosystems are key to providing the services, content and technology necessary to build on activity targeting digital connectivity, as well as providing high-value jobs and growth opportunities.** A country can best convert connectivity into digital dividends when it has a thriving diverse and growing local ecosystem of innovative companies, particularly start-ups and SMEs, to provide digital services and take advantage of new opportunities – including creating high-value and highly skilled jobs – and grow by partnering with established global companies. Girls and women are not only underrepresented as ICT users, but also within the ICT industry itself – in start-ups, technology companies and ICT jobs in general. This lack of diversity limits innovation in the sector. There are too few positive role models to challenge stereotypes about women's use of technology and the tech sector does not generate sufficient services or relevant content for girls and women. Interventions that enhance lower-end digital skills and literacy, and provide support to the local tech sector (through training, mentoring, advice and related support, can lead to the growth of local firms and to the increase of relevant products and services for both local populations and international markets.
38. **Substantial primary and secondary benefit can be unlocked by brokering links between the local tech sector and international companies.** Evidence from the UK-Israel Tech Hub[35] and DIT shows that support to local companies to build partnerships with international companies, including those from the UK, can be effective in unlocking contracts and boosting exports from the local tech sector internationally. These partnerships could take the form of commercial deals - where international businesses will procure services provided by local tech businesses and vice versa - generating increased exports or FDI. They could also take the form of innovation partnerships, where both parties invest jointly to generate new solutions. Additionally, the programme's work on inclusive business models for affordable connectivity may offer opportunities for partnerships and investment with international companies once the models are validated and supported to scale up.
39. **Local tech hubs exist in most of the target countries** but while they can add value in supporting other local actors, **they are often in a fledgling state and have limited capacity for networking and making the international connections** necessary to boost the ecosystem and the digital economy as a whole. There is a good opportunity to harness the experience developed through the existing UK Tech Hubs to act as a delivery mechanism for the type of support that is still lacking in the programme countries. The UK Tech Hubs offer a model that is easily transferable and adaptable to the context, thereby responding to the needs of the local digital ecosystems. Relationships will be built with start-ups, entrepreneurs and established businesses in the tech sectors of the five programme countries. Additionally, the UK Tech Hubs can help to position the UK as the "go-to" partner in the tech sector and facilitate a two-way flow of business and innovation (see Annex 1 for more detail on the Tech Hub approach).

Contextual considerations for intervention

Holistic, multi-pillar approach

40. **A multi-dimensional, holistic approach is required if more wide-spread connectivity is to deliver for inclusive development and broader prosperity.** The programme will offer a holistic package of support, with clear synergy across pillars, in order to achieve full impact and avoid risks of exacerbating digital inequalities - as elaborated below. Specific criteria (Figure 14 and 15) will be used to ensure targeting of programme and quality of implementation.
41. **'Analogue' enablers are crucial to yielding full value from support to connectivity**: The World Bank notes that "*access to the Internet* is critical, but not sufficient. The digital economy also requires a strong analogue foundation, consisting of regulations that create a *vibrant business climate* and let firms use digital technologies to compete and innovate; *skills* that allow workers, entrepreneurs, and public servants to seize opportunities in the digital world; and *accountable institutions* that use the Internet to empower citizens[36]."

[35] http://www.ukisraelhub.com/

[36] World Bank, 2016. World Development Report: Digital Dividends, p.30

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42. **Digital technologies raise the opportunity cost of not undertaking an integrated, multi-pillar approach:** "Digital technologies amplify the impact of good (and bad) policies, so any failure to reform means falling farther behind those who do reform. Secondly, while *digital technologies* are no shortcut to development, they *can be an enabler and perhaps an accelerator by raising the quality of other interventions*. Online business registries ease market entry for new and innovative firms. Well-designed Internet-based training helps workers upgrade their skills. New media platforms can increase citizen participation. And digital enablers—digital finance, digital identification, social media, and open data—spread benefits throughout the economy and society, further strengthening the interaction between technology and its complements."[37]
43. **Sustainable business models for last-mile connectivity require demand-side and enabling environment solutions**: "Regardless of the approach, technology and supply-side solutions are not enough; sustainable business models— not to mention social impact—require *affordable service*, sufficient *local content*, and relevant services to attract and retain users, and ways to generate sufficient awareness and skills among underserved users. A robust approach to fostering demand is integral to success for any access innovation[38]."
44. **ICT can heighten inequality without appropriate support to analogue enablers**: Early econometric studies have shown that the share of ICT capital stock of a country has a direct effect upon income inequality within countries[39]. This is demonstration of the 'income inequality paradox': on the global scale, ICTs drive growth and reduce inequality, but on the national level (particularly in developing countries) they appear to drive growth while contributing to rising inequality. To mitigate this effect and ensure opportunities do not become risks, analogue complements to ICT infrastructure investment are crucial. As the World Bank Digital Dividends report notes, the "analogue enablers" embodied across the programme pillars are absolutely critical to ensuring that the benefits (or dividends) of Internet access and ICT use are realized and distributed broadly. The analogue complements are conditions that foster competition and innovation on the supply side and inclusion on the demand side.
45. There are a number of inclusion issues that cut across the three programme pillars. Pillar leads will have an agreed understanding of these issues including how each pillar will contribute to addressing them (Annex 9 sets out these issues in more depth). The broad issues are as follows: i.) Where and how to connect people matters. Internet provision must be in places considered suitable for girls and women and accessible by persons with disabilities (PwD). Content must be available in a variety of forms to meet different needs such as blindness or illiteracy; ii.) Different groups have different price elasticity depending on individual income and control over finances; iii.) People must have the skills, incentives and confidence to go online in a safe way. Delivering this will need to take account the specific needs and constraints of different poor and excluded groups; iv.) There must be an enabling environment and relevant legal and institutional framework that supports and encourages unfettered Internet access and use by all people. Programme quality and targeting criteria (Figure 14 and 15, Annex 10) will be used to ensure the programme takes consideration of these varied characteristics.
46. **It will be important to draw close parallels between programme activity and other related development programming in target sectors.** For instance, aligning gender-focused work with related activities to support girls and women. Likewise a strong understanding of context is important to ensure programme impact and gains for excluded populations. It will be important to take into account constraints (e.g. energy access) on programme activities, and identify opportunities to work with others to deliver inclusion across a range of dimensions for the populations most in need. There will also be opportunities for synergies with ongoing programmes that use digital channels to deliver their expected development outcomes, e.g. in the fields of education, health, employability, entrepreneurship development, financial inclusion and e-governance.

[37] *Ibid.*

[38] Caribou Digital, USAID and DIAL, 2017.

[39] IMF working paper, 2008.

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Figure 14: Indicative programme quality criteria

Inclusion

- **Affordability and accessibility -** allowing marginalised populations to benefit; sustainably targeting poor and excluded groups.

Scalability

- **Ability to scale** - models supported have the potential to scale beyond proven context - with adaptation as needed - to increase impact.
- **Commercial viability and sustainability -** base-of-the-pyramid models supported by the programme are commercially viable and become sustainable following private sector investment / access to appropriate finance.

Transferability

- **Relevance to other (low-income) contexts -** activities are relevant to contexts that are equally or more excluded and low-income; and can potentially be transferred - with adaptation as needed.
- **Lesson capture -** lessons are captured in a way that can be applied elsewhere - especially in other countries/contexts that face extreme poverty and exclusion - and shared with relevant stakeholders.

Robust commercial design

- **Diverse consortia encouraged -** ToR developed to encourage consortium bids, with a wide range of suppliers (e.g. local expertise, deep technical knowledge, organisations of different scales).
- **Portion of local/international contract value stipulated -** minimum and maximums for amount of work to be undertaken by international vs local firms (e.g. lead supplier limited to a portion of contract work).
- **Supplier Review compliance -** programme will be implemented in line with DFID's Supplier Review recommendations, and will model enhanced behaviours for rigorous oversight and commercial management arising from this.

Needs-based approach: flexibility and tailoring according to context/group

47. **A needs-driven approach that responds to (a) local context and (b) the needs of different groups will be essential to a successful intervention.** Different barriers and incentives to getting online exist for different groups, and interact and differ across contexts. The programme team will use a diagnostic approach that takes into account local variations and considers which package of activity would have the highest impact. It will also be essential to build flexibility into programming to meet needs of individual countries effectively, respond to changing digital ecosystems and fine-tune targeting of interventions to ensure relevant support is directed to emerging needs of marginalised and excluded communities. Interventions will be tailored to each country by creating a bespoke package that meets the needs identified through diagnostic and research work. Country-level diagnostics will leverage HMG in-house expertise at centre and post in their first phase to allow for well-informed programme set-up, and will later be complemented by additional expert input from the implementing partners, as needed. The in-depth diagnostic in each country will determine funding allocation and the focus of activities in different pillars depending on priorities and feasibility in each context.

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Figure 15: Targeting of intervention to specific types of marginalised communities and groups

Target beneficiaries	Rural	Peri-urban	Urban
Low-income groups	Characteristics: limited access to capital, market, skills and training. Geographical isolation and low access to information, including prices and government information. Access challenge: communities with no existing affordable network coverage, weak skills and limited relevant local content. Proposed intervention: Network expansion to underserved communities through alternative affordable models. Interventions to support skills and local content development.	Characteristics: limited access to capital, markets, skills and training, some access to information via urban links. Access challenge: communities without existing affordable network coverage OR already within coverage but unaffordable access for Base of the Pyramid (BoP). Weak skills and limited local content. Proposed intervention: Network expansion to underserved communities through innovative affordable models OR alternative models to serve BoP customers leveraging existing devices and access technologies, shifting burden of willingness to pay. Interventions to support skills and local content development.	Characteristics: limited access to capital, markets, skills and training, due to poverty and exclusion. Greater access to information through proximity to urban core. Access challenge: communities already within coverage but unaffordable for BoP. Greater skills transfer, but constraints on relevant local content. Proposed intervention: Alternative models to serve BoP customers, leveraging existing devices and access technologies, shifting burden of willingness to pay. Interventions to support skills and local content development.
Additional interventions to target excluded groups			
Low-income women and girls	Characteristics: facing challenges outlined for low-income groups as above. In many contexts, limited access to resources and information exacerbated, with rural women and girls particularly disadvantaged. Safety and cultural norms may constrain women's mobility and participation in public spaces. Intervention: Support interventions that encourage women and girls participation and benefit from access, and tackle cultural norms that might pose a barrier. Ensure content supported targets women and girls, and monitor impact on these groups.		

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Low-income/marginalised people with disabilities	Characteristics; considerable additional barriers to those outlined above depending on nature of disability. Discrimination and constraints to mobility common for many groups. Intervention: Interventions to support specific technology where required for people with disabilities, and ensure content development targets their needs.
Other excluded low-income groups	Address on needs-specific basis (e.g. where facing ethnicity-based, gendered, or other exclusion/discrimination).

* *Characteristics frequently intersect so those used here as illustrative; disaggregated data will be used to allow for monitoring of impact on specific groups*.

(a) Country/context-specific considerations

48. The barriers, enabling conditions and inequalities discussed above exist in a variety of configurations across programme countries. Activity and communications must be tailored accordingly. Individual country configurations result in different digital needs, opportunities and potential impacts. An outline of existing variations can be drawn by comparing country rankings on three indices: United Nations ICT Agency (ITU) ICT Development Index (IDI) - Access pillar (infrastructure); ITU IDI - Skills pillar; and, the World Economic Forum's Global Competitiveness Index - Firm-level technology absorption sub-index. A country that ranks poorly in the ITU IDI Access pillar would have a high need for increased digital access; however the opportunity for and benefit of any increase would be limited if the country also ranked poorly in terms of skills and technological readiness. There is some correlation between the three indices - countries tend to perform well or poorly across all three indices, emphasising the need for a holistic approach. However, there are some countries that buck this trend and therefore represent 'low hanging fruits': where there is high need coupled with comparatively high performance in skills and technological readiness. Activity in each country will also need to consider the current capabilities and prioritisation of digital and cyber matters domestically. For example, the development of a national Digital Strategy or Broadband plan and engagement in international fora should inform the context of any activity in that country[40]. Considering alternative programme elements or structure – such as triangular learning between the programme countries or within their regions – may be of benefit.
49. Communication is also an important aspect. Given the range of capabilities in digital and cyber across the programme's countries, programme delivery and communications must be informed by the contextual environment of each country. For more economically developed countries, and those with greater digital and cyber capabilities, the communication strategy should reflect the cooperative and collaborative nature of the programme including at the government-to-government level.
50. Regional variation can be pronounced. For example, in Africa the key barrier to access is that most individuals tend not to have developed digital skills[41]. Whereas, in Asia, GSMA found that non-users do not understand the value of the Internet beyond entertainment, ringtones and other low-value-add content. Therefore, concerted efforts are required to raise awareness and boost demand and use of Internet access for productive and development purposes, by educating communities as to the benefits and value of using the Internet to access locally-relevant services that have a significance for their social and/or economic development [42].

(b) Group-specific considerations

[40]For example, Brazil's ongoing development of a national Digital Strategy and engagement in international fora should inform the context of any activity in Brazil.

[41]McKinsey, Offline and falling behind, 2014

[42]GSMA, Digital Inclusion Programme Report, 2014

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51. **The benefits of digital access have not been distributed equally - with poor and excluded groups particularly disadvantaged.** While digital technology is spreading, the benefits have not spread as equally, as nearly 60% of the world's population is still offline, with access especially poor or costly in developing economies, rural areas and for girls and women. Only 15% of the world's citizens have access to affordable high-speed Internet and the prices for services vary enormously[43].
52. **Girls and women are less able to harness benefits from digital technologies.** For girls and women in developing countries, the Internet can be a gateway to a host of tangible benefits, such as job and education opportunities, and to less tangible benefits, such as confidence, self-esteem, and empowerment. However, the connectivity gap becomes a chasm when it comes to being poor and female. Girls and women in the poorest countries are almost a third less likely to have access to the Internet than men, and the gap increased by 2% between 2013 and 2016. Analysis by ONE[44] suggests that, given current trends of Internet penetration, over 71% of Africa's girls and women will still not be online by 2020, pushing the connectivity gap between men and women to over 26%[45.] Lack of know-how and high cost are the two main barriers keeping girls and women offline. Studies have shown that narrowing this gender gap can deliver significant social benefits and also strong revenue streams for mobile operators: adding 300m women subscribers in low and middle-income countries would generate US$13bn in operator revenue[46]. Detail on the gender access gap in each of the proposed programme countries is included in the Appraisal Case.
53. **People with disabilities could benefit in particular from broader and more affordable digital access, but they risk being left behind.** Individuals that have limited mobility, sight, speech, or hearing may now aspire and achieve previously unattainable goals through the use of a computer or mobile phone and the Internet. Opportunities include education (e.g. participating in online courses), health (e.g. searching for health information and telemedicine), employment and work (telemarketing), and enhancement of friendships and social participation (networking). These are all important examples of the benefit unlocked by technology for people with disabilities. Policies and interventions should take into account type of disability , as a "one size fits all" approach to ICT for disabled populations will miss people with certain disabilities. Chadwick *et al.* (2013)[47] for instance argue that we should distinguish between physical and intellectual disabilities in order to ascertain how specific situations may influence access to ICT.

Why should HMG intervene? UK comparative advantage and fit to objectives

What is the UK's comparative advantage in intervening, and how will it add value?

54. **The UK's policy leadership and international influence in digital and ICT make it well placed to deliver activity in this area.** The UK is one of the few countries with the ICT knowledge and international reach for such a programme. It has strong expertise in the four areas needed for a successful intervention: business; development; technology and innovation; and international relationships; and the UK has the capability to bring together the necessary skills across government to deliver an effective multi-disciplinary approach. The UK's policy leadership and ambition in this area is set out in the following UK strategies: UK Digital Strategy; UK National Cyber Security Strategy; UK Government Transformation Strategy; and DFID's Digital Strategy 2017-2020: Doing development in a digital world (forthcoming). The UK is also considering making cyber security a theme of its Commonwealth agenda in 2018-2020.
55. **Moving from fragmented to holistic intervention.** This Prosperity Fund programme adds value by implementing the lessons learned from other development programmes, particularly in taking a multi-pillar approach that address supply-side barriers (connectivity models), demand-side barriers (trust; skills; content; services) and system-level barriers (regulation and governance) building on UK expertise. To date, the majority of existing donor and private programmes have focused on individual, isolated levers (such as

[43] World Bank, 2016. World Bank Report: Digital Dividends

[44] ONE, 2016. Making the connection.

[45] *Ibid*.

[46] Intel, 2013. Women of the World Report.

[47] Chadwick, D., Fullwood, C., & Wesson, C., 2013. Intellectual disability, identity and the Internet - in 'Handbook of Research on Technoself: Identity in a Technological Society'

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capital-intensive investment in infrastructure) rather than a holistic approach that draws on a broader range of factors. An integrated intervention is needed to tackle market failures and weaknesses in the overall system that prevents marginalised and poor people to benefit from the development dividends of digital access. For instance, a number of large policy and programme initiatives focus on building infrastructure but are not integrated with cyber-security capacity building. This separation creates the risk that protection of Internet users, their data, and the critical information infrastructure they rely upon will not keep pace with the expansion in access. The resulting increase in cyber-crime and disruption to Internet-dependent services will be a brake on prosperity and development unless support is provided to a more integrated approach to the promotion of digital access.

56. The proposed programme will also be among the first to support the **market validation of new, low-cost and last-mile connectivity innovations to reach out to marginalised communities**. Although there is substantial interest in this sector amongst other development players and the international private sector, to date most have remained reluctant to invest resources into new ways of broadening basic digital access as a crucial enabler of development. Several stakeholders lack the technology or development expertise and the strategic focus to take on the leadership role required to deliver a programme of this nature independently. There is therefore a clear gap for UK leadership and expertise and the opportunity of having the 'first mover' advantage through a programme of this nature and scale, to bring together other stakeholders, and to inform the development community through the insights ad evidence generated. Furthermore, the programme will build on and be complementary to the work of other organisations and international players who are supporting the spread of low-cost consumer electronics, and digitally-enabled business models for private sector provision of energy, water as well as education, health and financial services.
57. **Convening and leveraging other stakeholders.** It will be essential to link up with other stakeholders, to avoid further fragmentation of the landscape, and act as a locus for activity and funding. There is significant interest from a range of players from across the private sector, donor community, and from governments in partner countries and potentially large pools of funding to be unlocked. DFID will use its existing strong relationships with international organisations and development banks (including CDC and the World Bank), and investment groups such as PIDG, to ensure these players focus on complementary investments in the base-of-the-pyramid markets opened up through the support to inclusive business models provided by the programme. Furthermore, the programme will seek to leverage resources of the private sector and actively look for cost-sharing. Development donors (Norway, France, USA) and philanthropic organisations (Omidyar Network) have expressed interest in the UK programme and may expand our approach once the holistic model is tested and has generated useful insights for adaptation and replication in other geographies
58. **A cross-HMG approach.** Through this Prosperity Fund programme the UK can combine the expertise of the relevant departments to demonstrate the value of a multi-disciplinary approach. HMG can thereby influence the other key actors, such as the US and World Bank, to adopt it, and building better synergies with the work being carried out by the global tech companies (Microsoft, Facebook). By influencing a better approach internationally we will support better development outcomes. There will also be a double win for UK prosperity: we will have prevented a brake being applied to Internet-driven growth; and we will have positioned the UK and our tech industry at the forefront of the best-practice approach to expanding basic Internet access for development and building thriving digital economies. Finally, this will help build learning and expertise about digital inclusion and access, which will have wider application across several DFID-funded initiatives that use (or plan to use) digital channels to deliver developmental outcomes in the fields of health, education, energy networks, financial services, employability and e-governance.

Strategic fit: Link with to Prosperity Fund theory of change and NSC strategies

59. **The programme's Theory of Change is aligned with that of the Prosperity Fund.** Digital access is a cross-cutting, enabling intervention which will complement and support all other Prosperity Fund interventions. The programmatic approach is modelled on the Prosperity Fund's theory of change, with a set of interventions that address: investment in human capital/connectivity, innovation, financial and economic reform, policy and regulatory capacity and ease of doing business. The programme is holistic, delivering across both the 'supply' and 'demand' side, along with systemic policy and regulatory work.
60. **This bid also fits with emerging NSC strategies**:
    a) Prosperity: UK business wins, supporting key emerging markets through a more conducive and

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dynamic business environment.

b) Security, Migration and Development: promoting transparency and accountability (particularly in managing public resources), providing jobs and opportunity for young people, and enabling delivery of the Sustainable Development Goals.

c) Values: using British leadership in technology and policy expertise to promote accountability, prosperity and development alongside HMG values of responsible Internet use and governance.

61. **The programme will link to other DFID, HMG and global development player activities and will identify opportunities for additionality and collaboration.** The programme will seek opportunities for additionality and collaboration, including crowding in private sector investment and development finance. The programme will also ensure strong linkages are built between the Digital Access programme and DFID's or other stakeholders' initiatives that focus on issues directly relevant to digital access - including the DFID/GSMA Strategy Partnership, the Energy Africa campaign, and USAID Power Africa Initiative and digital inclusion work. The Programme will liaise with organisations working in the same sector, including CDC, the Private Infrastructure Development Group (PIDG) and the East Africa Infrastructure Fund. The Programme will also ensure coordination and synergy with DFID's (and HMG's) wider ODA-focused health, education, economic development and inclusion work in target countries. Initial consultations have demonstrated appetite amongst these programmes and external organisations for enhanced digital access in the programme countries as a key enabler to activities and services that can be delivered to marginalised communities through digital channels; and a strong desire to collaborate in these areas, including on highly visible platforms such as the World Economic Forum.
62. **The design of the programme has focused on countries identified as high-priority by the Prosperity Fund; the selected programme countries are also included in the top 20 countries by size of offline population.** Country selection is considered in greater detail in the Appraisal Case, Figure 20, and Annex 3.

Impact and outcomes of programme

63. The flagship result of this catalytic programme will be three-fold:
    a) The **learning** from the testing of a unique holistic approach to promoting affordable and safe digital access for development, based on the World Bank model and potentially useful for other donors and development banks intervening in this sector;
    b) The validated inclusive business **models** that will be able to scale up and deliver digital access in innovative ways; these may become viable in other markets and expand to other geographies.
    c) The **enabling and amplifying effect** of digital access for the cost-effective large-scale delivery of information and services that are crucial to marginalised populations' development outcomes in education, health, employment, participation, etc., leading to *better value for money* of government interventions and aid programmes.
64. Additionally, from the quantitative perspective, as an outcome of the programme activities in five countries (and in particular as a consequence of the testing of new connectivity models) approximately 1.5 million previously-excluded people are expected to gain affordable basic access to the Internet. The focus of increasing access will be on marginalised, lower income communities, who stand to benefit from the development dividends of the Internet - if safe, secure and affordable basic digital access can be made available to them through the roll-out of inclusive business models applying innovative last-mile technology solutions that reach out to the underserved. Once these models are validated and scaled up, their multiplier effect will expand the outreach to many more communities and people.
65. Economic appraisal (detailed in the Appraisal Case and Annex 5) suggests that the above-mentioned outreach to new users could potentially yield a net primary benefit due to GDP growth of between £6.7 billion and £15.1 billion over a 10-year time period. In addition, indirect primary benefits, through crowding in private sector investment and development finance to innovative connectivity solutions and improving regulatory environments could range between an estimated £57.5 billion and £137.1 billion.
66. Country-level diagnostics, combined with the holistic nature of the programme, will ensure that interventions are tailored to directly benefit high-need groups and avoid elite capture. While the focus on the more marginalised and lower income populations may push the macro-level economic benefits towards the lower end of the estimates (due to the tension between maximising economic growth and promoting

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inclusion), it will increase distributional and non-economic benefits, leading to higher levels of poverty reduction. It will ultimately also contribute to more inclusive and sustainable economic development.

67. Secondary impacts through improved UK export opportunities, if based solely on connectivity improvements directly supported by the programme, are valued at between £-16.1 million (indicating increased exports are insufficient to justify the costs of the programme alone) and £65.0 million. When improved connectivity funded by finance crowded in from other actors and improvements to the regulatory environment are taken into account, secondary benefits to UK exports could range between £282.7 million and £674.0 million.

Figure 16: Note on calculation approach for economic modelling

The cross-cutting nature of Internet access and the digital sector make it challenging to calculate the full range of social and economic impacts that digital access can have. The cost-benefit analysis of programme impacts focuses on the causal link between Internet access and GDP growth, because this allows the impact of digital to be quantified in a linear way. However, the exact nature of this causal link is contested; these figures should therefore be treated as best estimates indicating the order or magnitude of GDP effects based on available data.

Proxy values were used to estimate the impact of the programme in terms of number of additional people connected per country. This can be linked to GDP growth through estimates produced by the World Bank and IADB. The impact on UK exports as a consequence of the projected increase in GDP was evaluated. Finally, the impact of regulatory reform and crowding in private sector finance on both primary and secondary benefit was estimated, using the results from similar catalytic programmes. The predicted magnitude of these impacts was verified by comparison with the results of other DFID programmes that aim to leverage funding from other actors. A net present value (NPV) model was used, which set programme costs against the value of impact (modelled over a 10-year period, with impact delayed by one year to allow for activity to generate returns). The NPV returns a negative value where evidence of impact is low because of discounting and including programme costs. Detail on the approach taken is outlined in Annex

68. The programme will seek to amplify its impact beyond the direct effects of its primary activities through the following four channels:
    a) **Market validation and de-risking:** Technical assistance for business modelling and capability, facilitation of access to suitable finance and - where needed - well-targeted grant funding will be used for market validation of new pro-poor connectivity solutions, thereby contributing to the de-risking of additional investment in providers of these solutions. The programme will actively seek to use its strategic support to innovative business models to leverage further finance for such providers. The effects of this are included in the quantified impact figures, calculated using the approach outlined in Figure 16 and Annex 5.
    b) **Additional sources of funding for programme activities**, either from other donor organisations or the private sector.
    c) Supported **improvements to the operating environment**, regulations and greater connectivity lead to increased investment (internal and external) and broad-based economic growth beyond the tech sectors.
    d) **Dissemination of learning and evidence** on holistic approaches to promoting digital access, to influence policy and to encourage and direct further work in this area. This could include multi-stakeholder influence and partnerships (e.g. with the WEF partnership).

Wider analysis of primary benefit

69. The literature suggests that the primary benefits of the proposed investment will go well beyond the GDP effects that are quantified. While these additional benefits could not be monetized here, they are discussed below, with evidence provided where it is available. The programme activities have the potential to impact

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greatly on the poor and marginalised, including girls and women.

70. A 2014 study by Deloitte[48] highlights the significant potential benefits for extending basic affordable connectivity to poor populations. If developing countries achieved Internet access levels seen in developed markets, long-run productivity could increase by an average of 25%. This effect is most pronounced in regions currently characterised by lower current levels of productivity or lower Internet penetration rates. In India, long-run productivity could increase by 31%, while Africa and South and East Asia may experience productivity increases of about 29% and 26%, and productivity in Latin America could increase by 13%. The report estimates that if Internet access in developing markets rose to match that in developed markets, the population living on less than $1.25/day could be cut by a third. The additional impacts of reducing poverty can be significant, bringing about gains in health and education, for example.
71. Enhancing connectivity for girls and women could also yield significant benefits. An Intel[49] study found that providing Internet connectivity for an additional 600 million women within three years would result in a GDP increase of between USD 13 to USD 18 billion.
72. Enhancing ICT use could also bring environmental savings, cutting projected 2020 global greenhouse gas (GHG) emissions by 16.5%, and leading to an estimated 1.9 trillion USD in gross energy and fuel savings[50].
73. Additional benefits of connectivity could include:
    a) Reduction in mortality rates (especially for rural populations);
    b) Increased life expectancy for HIV/AIDS patients;
    c) Increased educational outcomes and improved secondary education attendance rates;
    d) Inclusion and awareness raising for marginalised groups;
    e) Reduced unemployment through enterprise development and job creation.

Secondary benefit

74. Some of the benefits of the programme, particularly through the channel of increased GDP, will benefit all countries. However, we expect specifically UK businesses to benefit for a number of reasons:
    a) The UK has a comparative advantage in the ICT sector and industry bodies. TechUK and Innovate UK assess that UK companies in this sector are ready to seize new export opportunities.
    b) Programme design has included consultations with UK ICT companies and experts like Tim Berners-Lee, the inventor of the World Wide Web, and industry has been highly supportive of the concept.
    c) The programme will work in countries that already have good conditions for UK exporting companies (i.e. because of language or a strong UK brand). UK ICT and cyber-security companies are internationally competitive, as evidenced by their ranking on international indices (see Figure 17 below).
    d) The majority of the programme countries are English-speaking and Commonwealth members, giving UK firms an edge.
    e) The DCMS Tech Hubs will play an important role in stimulating the digital ecosystem and identify opportunities for international and UK business partnerships.
    f) Through a cross-HMG approach we will also co-ordinate the programme with trade promotion activity by DIT, so that UK companies are primed and ready to benefit from spill-overs.
    g) Industry will be widely consulted during the design of the country-specific programme activities, in order to identify where the business sector and international expertise can add most value. The UK has a strong digital sector, which will be well positioned to take advantage of the business opportunities this creates.
    h) UK leadership through this programme will help to position the UK as the 'go-to country' for tech and for growing innovative digitally-advanced businesses across all sectors as the UK's expertise and competitive advantage is showcased. The Programme has also secured a small non-ODA budget to be managed by DCMS, working with DIT, to focus on engaging UK companies.

[48] Deloitte, 2014. Value of connectivity: economic and social benefits of expanding Internet access.

[49] Intel, 2013. Women of the World Report.

[50] The Climate Group (on behalf of GeSI), 2008. SMART 2020: Enabling the low carbon economy in the information age

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Figure 17: Evidence of UK PLC competitiveness in ICT/digital

- ✓ UK digital exports are rising fast and could rise faster:
  - o The UK's telecommunications services exports are growing by 11.94% per annum and computer service exports by 14.26%.
- ✓ UK companies understand e-commerce :
  - o the UK Internet economy is the largest of any G20 country (as a proportion of GDP)[51];
  - o e-commerce accounted for 20% of UK business turnover in 2013 (the 3rd highest percentage in the EU);
- ✓ The UK is ready to seize digital opportunities:
  - o it is the 3rd most competitive country according to the World Economic Forum's 2016 Global Competitiveness study;
  - o it ranks 4th in the UN's ICT Development Index' (behind the South Korea, Denmark and Iceland).

Gender Equality: International Development Act 2014 / Public Sector Equality Duty: Equality Act 2010

75. Girls and women in developing countries are disproportionately likely to be offline and as such are key target beneficiaries for this programme. An Intel study52 found across the developing world, nearly 25% fewer women than men have Internet access, with the gap about 45% in sub-Saharan Africa and 35% in South Asia, the Middle East and North Africa; and 50% for poor urban women. The more embedded and important digital access becomes to participation in economic, social and political life, the greater the consequences of being digitally-excluded will be. Therefore, ensuring that girls and women benefit strongly from increased digital access will be an important focus of this programme.
76. Enhanced digital access can help girls and women overcome some of these existing inequalities and social constraints. In addition, enhancing connectivity for women could also yield significant benefits in terms of GDP growth.
77. Reducing gender inequality will be a central concern for this programme. The country-specific programme activities will be designed to tackle existing gendered digital inequalities and maximise the opportunities presented by bringing girls and women online. A detailed overview of gender considerations in relation to programme pillars, and phases of the programme design, delivery and evaluation, is provided in the appraisal case.

Summary of strength of evidence

78. The table below (Figure 18) provides an assessment of the strength of evidence available to support the design decisions taken in this business case.

[51] Boston Consulting Group, 2015. The Internet economy in the G20.

[52] Intel, 2013. Women of the World Report.

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Figure 18: Strength of evidence assessment

Area		Strength of Evidence	Summary of existing evidence / Reason for assessment
Holistic model and theory of change			
Need for a holistic approach, delivering supply-side, demand-side and systemic aspects of digital access, is required to fully reap its development dividends and prevent the risk of increasing inequality.		Medium/High*	World Bank Digital Development Report key source, based on review of all literature; this will be an area the programme explicitly seeks to test.
Programme design and activity areas			
Market failures on the financing of / investment in new models to support affordable and inclusive Internet access limit their growth.		Medium/High*	Financing gap identified as key barrier in recent literature[53]; approach is novel and relatively unproven; this will be an area the programme explicitly seeks to test.
Trust and resilience are needed to support strong digital economies and protect citizens, infrastructures, and institutions from cyber risk.		High	Cost of cybercrime, including to poor and excluded populations, is well documented.
Weak systems hold back digital access for poor and excluded.	Lack of locally relevant content is a barrier to demand for access.	Medium/High	Clear evidence of inequality in local content, and barriers around language; less evidence around precise content levers (e.g. Government services).
	A weak regulatory environment reduces affordability and holds back development of new Internet access models.	High	Clear link between regulatory environment and affordability and support for new Internet access models; examples of influencing through actors such as A4AI and GSMA.
	Need to build digital skills to enable poor and excluded to benefit from digital dividends.	Medium/High*	Strong evidence that skills and literacy barriers prevent poor and excluded from fully benefiting from digital access; more varied evidence on best model for skills delivery.
Need for support of sustainable digital ecosystems.		Medium	UK Tech Hub model demonstrates viability of approach; some evidence of gaps in ecosystem-level support.
Impact of Internet access for poor and marginalised populations			

[53] Caribou Digital Closing the access gap, 2017

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At the macro level, an increase in Internet penetration has a corresponding increase in GDP, reflecting improved productivity and market efficiency.		Medium/ High	Strong evidence of correlation between Internet penetration and GDP. Magnitude of the link is contested (see World Bank and AFDB estimates).
Digital access has strong economic and social benefits for poor and excluded people.	**Efficiency and productivity gains**: SMEs harnessing digital efficiencies and productivity increases drive local economic growth and increased employment opportunities.	Medium-Low **	Consensus on high theoretical potential. Empirical evidence suggests there is a lag between getting Internet access and productivity gains as human capital and new use cases are developed. It is also not always clear whether productivity increases are the result of increased Internet access, or other variables that simultaneously result in increased Internet access and economic growth, e.g. improved business environment regulation. Majority of evidence comes from developing countries.
	Promotion of inclusive political institutions: Digital communications help to amplify the voices of geographically or politically remote communities.	Medium-Low **	Most existing studies tend to focus on large, one-off events, such as the Arab Spring, from which it is difficult to disaggregate the digital effect. Some evidence that the Internet facilitates more collective action and helps improve allocation of public resources and reduce corruption. The DFID-funded Make All Voices Count programme is in its final few months and is now distilling lessons on voice and the conditions necessary for inclusion from across 150 grant-funded projects. Once the evidence review is completed, the applicable lessons will be fed into detailed design of relevant programme activities.
	Improved information flows: Access to information improves educational and healthcare outcomes and improves the functioning of labour markets.	Medium/ High**	There is strong evidence for this, from both developed and developing countries[54].
	Unlocking services: New business models and efficiencies driven by digital	Medium/High**	There are many examples of digitally-enabled businesses delivering services such as water, electricity and financial services to informal and rural communities. However, some questions remain about their long-term

[54]World Bank Digital Dividends Report 2016

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	technologies allow the private sector to deliver new services to excluded communities for the first time.		commercial viability, and whether they are able to reach the very poorest.
	Enhancing agency: Technology can be a tool for enhancing the agency of those who face traditional constraints on their mobility.	Medium/High **	There is good evidence that the Internet can strengthen individuals' and communities' social capital, promoting the development wider and deeper networks which have employment, wage and security benefits. The potential of impacts for people with disabilities who may face constraints on their mobility has in particular been identified, however evidence of impact at scale of this has been limited due to barriers faced by PwD. Analysis of the opportunities must be balanced with risks (e.g. online crime or e-VAWG).
* this will be an area that the programme actively seeks to test ** this will be a key area on which programme learning and insights will seek to build evidence and data			

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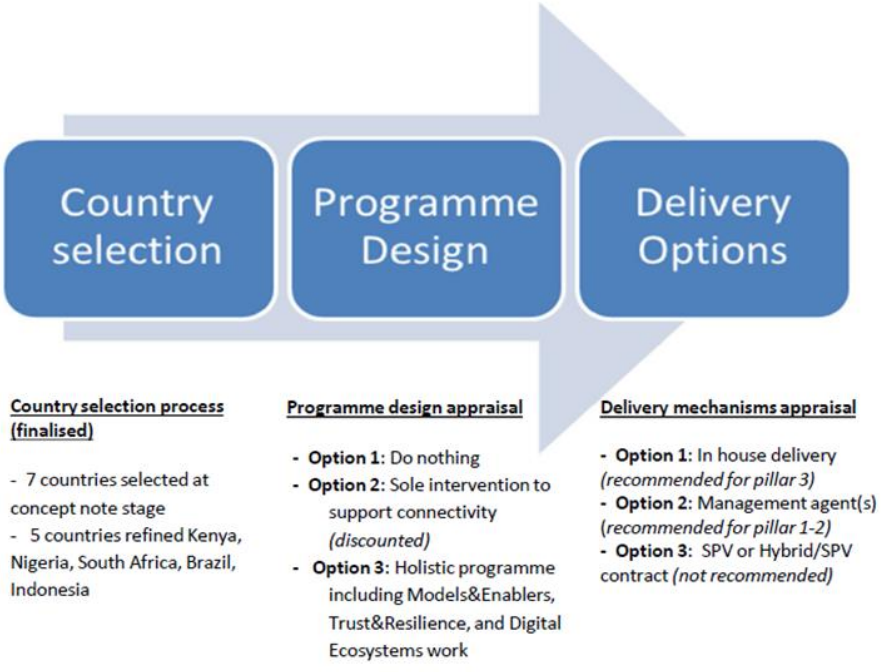
Appraisal Case

79. This Appraisal Case is split between two key areas of decision making: programme design, and delivery mechanisms. The options considered are as follows:
    a) Programme design appraisal
        - **Option 1:** Do nothing
        - **Option 2:** Sole intervention to support connectivity ***(discounted)***
        - **Option 3:** Holistic programme encompassing of connectivity and enabling activities ***(recommended)***
    b) Delivery mechanisms appraisal
        - **Option 1:** In-house delivery ***(recommended for Pillar 3)***
        - **Option 2:** Management contractor ***(recommended for Pillars 1 and 2)***
            a) Deliver through a single contractor/consortium *(not recommended)*

            b) Deliver through a contractor/consortium for Pillar 1 and a second contractor for Pillar 2 *(recommended)*

        - **Option 3:** Special purpose vehicle (SPV) or hybrid SPV/contract *(excluded - but could be considered in the future)*
80. Due to the strength of evidence supporting the need for a holistic intervention, substantive decision-making revolves around the programme delivery choices and do nothing option – with part of the programme approach confirmed by programme diagnostics and detailed design at inception.

Figure 19: Programme design process and appraisal options



Country selection

81. The five programme countries (Kenya, Nigeria, South Africa, Indonesia and Brazil) have been selected from an initial list of seven put forward in the concept note. There is clear evidence of potential primary and secondary benefits in all programme countries, with buy-in from countries' governments and from UK posts. They have been identified as strongly recommended priority countries by the Prosperity Fund.
82. Annexes 3 and 4 provide a country-level assessment of needs, programme opportunities and openings for British business. This has been completed through extensive consultation with HMG at post, British

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businesses and by two external research reports completed by independent organisations[55]. Details of the country selection process are outlined in Figure 20. The multi-country approach of this programme is effective because:

a) Most companies work at a multi-country level facing similar barriers;
b) Policies and infrastructure require regional agreement and co-ordination;
c) Many regulatory bodies operate at regional levels.

83. A larger selection of countries would risk fragmenting and diluting impact, whilst a smaller selection would reduce the potential for the programme to harness regional opportunities and to scale and replicate interventions. Fewer countries would also reduce the opportunity to test the model in a range of contexts (this could be one of the topics for the learning and insights work).

Figure 20: Country selection process

- **High potential poverty reduction and prosperity benefit countries identified:** Programme design focused on countries that are both Prosperity Fund priorities and also in the Top 20 countries by size of offline population. From this set of countries we have then looked at where we have the greatest opportunity to deliver development impact (for which having a DFID country programme was a key indicator) and where we could have the greatest prosperity impact (for which the size of the market and potential for UK export growth were key indicators).
- **Political assessment:** Countries where political and other challenges to delivery would make a country unsuitable for an Internet-focused programme at this time (e.g. China, Ethiopia), were ruled out. This resulted in a shortlist of seven countries for further consideration: Nigeria, Kenya, South Africa, Brazil, Mexico, Indonesia and India.
- **Further assessment:** To reduce this set of countries to five final target countries, a more detailed assessment was undertaken, involving further primary and secondary evidence analysis, post consultation, interviews and questionnaires, and interviews with in-country experts. This included a focus on country need for the intervention and political will considered on a pillar-by-pillar basis; and strategic fit and capacity at post. This is documented in a separate report, prepared by external consultants and quality-assured by the in-house design team. During this consultation process, India was ruled out as capacity at post was a fast constraint on their ability to support the delivery of additional programming. Kenya, Nigeria, South Africa and Indonesia, with the largest offline populations and highest proportions of their populations living below the poverty line, presented the best opportunities for high primary benefit (see Annex 3). Political will in these countries is also seen by posts to be generally medium-high. The strength of the UK brand, and existing digital British business interests also marks them as high potential for secondary benefit. A direct comparison of Mexico and Brazil revealed that intervention in Brazil would deliver a greater primary benefit than Mexico, having a larger offline population and higher rates of inequality.
- **Final selection:** Final country selection of **Kenya, Nigeria, South Africa, Brazil and Indonesia** was confirmed.

Programme design appraisal

Option 1: Do nothing (counterfactual)

84. Option 1 is that the UK does not provide any funding by way of the Digital Access Prosperity Fund programme. Continuing barriers to digital access mean that excluded populations remain unable to harness

[55] Caribou Digital, 2016. Digital Access in Africa; DAI, 2017. Digital Access Prosperity Fund programme evidence review. (Both commissioned by DFID).

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the development benefits of Internet access and economic and prosperity gains are not fully delivered. Digital access may continue to grow organically, either through the actions of other donors, the private sector or in-country government organisations. However, a likely focus on purely infrastructural interventions means that the barriers to access for the majority of populations in developing countries would not be appropriately addressed. Benefits would continue to accrue to already affluent populations, exacerbating existing social and economic inequalities. Other countries would capture more of the secondary benefits. Not intervening through the Digital Access programme would also constitute a missed opportunity for the UK to be the 'first mover' in testing the application of the World Bank holistic model for digital dividends, and would not provide DFID with a development enabler for excluded populations to access crucial information and services at a larger scale and in a more cost-effective manner.

Option 2: Sole intervention to support connectivity *(discounted)*

85. The programme would focus solely on supporting Internet access. Additional programme activities that build security, inclusion and promote sustainable institutions and thriving ecosystems would not be delivered. Although more resources could be focused on the supply-side aspect of facilitating connectivity under this option, economic and social gains of Internet access may not be realised and opportunities for international and British businesses would be reduced.
86. Recommendation: This option has been discounted because of the clear evidence of the need for a holistic approach to facilitating digital access, which tackles barriers on supply and demand side, and at the systemic level, while building inclusion. Delivering a connectivity only programme would not only have reduced impact, but is likely to bring additional risks of increasing exclusion, inequality, market concentration and reducing the accountability of public institutions. Figure 10 and 11 (see Strategic Case) adapted from the World Bank Digital Dividends report sets out the potential risks and the importance of activities to mitigate these.

Option 3: Holistic programme encompassing connectivity and enabling activities *(recommended)*

87. Given the strength of the evidence evaluated in the Strategic Case on the importance of a holistic approach that tackles the key supply and demand side as well as systemic barriers (including security, inclusion, digital skills, availability of relevant content, and thriving digital ecosystems), the programme has been designed to deliver an integrated series of interventions to unlock the benefit of more widely available, affordable, safe and secure digital access. The programme will act *catalytically*, supporting prosperity and the long-term opening up of markets by fostering private sector activity and by de-risking innovative business models. The three-pillar model uses HMG expertise across government to deliver a 'best-of-British' approach and will provide support to different elements of the digital and technology sector. The three pillars are detailed below:

- Pillar 1 - Models and Enablers: This programme component will focus on catalysing the development, market validation and roll-out of innovative and inclusive models for basic connectivity to reach currently underserved populations. Country-level diagnostics will identify the most marginalised groups and communities at risk of exclusion to ensure the programme benefits the poorest and most disadvantaged. In each country, the Pillar 1 intervention will include a combination of well-targeted technical assistance and - in some selected cases - competitive grant funding. On the supply side, this will deliver a tailored mix of support to business and technical capability, product/service development and facilitation of access to finance/investment. On the demand side, Pillar 1 will work with organisations and initiatives that address skill gaps, social and physical barriers to digital access, including gender stereotypes as well as mobility constraints for girls, women or people living with disabilities. The intervention will focus on models and organisations that facilitate access to locally-relevant content as this enhances the developmental outcome of wider digital inclusion, e.g. through information or services related to health, education, employment or e-government. At the systemic level, Pillar 1 will foster an enabling environment for digital inclusion, by focusing on strategic improvements of the legal and regulatory framework relevant to the supported business models for affordable connectivity, as well as broader sector-wide reform and policies for better governance of

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the Internet. Additionally, support will be provided to governments for accountable digital service delivery, for example by harnessing GDS expertise. Pillar 1 will be led by DFID.

- Pillar 2 - Trust and Resilience: Building on FCO expertise in cyber-security capacity building, tailored technical assistance will improve target countries' resilience to cyber-crime, keeping their online populations safe and protecting critical national information infrastructure. A supplier would evaluate the Cyber Security capabilities of each country, against internationally recognised capacity and maturity models. Having identified areas that require improvement, capacity building projects (primarily at government/national agency level) will be funded, based on existing FCO expertise on what works in this field. FCO will also work with the UK Government Communications Service (GCS) on government capacity for awareness campaigns on cyber risks.[56]

- Pillar 3: Sustainable Digital Ecosystems: Sustainable digital ecosystems, needed to enable digital growth, will be promoted through UK Tech Hubs – i.e. small, locally engaged team based within the UK Embassy of each target countries. Tech hubs will help grow the local tech sector by facilitating partnerships between local tech entrepreneurs and international and UK companies in the form of commercial partnerships, joint ventures or R&D collaborations, and supporting companies and entrepreneurs through training, mentoring and advice. Specific activities are adaptable to context and the needs of a given local digital ecosystem in each of the countries. Individual tech hubs will focus on particular sub-sectors (e.g. cyber, fin-tech) where there are strong synergies between local strengths and the needs of international businesses. Each Tech Hub will aim to establish a coding academy that is free at the point of delivery. These academies will run six-month boot-camps taught in English to a mix of international and local students, focusing on modern software development methodologies, producing technically excellent web developers with strong soft skills. Pillar 3 will be led by DCMS.

88. A DFID-led work-stream on *research and learning* will underpin the three pillars. Systematic capture of evidence and lessons will be used for continuous programme improvement, policy influencing and further investment into digital inclusion from stakeholders in the private and public sectors. The cross-government approach of the programme will provide the appropriate expertise and policy leadership needed for the three pillars. The programme will be needs-driven and flexible: a *diagnostic* will be undertaken to target programme activity, develop context-specific criteria which determine the focus of programme in each country and strategically allocate resources by pillar and by country across the programme. More detail on programme activity is included in Annex 1. The diagrams below in Figure 21 and Figure 22 provide an illustration of the DFID-led Pillar 1 work and specifically on the support to inclusive business models development.

89. Recommendation: It is recommended the holistic programme design option (Option 3) is selected. Optimal delivery mechanisms are considered later in the Appraisal Case.

[56] The UK was one of the first countries to establish an international cyber-security capacity building programme to do this, five years ago. The team in the FCO that oversees that capacity building programme will lead Pillar 2, drawing on experience from across government, a network of cyber officers at programme posts and strong relationships with private sector, academia and civil society. The Home Office supported 'End Violence Against Children Fund', which tackles on-line child violence, will be an important reference point and the FCO will work closely with the Home Office to learn lessons and ensure the two programmes are complementary.

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Figure 21: Overview of DFID-led Pillar 1 work on Models and Enablers of inclusive digital access

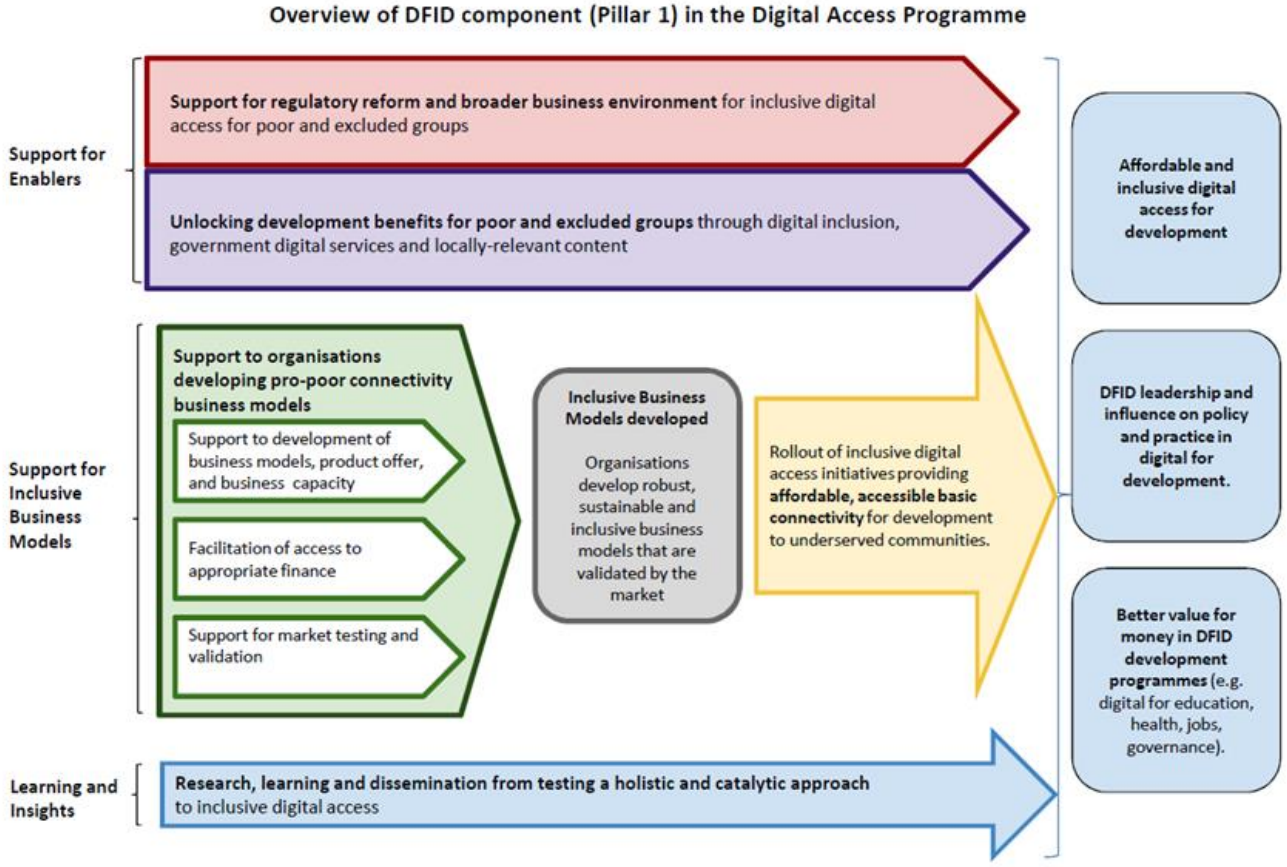
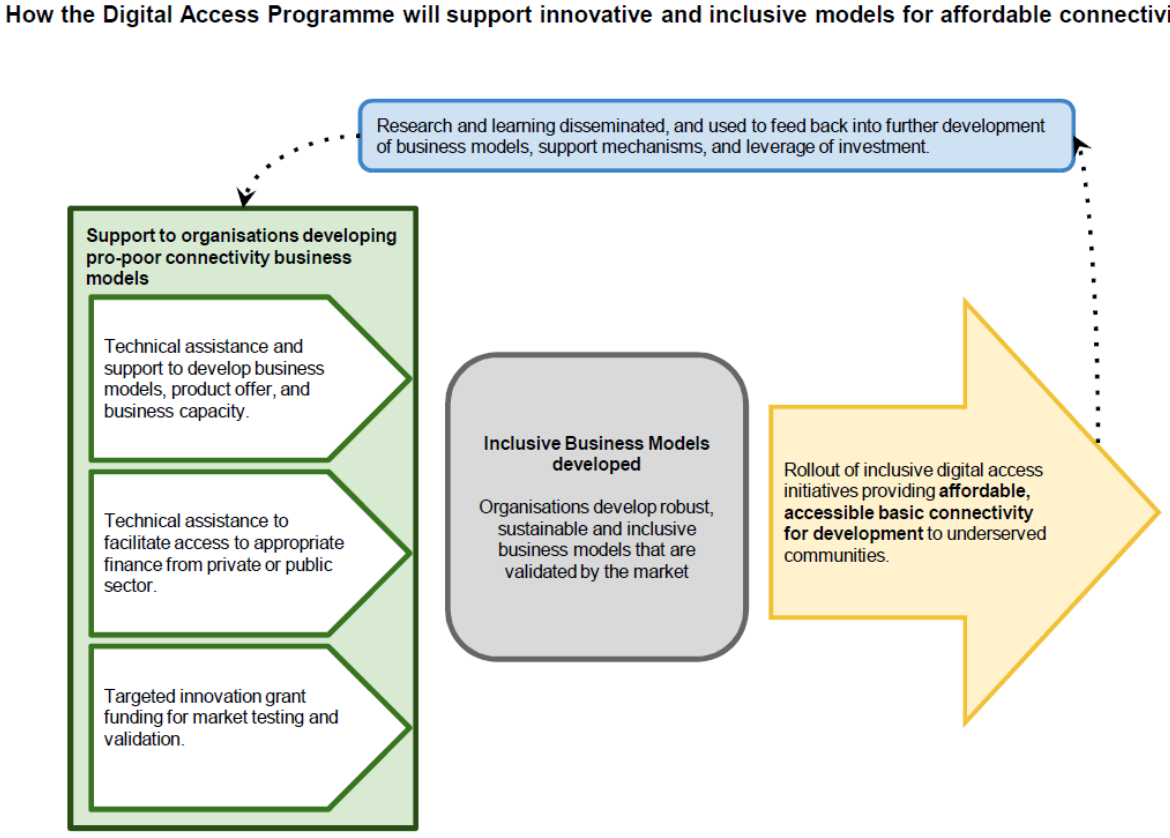


Figure 22: Support to inclusive business models for affordable digital access



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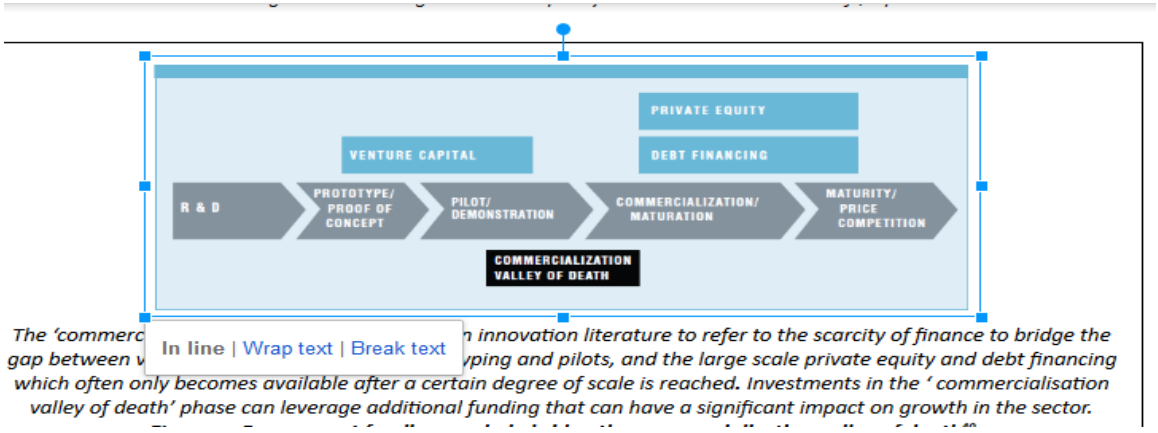
Cost benefit analysis of recommended option

Background and assumptions

90. The economic appraisal assesses the costs and benefits of an £82.5m Prosperity Fund investment in five countries to widen access to the Internet (see Annex 5 for methodology; and Figure 16 for summary).
91. Costs and benefits were modelled for both primary and secondary benefits over a 10-year time-frame, in line with guidance from the FCO for Prosperity Fund investments.
92. Primary benefits are monetised using evidence on the potential GDP gains that are associated with more widespread connectivity. Secondary benefits are monetized in line with the HMG guidance. The methodology assumes that an increase in GDP translates one-to-one into an increase in UK exports to the countries, and that UK market share remains constant such that exports to the countries expand in line with the increase in imports (see Annex 5 for further detail).
93. Due to data constraints at the time of programme design, the programme's value added could not be calculated. A clearer picture of the programme attribution will be developed after in-depth country-level diagnostics (which are meant to provide relevant baseline data and projections), on the assumption that baseline data will be available measure this robustly.
94. UK funding through this Programme is intended to be catalytic – specifically by enabling larger scale investment. It is intended that the support provided by this Programme can help to close the so called "commercialisation valley of death" (Figure 23) – the chasm between early investments that could yield global advancements and larger scale private finance for proven concepts. Support for the relevant organisation to deal with the 'commercialisation valley of death' phase can leverage additional funding that can have a significant impact on growth in the sector. Where the UK is successful at catalysing or encouraging private sector funding at scale, the UK would also see an increase in both primary and secondary benefits as the market starts to widen. Evidence from comparable DFID and external catalytic programmes of this nature suggest that each £1.00 of initial investment could result in around £0.80 of leveraged funding.

Figure 23: Development interventions can help bridge the 'commercialisation valley of death'[57]



Note: The phrase 'commercialisation valley of death' is used in academic and practitioner literature to refer to the scarcity of finance and support needed to bridge the gap between venture capital for prototyping and pilots, and the mainstream large-scale private equity and debt financing that can become available after market viability is demonstrated and a certain degree of scale is reached. Technical support to business modelling and capability (accelerator-type assistance), facilitation of access to appropriate financing (e.g. impact investment / patient capital with social return) and well-targeted grant funding are useful tools to bridge that gap.

95. Therefore, in addition to estimating primary and secondary benefits as a direct result of the project investment, the appraisal estimates the potential growth that could come as a result of leveraged funding

[57] The Breakthrough Institute, 2011. Bridging the Valley of Death.

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and regulatory reform. The evidence presented here only represents the potential benefits in order to give a sense of the relative magnitude of change that might occur, and does not account for the costs that would be required to realize this growth.

Key findings

96. As a result of programme support, approximately 1.5m people can be expected to gain access to the Internet as a direct consequence of testing and validating inclusive business models for affordable basic connectivity. However these will have a multiplier effect and many more people are expected to gain digital access as an outcome of the roll-out of said models. The economic appraisal suggests that the net benefits of an £82.5m Prosperity Fund programme in five countries to widen access to the Internet are net positive for GDP growth when modelled over a ten-year time-frame. The appraisal assesses both low and high estimates for direct impacts of the project. Primary benefit impacts through GDP growth are estimated to range between £6.3 billion and £15.1 billion.
97. Secondary benefit impacts through improved UK export markets are valued at between -£16.1 million and £65.0 million. At the low end of this range, the modelling suggests increases in UK exports would be insufficient to justify programme costs alone, but that significant gains for British business are likely to be accrued through programme activity, especially in the higher range of programme impact.
98. In addition, it is anticipated that this investment will leverage additional investment, by bridging the so called "valley of death" (Figure 23), as well as unlocking regulatory reform, opening the sector to greater funding. Primary benefits through leveraged growth and its impact on GDP could range between an estimated £57.5 billion £137.1 billion, while secondary benefits to UK exports could range between £282.7 million and £674.0 million.

Figure 24: Model Outputs, 10 year Discounted Net Present Value (NPV)

	Low	High
Direct Primary Benefits	£6.3 billion	£15.1 billion
Primary Benefits: Leveraged growth	£57.5 billion	£137.1billion
Direct Secondary Benefits	-£16.1 million	£65.0 million
Secondary Benefits: Leveraged growth	£282.7 million	£674.0 million

Additional notes

99. The findings are sensitive to a range of assumptions, including the discount rate used, the cost of bringing someone online, the number of years modelled in which year benefits start to accrue, overall UK export levels and the distribution of funding across countries. A quantitative sensitivity analysis is detailed in Annex 5. There are also constraints with regard to data on which to base modelling of the secondary benefit. However, there is also evidence that the benefits could be higher than those estimated here. For example, regarding developing countries generally, a 2012 report by Deloitte *et al.* found that a 10 percent expansion in mobile penetration leads to a 4.2 percent increase in Total Factor Productivity.[4]

Delivery mechanisms appraisal

Option 1: In house delivery (recommended for Pillar 3 – DCMS)

100. An analysis of the viability of in-house delivery was undertaken across the programme pillars and involved

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departments to assess where HMG may have strong capability, particular value to add or offer better value for money for delivery (summarised in Figure 25).

101. Meeting the substantial staffing requirement (beyond affordable levels according to Prosperity Fund guidance), including relevant technical skills and specialised delivery expertise, would introduce considerable cost and risk to HMG, and this makes in-house delivery within the programme timeline unfeasible for pillars 1 and 2. For these pillars an external delivery mechanism would yield higher impact and better VfM (as considered in appraisal options 2-3).
102. However, Pillar 3 will be best delivered 'in house' via the UK Tech Hubs as a delivery mechanism, because of the characteristics of its successfully tested model of the UK Israel Tech Hub This will involve building a network of new Tech Hubs in programme countries, following the model of brokering and convening and through provision of training and support . The Tech Hub network model will be more cost-effective than contracting out delivery. It will also allow the programme to harness HMG convening power (including amongst competitive firms), and to harness the strategic and operational expertise in this field developed by the model Tech Hub over five years of activity. An options appraisal of delivery via the UK Tech Hub vs other delivery models for pillar 3 can be found in Annex 2.
103. Recommendation: Deliver Pillar 3 in-house, and consider an outsourced model for Pillars 1 and 2. Given this recommendation, Pillar 3 will not be considered under Options 2 and 3.

Figure 25: Assessment of viability of in-house delivery

Criteria	**Pillar 1**	**Pillar 2**	**Pillar 3**
HMG has all expertise required	*Only partly, in digital for development, private sector development and business environment reforms. Sufficient to ensure programme oversight but might be insufficient for delivery, unless required technical expertise is brought into the departmental or XHMG programme structure. To note: digital expertise in DFID is growing and has a strong focus on digital inclusion.*	Yes - *HMG has strong cyber security expertise held across several departments*	Yes - *HMG expertise exists and Tech Hub model is ready to be replicated*
Existing staffing meets requirements and can be easily bolstered to deliver programme	*HMG do not currently match all required areas of expertise but could be bolstered if sufficient resources are allocated to strengthening HMG advisory capacity in this area.*	No - *Staff with cyber expertise in HMG are in high demand and cannot be reassigned to this programme*	Yes - *additional staffing is readily available for HMG*
In-house offers better or comparable VfM compared to other delivery routes	*Based on the conditions at the time of BC design, implementing agent would offer better value. However a hybrid model of in-*	No – *implementing agent will offer better value as they can mobilise and coordinate external experts*	Yes - *cost benefit analysis (annex 2) shows this is best value route*

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	house and outsourced could be considered.		
Overall: In house delivery viable and offers good VfM?	*Based on conditions at the time of BC design, using external implementers could offer good VfM. However, if sufficient resources are allocated to enhancing the current growing expertise of DFID in digital for development, a hybrid model could be considered.*	No	Yes

NOTE: The options analysis below was produced at the time of Business Case design. Based on the diagnostic phase findings, on the assessment of delivery models during the approval process, and on the evolving advisory capacity of departments (and in particular of DFID as lead department for this programme) on digital for development, the delivery options will be reconsidered in view of the various procurement processes and recruitment drives. Staffing plans and modalities of delivery through external partners will also have to consider the different contexts in the five programme countries (including XHMG structures at post, this being a PF programme) and will be subject to a reasonable extent of adaptation. The programme SROs will be responsible for following up on the evolving analysis of these options and for adopting the most appropriate to achieving programme impact.

Option 2: Management contractor (recommended for Pillars 1 and 2)

104. The recommended option for pillars 1 and 2 is to deliver through a management contractor. The primary reason for this approach is that for these activities using an implementation partner will be more effective than in-house management - as external specialists can be dedicated to tasks and will have the flexibility to handle key issues arising. This approach will reduce the administrative and managerial burden on HMG for most of the programme, allowing HMG to focus on strategic vision, policy issues and oversight of the programme.
    a) Management contractor would bring experience of managing programmes of a similar size and expertise in delivering technical assistance and support across countries, potentially realising economies of scale.
    b) Management contractor would have responsibility for additional staffing and be able to bring in specialist digital/ICT and cyber security expertise where required.
    c) Management contractor would take on operational and management risks of the programme, and be able to work with local organisations to harness their insights.
    d) ToRs will be drafted to ensure coordination with in-house programme activity, and phased approach to activity, incorporating learning and adopting agile principles where relevant.
    e) Strong financial and oversight controls will ensure Value for Money in management contractor fees and delivery.
    f) The HMG Programme team (departmental SROs, Lead Advisers and Programme Managers at centre and post) will ensure a hands-on approach to programme oversight and quality management, will leverage in-house expertise where needed for policy dialogue, strategic inputs, quality assurance and to internalise programme learnings. The robust programme governance structure will also be used to hold the contractor to account and ensure improved VfM as well as proper monitoring of the programme's activities and outcomes. The HMG Programme team will apply the recommendations of the Supplier Review to obtain optimal performance from the main management contractor and

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other implementing partners.

g) ToRs for the main contractor will also include clauses that clearly commit them to form strategic and effective partnerships with local / specialised implementing partners who are able to bring in contextual knowledge as well as specialised skills as needed.
h) They will also set out the role for management contractor in potentially mobilising additional resources from donors or the private sector. However, there may be less flexibility to take on additional funding or leveraged inputs from other partners compared to an SPV (see option 3).
i) Early market engagement has confirmed feasibility of delivery through this model, and suggests market appetite (see commercial case).

105. Recommendation: this option is recommended for the larger portion of programme activity as it offers the lowest risk, and is a less complex option for programme delivery. The ToRs will reflect strong financial and oversight controls to ensure value for money in management contractor fee rates and delivery costs. Coordination with Pillar 3 will be part of the contractor mandate, supported by cross-cutting programme governance.

Option 2a: Deliver through a single contractor/consortium

106. Alternatively, Pillars 1 and 2 could be delivered by single management contractor who would be expected to deliver through a consortium responding to the different requirements of the various aspects of the programme.
    a) Given the importance of coordination and synergy between the different pillar interventions to support the holistic nature of the programme, a single contractor would help significantly in ensuring that activity joins up and delivers the impact set out in this business case.
    b) Although a smaller number of firms are well placed to deliver on this scale of intervention, early market engagement has confirmed there is appetite from several firms and robust competition within the market.
    c) The ToRs and contractual agreements can be used to ensure management agent day rates and costs are proportionate and that fixed portions of the contract is reserved for smaller consortium members or to ensure country expertise. Dividing the work into lots could be considered to differentiate the two pillars while keeping overall management of the programme within one procurement process, even if the two departments (DFID and FCO) are responsible for contracting the work for their pillars separately.

107. Recommendation: While this option gives a strong advantage with regard to the coordination necessary for delivery of a holistic programme, a cross-departmental procurement process may result in confusion in accountability and greater difficulty in risk management.

Option 2b: Deliver through a contractor/consortium for Pillar 1 and a second contractor for Pillar 2

108. A variation on 2b, this option has two procurement processes resulting in two management contractors. DFID would procure a management contractor to carry out the in-depth diagnostic work, propose detailed activity design and implement the selected interventions under Pillar 1. A separate process would be undertaken by the FCO for Pillar 2.
    a. This option combines most of the advantages of a single management contractor with a more acceptable level of risk and clearer lines of accountability between departments.
    b. The requirement for coordination across all three pillars would be written into the contracts for both management contractors (with the use of an MoU to be considered).

109. Recommendation: It is recommended that two procurement processes are taken forward to manage activity in Pillars 1 and 2, with robust contract negotiation to ensure fees are proportionate, suitable reporting and oversight mechanisms, emphasis on the requirement of consortium partners being able to deliver effectively against the work areas set and potentially requiring a set minimum spend through smaller suppliers and a

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fixed element for country-specific expertise. Limiting the procurements for Pillars 1 and 2, resulting in only two separate contracts would bring considerable economies of scale, reducing the burden on HMG of multiple procurements and facilitating coordinating between programme elements (see commercial case). The advantages of clearer and stronger departmental accountability and direct control over own risks for a new programme area outweigh the benefits of stronger programme unity that a single procurement process would provide. This option may however have some impact on the number of HMG staff required. Plans for dedicated staff in-country to support programme management and delivery, and management contractors reporting regularly to programme governance structures will help ensure strong oversight. This will also help to ensure the programme is relevant to country context; allow regular review of progress in each country as well as at programme level; and enable the Programme to adapt as implementation progresses.

Option 3: SPV or hybrid SPV/management agent (excluded - but could be potential option in the future)

110. An alternative option is to establish a new, autonomous entity (a special purpose vehicle or SPV).
    a) As an independent entity, the Special Purpose Vehicle would exist beyond the length of the Programme, and could provide a sustainable channel for future funding and implementation of similar holistic interventions.
    b) An SPV could eventually deliver the whole programme through one mechanism and so realise the benefits of the holistic approach.
    c) SPV would allow other actors to contribute funds more easily, making it easier to leverage funds from public and private actors. Once in place, SPV could offer better value than contracting, through lower overheads (depending on its cost structure).
    d) SPV set-up would however impose additional costs, technical complexity, a longer timeframe needed for organisational development, a different set of risks and a greater administrative burden for HMG. Given short activity timelines, there is a risk that the establishment of an SPV reduces the programme's ability to deliver within a four-year timeframe, and that overall programme impact is reduced.
    e) Use of a hybrid contractor/ SPV model, where a management contractor would begin delivery of programme activity for pillar 1-2 in parallel with SPV set-up, could be used to allow the programme to commence without delay. This would reduce risk of delay in delivering programme activity, however there is potential for uncertainty and confusion with two parallel processes planned. It would still require a significant investment in the organisational development process.
111. Recommendation: An SPV is not recommended as it requires significant time and effort to be set up effectively. However, as the programme starts to demonstrate success and develops a track record in bringing in other donors, it could consider the process of setting up an SPV. This could be either done during years 5-6 if the programme is extended, or as part of the next-phase procurements.

Option appraisal summary for Pillars 1 and 2

112. Figure 26 presents the delivery mechanisms appraised relative to one another against delivery critical success criteria, for Pillars 1 and 2. More detail on the decision making processes involved in selection of the best delivery option can be found at Annex 2.

Figure 26: Options appraisal against delivery critical success criteria

Delivery critical success criteria	**Option 2a: Management contractor - multiple separate contracts**	**Option 2b: Management contractor - single consortium**	**Option 3: SPV or Hybrid SPV / Contractor**
Cost over programme lifetime	Low	Medium	Medium/high

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(RAG rating evaluated in terms of *savings* compared to other delivery options)			
HMG control over delivery processes	High	High	Low
HMG direction over policy decisions of programme	High	High	Low
Flexibility and ability to respond to varied contexts, and changes in context	Medium	Medium	Medium/Low
Coordination/ between programme activities	Low	High	High
Ability to begin programme activity quickly in order to obtain maximum benefits during the programme timeframe	High/Medium	High	Low
Clear departmental accountability and risk management	High	Medium	Low

113. It should be noted that the HMG Programme team will conduct engagement visits and will deliver **in-house** the first segment of the **country-level diagnostics** by leveraging HMG expertise at centre and post. This will help build momentum in-country while the procurement process is underway and will also position the Programme leads to provide a well-informed brief to the management contractors, fine-tuning their ToRs and speeding up detailed activity design and delivery.

Theory of change for preferred option

114. As set out in the strategic case, there is clear evidence from the literature and consultations with industry, development practitioners and key stakeholders that an intervention of this nature would be effective in addressing key market failures for inclusive digital access. A holistic approach that provides support to address challenges on supply and demand side, as well as at the systemic level (e.g. regulatory reform), enhances online security and helps to strengthen local digital ecosystems will support substantial development and gains for British business. The Theory of Change for this Programme is presented diagrammatically in Figure 27 below.

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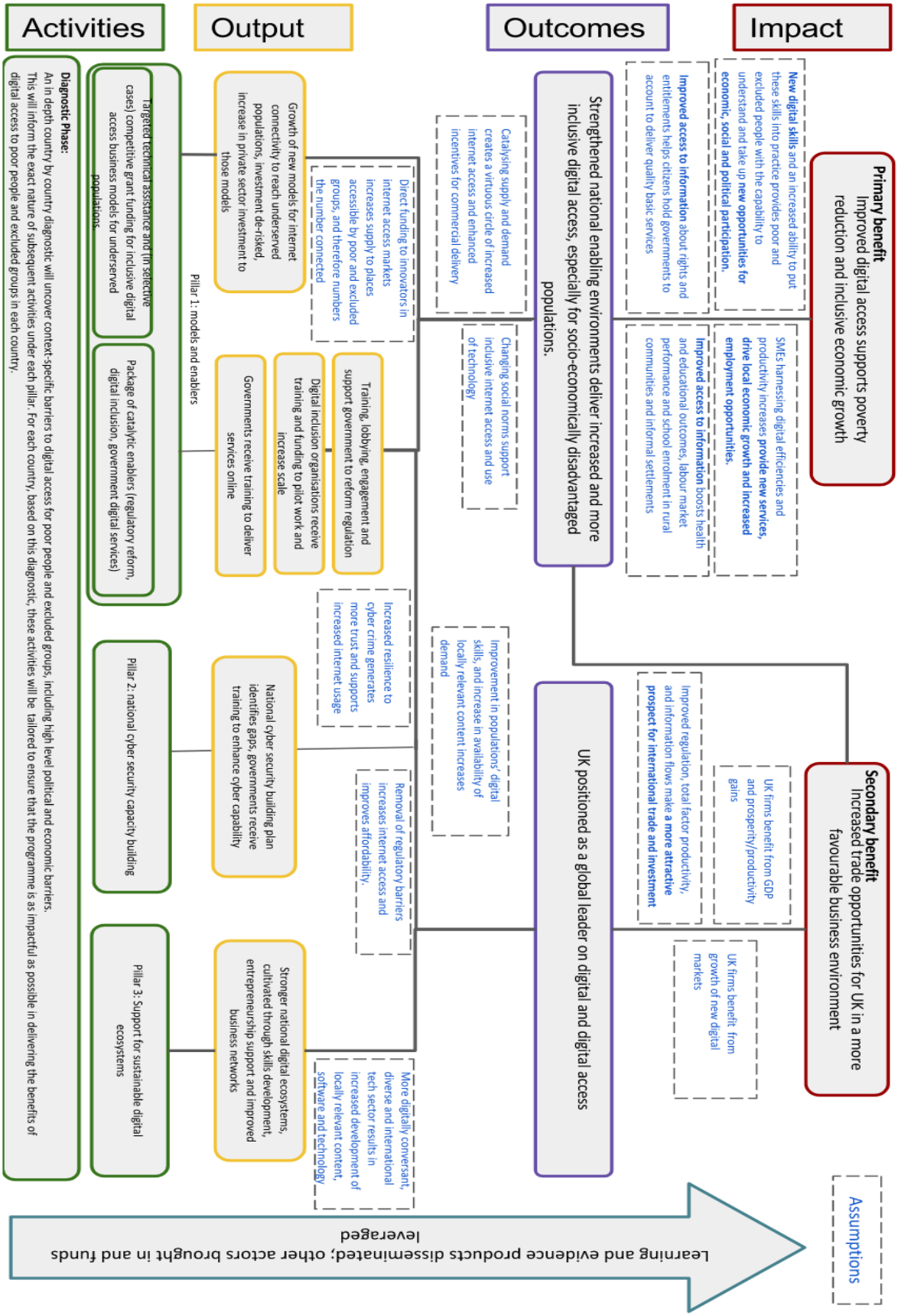
Figure 27: Programme Theory of Change



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Opportunities to build on the evidence base

115. The programme offers an opportunity to build learning and evidence regarding holistic approaches to digital inclusion (following the World Development Report 2016) and into innovative access models. It is envisaged these outputs will be shared across the UK Government, as well as other development players. This will allow the UK to play a leadership role in the digital access arena and promote other initiatives and further activity in this area. Specific research questions for focus as part of MREL will be agreed at inception stage.

Sustainability and wider benefits

116. The programme focuses on countries where the UK Government already has presence, relationships, influence, and capability in the digital space to ensure coordinated delivery that translates into a sustainable solution. Extensive analysis has ensured a clear view of the key challenges to sustainability in each country and that these are addressed. This will be further investigated by the country-level diagnostics conducted in-house and complemented by the inception work of the management contractors. These analyses will direct activities to highest impact and greatest sustainability.
117. The programme ensures lasting impact beyond its delivery years by supporting areas with potential for sustained private-sector activity - by accelerating and de-risking innovation through seed funding and regulatory reform, market-based change will be sustained. This will be further supported by DIT activities in each market. Furthermore, increased use of digital technology can reduce unsustainable resource use, for example through more efficient service delivery and distribution, greater and quicker access to information, support to 'smart cities' and climate-smart development.
118. DFID will use existing strong relationships with donor organisations including the World Bank, and investment groups CDC and PIDG, to ensure these players focus on complementary investments – for example on infrastructure. The programme is set up to seek co-financing with private sector and other donors, and the programme team will encourage investment of private sector resources and actively look for cost-sharing. Development donors (Norway, France, and USA), philanthropic organisations and impact investors (Omidyar Network) have expressed interest in the UK programme and may expand our approach. If successful, this would result in an enhanced impact for the programme (offering high VFM for UK funding) and could result in programme activity continuing beyond the lifecycle of the programme.
119. The tech hub element of the programme has a strong track record of sustainability. A key success of the UK Israel Tech Hub has been generating and securing private income. Over 50% of its funding is now provided by private sources - from philanthropy, corporate fees and sponsorship. In the medium to long term, we would seek to replicate this across the Hub network, with the proportion of public funding required to sustain this hub network diminishing over time. We also expect this programme to pave the way for a wider network of tech hubs around the world, particularly in developing countries.

Scope to scale programme activity up/down as required

120. It has been identified that it would be optimal for the programme to operate in five countries to be able to have global impact and create a network that can share lessons. However, there would be scope to reduce or increase the number as required or modify the package of activities for individual countries. Feedback from early market engagement has also raised a recommendation to extend the programme either by increasing the resources and timeframe, or by spreading the current programme budget (£82.5m) over additional years.
121. There may be opportunities to extend the programme if funding is available, for instance by expanding geographical scope.
122. The tech hub model has been purposefully designed to be scalable - up or down. The expectation is that this programme will pave the way for a wider network of hubs, with interest already from posts in India and Mexico. A wider network of hubs could be sustained by developing a network of tech hub 'alumni' and by building private sector funding, as the UK Israel Tech Hub has done successfully, with the proportion of public funding decreasing over time.

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Social inclusion considerations

123. The programme has been designed to address key drivers for inclusion with a strong focus on girls and women and disability in a holistic way across the three pillars (see table on inclusion in Annex 9). This is reflected in the theory of change and will be threaded throughout each step of programme design and delivery. Expertise in social inclusion with knowledge of these issues in the five selected countries will be a core requirement for the management contractors and weighted heavily during the tendering process. The next stage of programme development will be a thorough context analysis derived from the theory of change for each of the proposed sites. Each context analysis will look at who is excluded, the types of exclusion they face, and how they are excluded, including the processes and mechanisms that exclude them and the opportunities for change. The context analysis will be used to design and target the programme so that it delivers increased access to poor and excluded groups; this will be reflected in the monitoring and evaluation of the programme.
124. Programme MREL: We will prioritize including programme beneficiaries in the MREL processes in a participatory way in promote voice and local ownership and for better development impact. MREL will have both specific indicators on inclusion and data disaggregated by gender and other relevant categories. There will be a focus on gender and other inclusion criteria in programme evaluation and learning. Gender and social inclusion considerations, also with regard to people with disabilities, will be a focal area of the 'Learning & Insights' work-stream led by DFID and underlying the three programme pillars.

Climate and environment

125. This programme will have significant potential for positive benefits in terms of its climate change and environmental impact. One study finds that the use of ICT could cut projected 2020 global greenhouse gas (GHG) emissions by 16.5%, leading to 1.9 trillion USD in gross energy and fuel savings. Technology also enables feedback for agile implementation and learning, meaning that Internet-enabled M&E devices like remote sensors allow for more efficient resource usage, project implementation and adaptive management. Ground sensors can track the sustainability of infrastructure in remote and conflict-affected areas. These systems offer rich, representative, actionable real-time information.

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Commercial Case

NOTE: As already mentioned in para 103, the options analysis on delivery models was produced at the time of Business Case design. Based on the diagnostic phase findings, on the assessment of delivery models during the approval process, and on the evolving advisory capacity of departments (and in particular of DFID as lead department for this programme) on digital for development, the delivery options will be reconsidered in view of the various procurement processes and recruitment drives. Staffing plans and modalities of delivery through external partners will also have to consider the different contexts in the five programme countries (including XHMG structures at post, this being a PF programme) and will be subject to a reasonable extent of adaptation. The programme SROs will be responsible for following up on the evolving analysis of these options and for adopting the most appropriate to achieving programme impact.

Programme delivery

126. This programme will involve two primary delivery channels:
    a) **Pillar 1 and 2 interventions will be delivered through management contractors.**
    b) **Pillar 3 activities will involve in-house delivery through the UK Tech Hubs network**.
127. The remainder of the budget will be used to fund HMG staff (centrally and in post) to assure effective oversight and quality assurance of the programme; to maintain the strategic direction and fit with HMG priorities and strategies in the UK and at post; to provide technical guidance as necessary; and to facilitate relationships and conduct policy dialogue with partner governments, industry and other external stakeholders.
128. As noted in the Appraisal Case, the HMG Programme team will conduct engagement visits and will deliver in-house the first segment of the country-level diagnostics by leveraging HMG expertise at centre and post. This will help build momentum in-country while the procurement process is underway and will also position the programme leads to provide a well-informed brief to the management contractors, fine-tuning their ToRs and speeding up detailed activity design and delivery.
129. The cross-departmental programme team will retain responsibility for programme policy and strategic direction and will maintain close oversight of delivery, timely and effective aggregation of results and financial information. They will ensure coordination between programme activities through day-to-day programme management and through the regular meetings of the programme governance structure (Programme Management Committee and Senior Governance Committee / Strategic Advisory Board- see Management Case for details).
130. For all procurement carried out by DFID, the recommendations of the recent Supplier Review will be followed as detailed in the sections below.

Delivery through a management contractor

131. The larger portion of programme activity will be delivered by management contractors. It is intended that one contract will be issued to implement Pillar 1 and a separate contract agreed for Pillar 2. There will be a separate procurement process for each contract with the selection of the preferred bidder through a competitive tender using the OJEU Open Route process for Pillar 1, and the Prosperity Fund framework approach for Pillar 2. It is not expected that the same bidder will be awarded both contracts, but the possibility has not been ruled out. Given the complexity of the programme and implementation in multiple countries, it is expected the successful bid for both contracts will be a consortium of partners with a range of skills and experience and joint ability to operate in different geographies
132. Review of similar DFID programmes, with the assistance of DFID's procurement specialists, indicates that there is capacity in the market for the type of intervention designed for this Programme. An initial early market engagement event attended by suppliers currently managing similarly complex and large-scale

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programmes provided a strong indication of interest. FCO's experience with an early market engagement for the delivery of pillar 2 activities also indicates the availability of suitable contractors (see Annex 6 for more detail).

133. DFID's complex procurement team in the Procurement and Commercial Department (PCD) will manage the procurement of the management contractor for DFID. A contract will be agreed with the successful bidder using DFID's standard contract provisions.
134. An option for DFID to procure through the Prosperity Fund Procurement Framework was considered but rejected given concerns about the timeframe for establishing the framework and in light of DFID PCD's previous experience in procuring contractors for this type and scale of programme.
135. The FCO will procure a management contractor for Pillar 2 using the Prosperity Fund Procurement Framework arrangement, established specifically to prequalify suppliers to manage Prosperity funded programmes. The resulting contract will incorporate the already agreed framework terms and conditions.
136. The advantage of separating out the procurement process for the DFID and FCO pillars is that it maintains departmental responsibilities as provided for in the SRO letters for Prosperity Fund programmes, clearly separating accountability for resources. However measures will be put in place to retain the advantages of co-ordinated implementation across the pillars (see below and in the Management Case).
137. The management contractors will take primary responsibility for ensuring the aims and objectives of the Programme are achieved as set out in the programme contracts and detailed ToRs. The contractors will manage the delivery of activities and will ensure compliance with departmental and the Prosperity Fund financial and management requirements.
138. Key activities for the management contractor for the DFID-led Pillar 1 include:
    a) Complement the in-house country-level diagnostics conducted by the HMG programme team to provide more in-depth analysis of priority areas of work, inform the design of detailed activities in each country, and assure the proposed approach.
    b) Set up and manage the relevant interventions to support innovative models of affordable connectivity and its enablers (e.g. through regulatory reform, digital inclusion and skills, and government digital services).
    c) Ensure coordination between programme activities, including with the network of UK Tech Hubs.
    d) Deliver particular programme activities as required, such as providing technical assistance.
139. The management contractor for the FCO-led Pillar 2 will undertake similar activities but focusing on conducting country-level capacity reviews define detailed design of activities for cybersecurity capacity building and generally set up the interventions for the promotion of trust and resilience.
140. The management contractors may potentially be required to take on management of additional resources (e.g. from other donors or the private sector) for similarly-focused activities – to the extent that the Programme manages to leverage support from other stakeholders and that it makes strategic and operational sense to convey it through the same delivery channel . Their ToRs and any resultant contracts will be designed so that an adaptive and flexible approach can be used that delivers credible VfM and operational risk is clearly apportioned.
141. The ToRs for Pillar 1 (DFID-led) and for Pillar 2 (FCO-led) will specify that the successful bidders will commit to compliance with interface arrangements to ensure cross programme co-ordination, for example through a MoU between contractors endorsed by the HMG clients.
142. Further early market engagement and consultation over the development of ToRs will be conducted for the Pillar 1 tender. This will enhance the procurement process by ensuring a good understanding of the programme and further validating the feasibility of planned implementation.
143. If other organisations wish to jointly fund this Programme, any such arrangements, including transfer of funds, will be managed through a MoU or other agreement as provided by DFID's Smart Rules.
144. Departmental leads will focus on strategic oversight and will ensure the programme delivers on stated goals and aligns with HMG objectives at both global and country level. Departmental leads will retain a strong role in decision-making as the programme develops through the programme governance structure and by means of the relevant programme management processes.

Performance and reporting

145. A three- to four-year management contract will be agreed for Pillars 1 and 2 by DFID and FCO respectively

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with a scope for a longer timeframe if the timeframe for programme delivery is extended. SMART Key Performance Indicators (KPIs) will be included in the contract documentation and used to measure supplier performance regularly, linked to payment, through contract duration.

146. Detailed reporting and monitoring requirements will be included in the management contractors' ToRs and agreed with PFMO central Monitoring, Reporting, Evaluation and Learning (MREL). It is anticipated that the management contractors will submit monthly accounting reports to DFID or FCO, to be shared with the programme governance structure. This will enable the HMG team to make key decisions regarding the direction of the programme, to ensure efficiency levels are maintained and effective delivery against outputs achieved. Regular supplier meetings with the programme team to discuss performance, results and VfM Will take place throughout the contract duration, and particularly at key stages of implementation, in consultation with the PFMO Evaluation Manager. Outputs from these discussions will also inform the Annual Review Reports. The PFMO Evaluation Manager will submit quarterly operational reports on the performance of the programme.
147. The management contractors will be invited to participate in and report to the Programme Management Committee (PMC) which will include representation from country-level programme leads. HMG staff in the UK and in-country will liaise closely with them and contribute to monitoring delivery progress and identifying any issues to be addressed at the regular supplier meetings. HMG programme leads will also be responsible to regularly visit project sites, participate in key programme events and interact regularly with the contractors on strategic, technical and operational issues.
148. A separate contract will be tendered by DFID through the OJEU Restricted Route for a contractor to gather specific learning and insights from the programme's implementation. This will complement the reporting and MREL processes described above. For more detail see the Management Case.

Delivery through UK Tech Hubs Network

149. A smaller proportion of programme resources will be managed by DCMS, for delivery of the Pillar 3 activities via the UK Tech Hubs Network. HMG staff at centre and post will deliver the Tech Hub element of the programme. There will be no direct procurement.

Market response to an HMG intervention

150. Early market engagement has assessed market appetite of both programme suppliers and potential grantees. To date engagements have included:
    a) Expert Panel including UK and international business leaders (convened Oct and Dec 2015)
    b) Convening connectivity specialists, including potential grantees (July 2016, Nairobi)
    c) Early Market Engagement with suppliers (February 2017, London)
    d) Positive responses from TechUK, Innovate UK and other sector stakeholders in response to measures in the UK Digital Strategy (March 2017, London)
    e) Digital Access Supplier Engagement Event for pillar 2 (August 2017,London)
151. Early market engagement has been conducted with an awareness of supplier incentives, and evidence presented rigorously evaluated to avoid potential bias/conflict of interest.
152. There appears to be a very strong appetite from a range of private sector players to engage with this programme, with the potential to form diverse consortia potentially involving smaller agile organisations specialised in digital access and contributing contextual knowledge. An assessment of market readiness and appetite for the various categories is included below (Further detail of stakeholders contacted can be found in Annex 7):
    a. <u>Supplier/management agent:</u> There is strong appetite within the market to take on delivery of this programme, as a number of viable suppliers expressed interest in the programme during early market engagement. Because of the scale of the programme, we anticipate that a relatively small number of suppliers will apply to tender through the DFID managed process, however we do not consider that this will significantly affect market competition. Further early market engagement activity in the preparation for tender will be designed and delivered to encourage interest from a broader range of suppliers. Market engagement messaging and content of ToRs will clearly indicate HMG expectation that larger management contractors form partnerships with smaller more agile and specialised organisations.

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b. Procurement through the Prosperity Fund Procurement Framework for Pillar 2 is limited to prequalified suppliers. The PFMO expect that a reasonable number of suppliers would bid for the each call-down contract.
c. Tech Hubs: The network's activities will be tailored to the local market and will be based on the Programme's analysis of complementary areas of expertise/need. DCMS undertook research into the markets in the five countries, existing Tech Hubs, existing government initiatives and relevant entrepreneurial activity in the digital sector.
d. Sub-contractors: We anticipate that the management contractors will use subcontracting or form a consortium to enhance their offer with specific technical and contextual knowledge from specialist firms/SMEs/CSOs. Indicators suggest there is also appetite amongst local organisations. There are examples of DFID projects that have effectively been able to utilise local and specialist organisations with valuable local expertise and credible VfM performance. Consultations with organisations in-country and in the UK have confirmed interest in this programme as either management contractor or in other implementing partner role.
e. Support to organisations working on affordable connectivity and digital inclusion: Engagements both in the UK and Africa have demonstrated high latent demand for the kind of support foreseen by this Programme. The need and appetite for support of this scale and type has also been confirmed through expert consultations, and commissioned research[58] [59], in addition to evidence collated in the strategic case. Research will be shared with potential bidders. There will be an important role for the management contractors in making sure international and UK businesses are aware of these opportunities.

How is value added to the programme and how will we measure and improve this?

153. For the procurement managed through DFID's PCD, management costs and daily fee rates proposed by bidders for the management contractor role will be included and assessed by PCD during the commercial evaluation to ensure these costs are at an appropriate level for the programme and benchmarked against other similar programmes and PCD's central consultancy fee data base. In addition the costs of bidders' partners and subcontractors will be critically assessed. Proposals will be judged against the VfM criteria of economy, efficiency, effectiveness and equity.
    a) Economy – fees, daily rates, overheads and unit costs of specific inputs. For example: identifying the local competitive rate for consultants benchmarked against the appropriate market rates. Also monitoring the rate of inflation and commodity prices, which will impact on the cost of goods and services. Costs of accommodation, travel, and other expenses will be included in the commercial evaluation. In consultation with PCD, consideration will be given to requesting a breakdown of supplier overhead costs, including profit, in the commercial bids;
    b) Efficiency – number of days and/or staff, and levels of experience required to deliver outputs, the inclusion of recommendations, which would improve the delivery of outputs or reduce fiduciary risks etc.;
    c) Effectiveness – elements of the proposals that would improve the overall impact of local technical capacity or introducing better management practices into the sector as a whole; and,
    d) Equity - As we anticipate effective delivery to be delivered by a consortium, consideration will be given in the ToRs to the recommendations of DFID's recently conducted Supplier Review, requiring a set minimum spend through smaller suppliers and a fixed element for country-specific expertise.
154. It is anticipated that delivery through a single management contractor for Pillar 1 will achieve the best value for money.
155. For the contracting managed through the Prosperity Fund Procurement Framework, terms and conditions, including a rate cap, will have already been agreed to deliver VfM.

Summary of procurement route

156. DFID's Procurement and Commercial Department (PCD) will lead on the procurement of the management

[58] DAI, 2017. Digital Access Evidence Report.

[59] Caribou Digital, 2016. Digital Access in Africa Report.

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contractor for Pillar 1 in line with prescribed OJEU Procurement Directives and procedures for the open tender process. Following this tendering process, a contract will be agreed, applying any new codes of conduct or contract rules recommended by DFID's Supplier Review. Contract management will be led by DFID's programme management staff with support from the relevant DFID Commercial Adviser.

157. The same procurement route will be used by DFID for the separate Learning and Insights contract, if needed.
158. Procurement for the management contractor for FCO's Pillar 2 will use the Prosperity Fund Procurement Framework allowing for stronger FCO control and accountability of this procurement process. A call-down contract will be agreed using standard Prosperity Fund contract terms and conditions. Contract management will be led by FCO's programme management staff. There may also be some country-level analysis and capacity review work on cyber security separately tendered and contracted.

Evaluation Approach

159. Bids will be evaluated on technical and commercial criteria. For the DFID management procurement, the weighting will be agreed with PCD. For the Prosperity Fund Procurement Framework the standard weighting will be used.

Due Diligence

160. It is likely that the supplier selected as management contractor will have previous experience delivering similar programmes for DFID or other departments. Under the OJEU process, a complete due diligence of potential suppliers is undertaken at contracting stage in accordance with DFID SMART Rules and DFID commercial advice, including a focus on financial, ethical suitability and duty of care concerns. It is expected that potential bidders will also need to provide significant detail on their sub-contractor and/or second and third tier suppliers.
161. Under the Prosperity Fund Procurement Framework, due diligence will have been carried out as part of the prequalification process.
162. The management contractors will have responsibility for verifying and providing evidence of due diligence in advance of disbursement of funds on behalf of subcontractors and organisations which receive support under the programme Pillars 1 and 2. DCMS will undertake due diligence on any directly-procured contracts, with oversight from DFID.
163. Cabinet Office approval will be sought for all procurements, both before the tender commences and before the contract is issued to the preferred bidder.

Terms of Reference

164. Work on draft ToRs has commenced and will be finalised once approval for the business case is received. The ToRs and the contracts will be carefully drafted to ensure delivery of the programme outputs as described in this business case and to allow for effective supplier management. Guidance generated as a result of DFID's recent Supplier Review will be reflected in the ToRs and contract for any DFID-led procurement.

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Financial Case

What sources of funding will the programme use?

165. The programme is seeking £82.5m Prosperity Fund ODA funding over four years for this programme. This includes all costs of implementation, such as administrative costs.

What will these funds be spent on and what are the key cost drivers?

166. Of the total budget of £82.5m, it is expected that:
    a) £61.5m will be transferred to the programme management contractors to provide organisations promoting affordable, accessible digital access and trust and resilience with a mix of technical assistance and competitive grant funding to deliver support to inclusive digital access models and enablers, as well as to trust and resilience.
    b) £10.65m (15%) will go towards management costs.
    c) £7.3m will be received by DCMS UK Tech Hubs network for direct delivery of additional Tech Hubs.
    d) £0.7m - £1.5m will be received by FCO for essential local delivery staff.
    e) £2.7m (3.5%) will be used by DFID, FCO and DCMS to cover essential staffing for programme management.
167. Staff costs and management fees represent the primary operational costs of the programme. Management costs will be affected by the complexity of the programme delivery, covering five countries and three pillars and particularly the requirement for fund management. Fee levels will be managed through the procurement process and benchmarking. Staffing costs will be proportionate, using staff appointed in country where possible and will be within the percentage costs limits for programme management staff provided by the Prosperity Fund.

How will it be funded: capital/programme/admin?

168. Funding will be 'programme' spending (RDEL). An allocation of £82.5m has been made by the Prosperity Fund, subject to approval of this business case. At this stage we do not envisage the schedule of disbursements to go beyond the current spending round (expires March 2021). All funds are ODA eligible and there are no contingent liabilities associated with this funding.

Profile of expected costs

169. The programme team will provide a total budget of £82.5m over 4 years from March 2017 to March 2021. The allocation of the budget between activities and the spending profile will be confirmed during the inception phase once the detailed country diagnostic work is completed (see Figure 29).
170. The total costs of this project will be fixed. The allocation of funds between different components and scope of individual activities will be reviewed regularly and on an annual basis as a minimum to maximise impact through adapting to learning and any changing circumstances.

How will you work to ensure accurate forecasting?

171. Forecasting for Pillar 1 will be undertaken by DFID and for Pillar 2 by FCO, each using their own systems, based on the payment schedule agreed with the implementing partners. DCMS will use their own systems and processes for their in house expenditure. For all activities, accurate forecasting will be managed by ensuring payments follow an agreed schedule defined by clear and time-bounded deliverables and costs. Payments schedules will be reviewed bi-annually and are monitored monthly and can be adjusted if necessary.

Disbursement of programme funds

172. As agreed with the Prosperity Fund, each department will be allocated funds by SRO letter on a per annum basis. Of this, £2.7m will be for programme management staff posts, travel and subsistence. This is within the 3.5% programme management staff allowance outlined within Prosperity Fund guidelines. See Figure 30

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(in Management Case) for how the disbursement of funds will take place from the different departments and mechanisms for ensuring financial accountability and risk management.

Figure 281: funding allocation by department over 4 years

Allocation over 4 years	DFID	FCO	DCMS	Total
Total programme spend allocation (RDEL)	£60m	£15m	£7.5m	£82.5m
Programme management staff allocation within programme spend (3.5% of total)	£1.9m	£0.6m	£0.2m	£2.7m

Due Diligence

173. Robust due diligence processes will be put in place before any expenditure takes place, as detailed in the Commercial Case.

How will expenditure be monitored, reported and accounted for?

174. In accordance with the contractual provisions, funds to the contractors will be disbursed in arrears on a quarterly basis on receipt of a valid invoice (assuming ADAMANT principles are met) supported by a breakdown of expenditure that is in line with the overall budget set aside.
175. In accordance with DFID's standard contractual provisions, each invoice will be supported by a breakdown of the costs being claimed against each budget line in the contract and the Programme Manager will be responsible for ensuring due diligence in the disbursement of funds, and for taking any action deemed necessary. A similar process will be followed for FCO managed funds.
176. Where appropriate, full details of forecasted future spend by financial year against the annual work-plan will be included in an annual report to HMG leads. The implementing partners will submit annual audited accounts for each of the financial years covered by the project.

How will ongoing costs continue to be met after the programme finishes?

177. There will be no ongoing costs to be covered once this programme has finished as there are no plans to establish structures with future resource implications under programme design. The exception to this would arise if it was subsequently decided to establish an SPV towards the end of the project.
178. The programme ensures lasting impact beyond delivery years by supporting sustained private-sector activity - by accelerating and de-risking innovation through business model validation and regulatory reform, market-based change will be sustained.
179. Increased use of digital technology can reduce unsustainable resource use, for example through more efficient service delivery and distribution, greater and quicker access to information, support to 'smart cities' and promoting climate smart development.

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Figure 29: Preliminary financial profile

		2017-18 (£s)	2018-19 (£s)	2019-20 (£s)	2019-21 (£s)	TOTAL (£s)
Management costs (assumes management agent fee of 15%)	Pillar 1 [DFID]	0	2,166,893	4,333,785	2,166,893	8,667,571
	Pillar 2 [FCO]	0	496,443	992,887	496,443	1,985,774
	TOTAL	**0**	**2,663,336**	**5,326,672**	**2,663,336**	**10,653,344**
Pillar 1 and 2 delivery costs	Pillar 1 [DFID]	100,000	12,279,058	24,458,117	12,279,086	49,116,261
	Pillar 2 [FCO]	0	2,813,180	5,626,359	2,769,796	11,209,335
	Pillar 2 delivery staff [FCO]	96,206	361,523	365,138	368,790	1,191,657
	TOTAL	**196,206**	**15,453,761**	**30,449,614**	**15,417,672**	**61,517,253**
Pillar 3 delivery costs	Pillar 3 delivery [DCMS staff]	40,945	2,410,437	2,433,567	2,455,027	7,339,975
	TOTAL	**40,945**	**2,410,437**	**2,433,567**	**2,455,027**	**7,339,975**
Programme management/ operational staffing costs	DFID	89,972	602,804	608,712	614,679	1,916,168
	FCO	63,384	181,463	183,278	185,110	613,235
	DCMS	10,956	49,196	49,688	50,185	160,025
	TOTAL	**164,312**	**833,463**	**841,678**	**849,975**	**2,689,428**
Learning & Insights	DFID, FCO, DCMS	0	100,000	100,000	100,000	300,000
	TOTAL	**0**	**100,000**	**100,000**	**100,000**	**300,000**
GRAND TOTAL		**401,463**	**21,460,997**	**39,151,531**	**21,486,009**	**82,500,000**

NOTE: Based on approvals timing, diagnostics findings and the evolution of the PF profile, the above budget will be updated as needed. Programme implementation may extend until FY2022/23 (with same total budget). The SROs for the programme will be responsible with following up with respective departments and PF governance structure on the update of the programme financial profile.

Financial and fraud risk assessment

180. Several of the countries that this programme will be implemented in have operating environments that present a significant fiduciary and fraud risk.
181. For this programme, these risks will be mitigated in the following ways:
    a) Funds will be disbursed either through the management contractors, or directly by HMG. Both routes will follow the procedures described above to verify payments before funds are disbursed.
    b) As described above**,** a thorough due diligence will be carried out on all recipients of funding throughout the delivery chain, before any payments are made.
    c) It is not expected that funds will be transferred through partner government systems or directly to small community based organisations which are likely to present a higher fiduciary risk.
    d) Grants will not be the primary delivery mechanism for this programme. However, where they offer more impact than other mechanisms, any grants made under Pillars 1 and 2 will be made in a phased way, starting with modest contributions against planned milestones until the effectiveness of the intervention has been proven and scale-up is agreed (where appropriate). Funds will be disbursed in arrears as standard practice.

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Management Case

182. This programme is designed to deliver an integrated intervention. It will do so through a three-pillar structure harnessing the best of UK government expertise with DFID, FCO and DCMS leading the programme's pillars and overseeing their delivery. In addition, GDS may act as an implementing partner for some components within Pillar 1 on government digital services – where applicable depending on partner countries' priorities and preferred models. Other departments will be brought in as relevant (e.g. the programme will collaborate with DIT on sector-specific trade and investment).
183. Clarity about roles and responsibilities, and effective governance structures, will be essential to programme success.

Cross-departmental roles and responsibilities

184. The programme is delivered by a cross-departmental team led by DFID, comprising DFID, FCO and DCMS. Each department will have its own SRO and be ultimately accountable for their allocation of funds from the Prosperity Fund and for all interventions that result from their allocated funding.
185. Each department will act as the policy and technical lead for their pillars and take responsibility for any advisory expertise required. However, DFID will offer advice on development management to the partner departments, where needed and feasible.
186. Figure 30 sets out how funds will be managed by the three departments. Each department will be given their financial allocation on a yearly basis by the Prosperity Fund's Management Office (PFMO). Each will then take full responsibility for the oversight and management of those funds, including any procurement processes necessary, for contracting and contract management, including financial management and any operational, delivery or reputational risks. DCMS will transfer funds directly to the UK Tech Hubs and will fund the relevant staffing for in-house delivery of Pillar 3. Each department will retain funds required to cover its own staffing costs.
187. The SRO letter transferring funds to each department will set out clear guidance and a detailed statement outlining the responsibility and specific risks for each department. Departments will ensure respective Ministers are adequately briefed on areas of specific departmental responsibility. Ministers will be required to accept and sign off the business case, and in doing so take on the programmatic responsibility and risk on behalf of their department.
188. The SRO in each implementing department (DFID, FCO and DCMS) will have overall accountability for ensuring the delivery of that department's activity, as well as coherence with the rest of programme activity and cross-HMG priorities. Within each department, the nominated programme manager(s) and lead advisers will work on the programme's operational and financial management, as well as on the reporting needed to allow for programme results to be aggregated. SROs will have responsibility for ensuring compliance with corporate processes for establishing the programme. They will oversee the management of funds for their department, ensuring that Prosperity Fund resources are used for the correct purposes; they will ensure that relevant programme managers follow up with implementing partner(s) to submit progress and financial reports as set out in the contractual agreement; and that the programme complies with corporate reporting.

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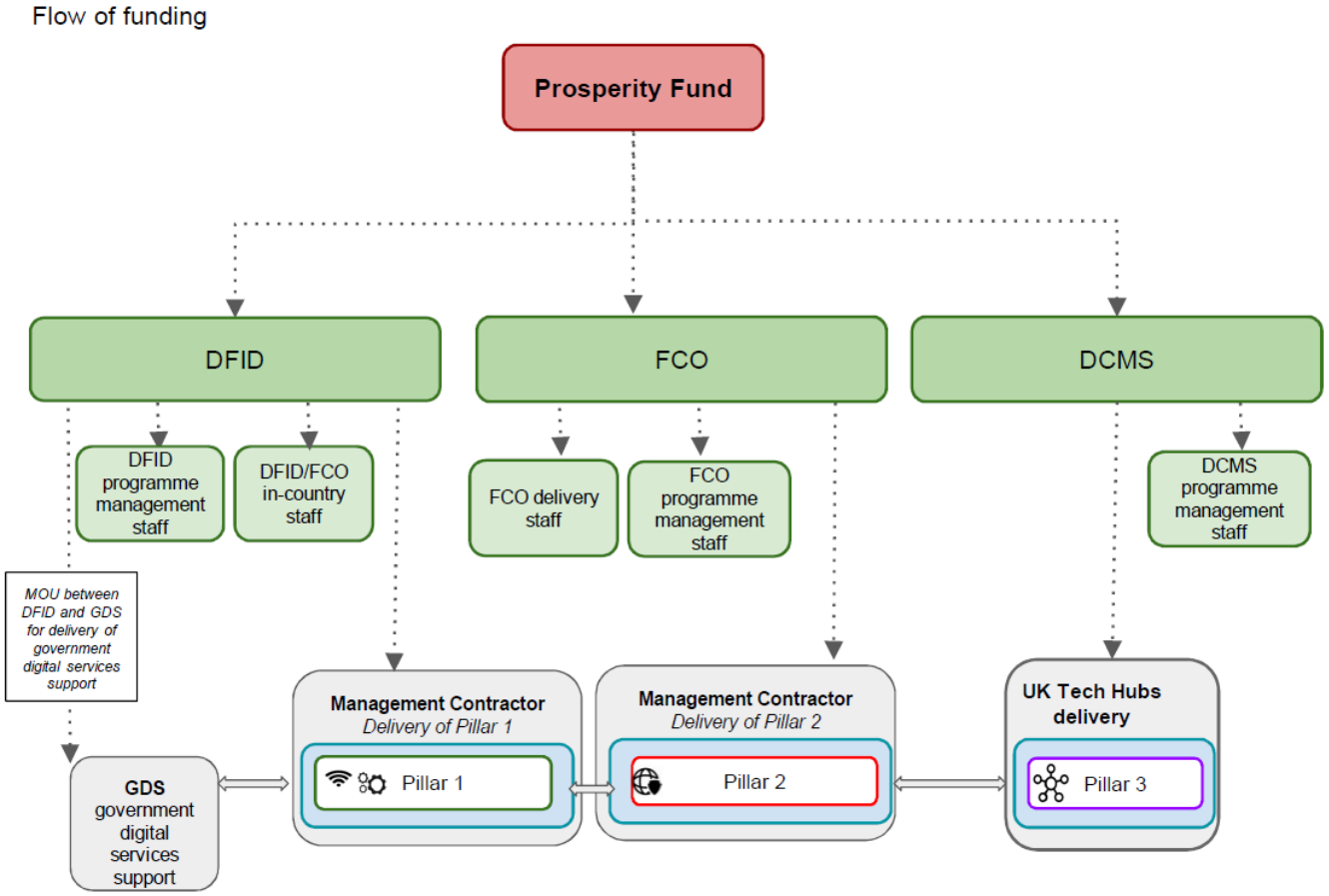
Figure 30: How will funds be managed by the three departments?



189. An MoU may be signed between DFID and GDS to allow GDS to act as an implementing partner for components of the support to government digital services, as required.

Programme governance

190. The Digital Access Programme's governance arrangements are illustrated in the diagram at Figure 31 and explained in the text below.

Senior Governance Committee (SGC) and Strategic Advisory Board (SAB)

191. The Senior Governance Committee (SGC) will comprise DFID, FCO and DCMS programme SROs. This committee will perform a decision-making function. Its key tasks are outlined below:
    a) The SGC will be responsible for providing oversight and setting the overall direction of the programme, ensuring coherence across programme elements at a high-level, and across departmental (including DIT, GDS and other stakeholders) and Prosperity Fund objectives.
    b) The SGC will be responsible for monitoring the overall progress of the programme, for providing strategic and expert guidance where needed and to highlight achievements and lessons learnt.
    c) The SGC will be responsible for escalating risks and concerns to the PFMO when these go beyond the scope of the DA programme and exceed the scope of the SROs' accountability.
    d) The SGC will review key programme documents and information (e.g. annual/quarterly reviews, performance reports, programme log-frame and risk register) and provide steer on programme direction, approach, opportunities and risks.
    e) The three SROs in the SGC will each approve and sign off key programme reports and deliverables,

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such as work-plans, budgets, annual reports, annual reviews, programme assessments and any modification documents, such as business case addenda for extensions.

f) The SGC will be responsible for communicating decisions and recommendations to the Programme Management Committee (see below at paragraph 187) clearly, timely and in official form.

192. The ToR for the programme governance arrangements will include criteria for the SCG to co-opt senior HMG stakeholders on an ad hoc basis depending on programme need (e.g. Directors/Heads of Department from the programme departments, the Prosperity Fund, DIT, GDS). These will meet in the configuration of a Strategic Advisory Board (SAB). When applicable, this will also involve high-level external experts from the Digital Advisory Panel (DAP) convened by DFID.
193. Relevant senior representatives from programme country missions (e.g. in-country Heads of Prosperity Fund committees or heads of mission and/or DFID country representatives and/or DIT directors, as appropriate) will be invited to join the Strategic Advisory Board meetings to provide country-specific perspective and participate in cross-country discussions.
194. The Strategic Advisory Board will perform a steering function. Its recommendations will be considered by the Senior Governance Committee and its SRO members will make joint decisions based on their respective accountabilities and in the interest of overall programme performance and coherence.
195. The DFID SRO will sit on the Senior Governance Committee / Strategic Advisory Board as well as on the Programme Management Committee in order to facilitate the collaboration between the two layers of programme governance.
196. The Senior Governance Committee will meet biannually (every six months).The SROs will meet quarterly during implementation, and as needed before full implementation starts. Any additional *ad hoc* engagements will take place by written correspondence or via occasional VC / meetings as appropriate.

Programme Management Committee (PMC)

197. The Programme Management Committee (PMC) will comprise DFID, FCO and DCMS programme managers and lead advisers. Country-level programme leads will participate to provide the country perspective, depending on agenda coverage of different country activities. The DFID SRO will participate also in this committee to ensure communication and coordination between PMC and Board.
198. The PMC will invite the project leads from the management contractors to participate in the relevant segments of each committee meeting, present on programme progress and discuss any risk or concerns.
199. The PMC will report to the Senior Governance Committee and escalate risks and concerns as necessary.
200. The PMC will have the following main responsibilities:
    a) The PMC will be responsible for operationalising the SCG's decisions and for ensuring that key actions foreseen in programme implementation are taken timely and in line with the programme's aims, work-plan, budget and agreed processes.
    b) When required, the PMC will also review and implement broader steer and recommendations provided by the SAB, as appropriate.
    c) The PMC may surface strategic issues for discussion by the SCG or SAB, producing relevant background papers and briefings where necessary.
201. The Programme Management Committee will convene quarterly to review key milestones, make or formalise joint operational decisions that require cross-departmental coordination and agree on information and approval requests to be submitted to the SCG. Programme managers and lead advisers will also meet regularly in an informal capacity (bi-weekly/monthly) for day-to-day coordination.

In-country Prosperity Fund committees

202. The programme will harness existing in-country governance mechanisms, through existing cross-HMG Prosperity Fund committees or similar governance functions where they exist.
203. The programme governance structure will interact regularly with in-country Prosperity Fund committees in order to oversee programme activities in-country - including co-ordination and synergy of the three pillars, liaise with and influence partner country governments and other local stakeholders as appropriate, undertake problem solving and risk management in-country.
204. Relevant representatives from UK missions will be invited to join the Senior Governance Committee and Programme Management Committee meetings as appropriate, in order to provide country-specific

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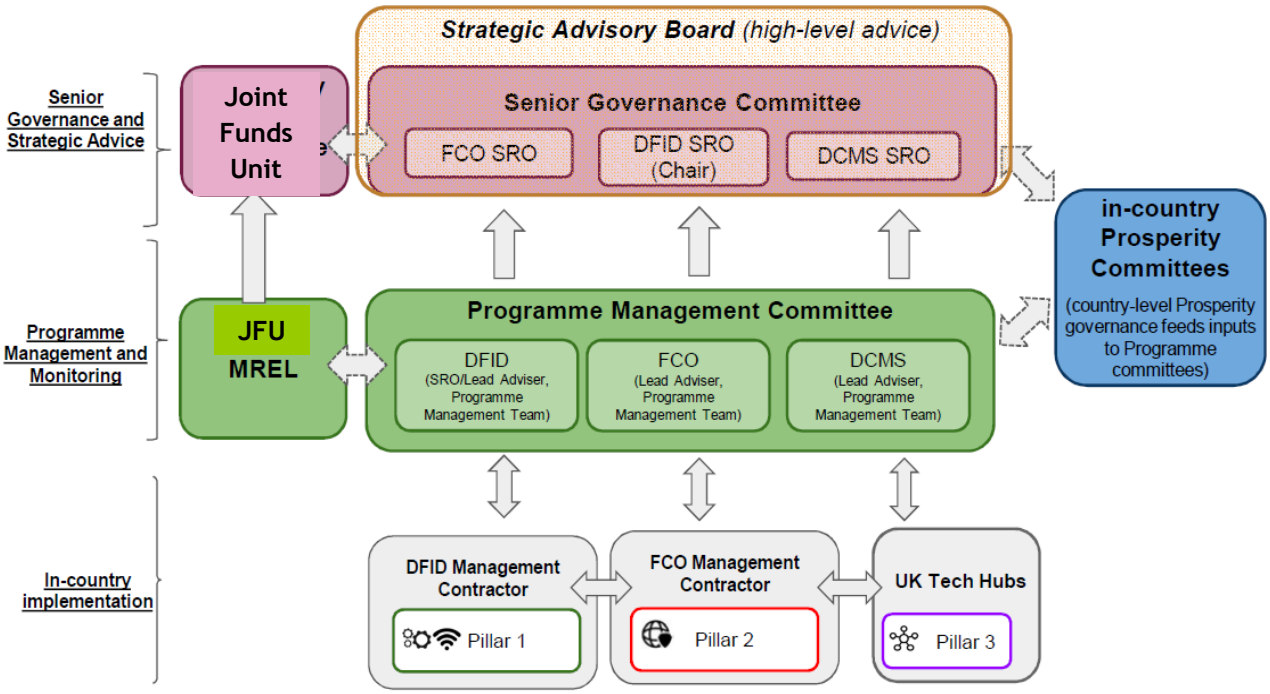
perspective and participate in cross-country discussions.

Figure 31: Programme governance structure



Departmental and SRO roles in programme oversight and delivery

205. SRO letters issued by the PFMO following full programme approval will set out clear guidance from the Prosperity Fund on departmental roles. The SRO letter will stipulate the role of each department within the Digital Access Programme. It will set out expectations and requirements and constraints placed upon each department and SRO, including regarding programme management and implementation, accountability, risk and communications management, and programme governance and reporting to the Prosperity Fund.
206. DFID will take on the role of lead department (with convening responsibility to ensure cross-departmental programme coherence), whilst FCO and DCMS will be required to constructively engage with the lead department in order to facilitate coordination, programme quality and aggregate reporting throughout implementation.
207. The indicative roles for each department are outlined below:

DFID: lead department with coordinating responsibility, and delivery lead for Pillar 1

208. In line with the guidance from the Prosperity Fund, as DFID will be the programme lead and will take responsibility for coordinated delivery of the programme across its three pillars. This includes establishing an integrated programme governance framework and engaging with delivery partners to keep the programme focused on its strategic objectives and collectively achieve impact.
209. DFID will facilitate and lead the programme governance structure (Figure 31) to ensure robust coordination and coherence across pillars.
210. DFID will also be responsible for ensuring - to the extent possible and with the support of the other departments – the aggregation of development results, the maintenance of a top-level risk register for the programme, the regular reporting to the PFMO; and for escalating any implementation issues that cannot be resolved by the Senior Governance Committee (SROs).
211. Additionally, DFID will use its experience of managing development programmes: to provide advice and

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guidance to the other departments on programme management; and to support the programme in achieving the intended inclusive approach, maximising the potential for leaving no-one behind and complying with ODA requirements.

212. DFID will be responsible for the oversight and delivery of Pillar 1 and all associated risks.
213. DFID will lead the procurement and contracting process related to the management contractor for Pillar 1 in accordance with DFID's Smart Rules and PFMO guidance.
214. DFID will provide advisory guidance on inclusive business models and on enablers of digital access.

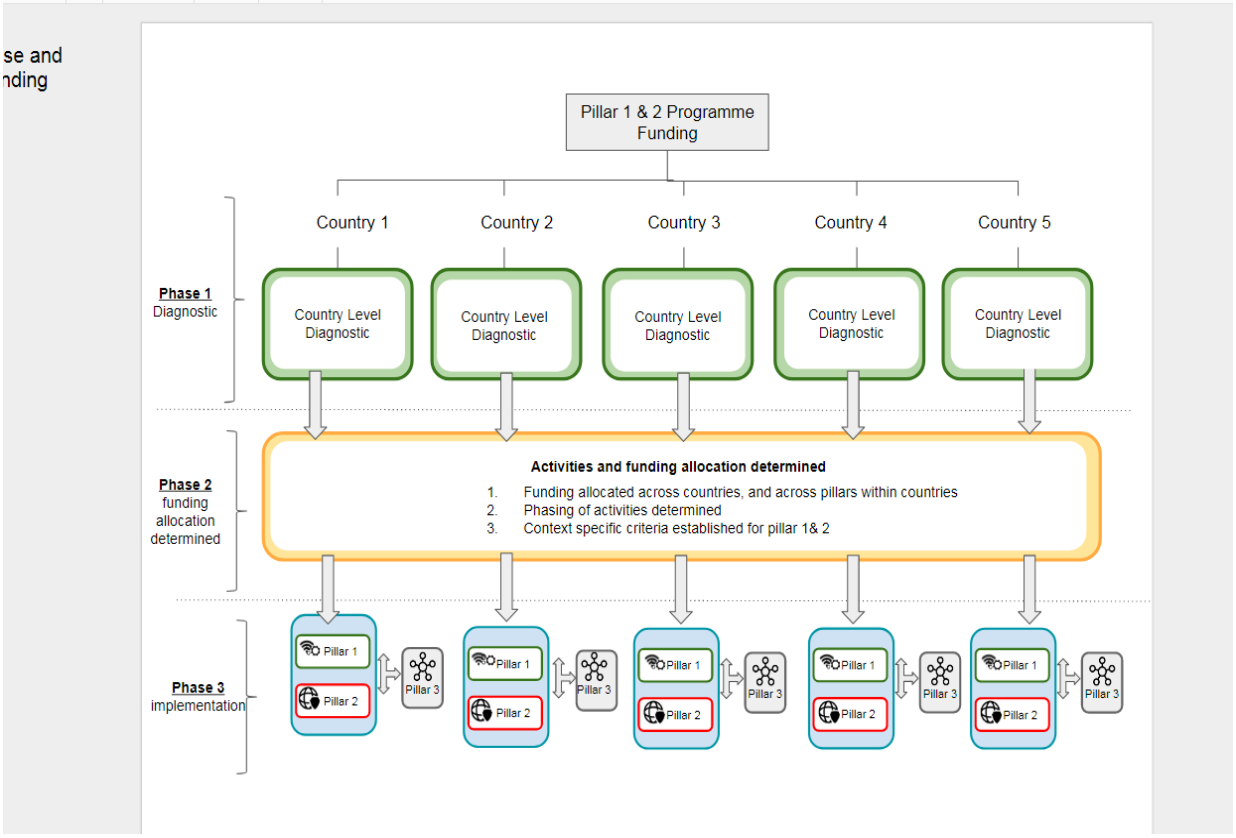
FCO: delivery lead for Pillar 2

215. FCO will act as the Pillar 2 lead and fulfil the policy and technical leadership role on trust and resilience.
216. The FCO will be accountable for all funding and have oversight of all spend under Pillar 2. This includes procurement and contracting of the management agent for Pillar 2, and any other contracting arrangements with other implementing partners for the FCO-led component.

DCMS: delivery lead for Pillar 3

217. DCMS will lead the delivery of Pillar 3 and assume responsibility for all activities of the programme's Tech Hub network – including for delivery, strategic, financial, management, and commercial risks; and oversight of any directly contracted suppliers or implementing partners.
218. DCMS will also provide advisory input on sustainable digital ecosystems based on its Tech Hub experience.
219. Initial plans for implementation phasing are shown in Figure 32 below.

Figure 32: Diagnostics, activity design and implementation phases



Programme management

220. Departmental leads and the PFMO will be involved in the monitoring and evaluation process to ensure compliance with the aims and objectives of the programme as set out in this business case. The risk register will be regularly reviewed and updated as part of ongoing scanning for emerging risks and a proactive

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approach towards risk mitigation.

What HMG resources are required to deliver the programme?

221. To maximise the impact and Value for Money of the programme, the programme will include a number of programme-funded positions, covering programme management and delivery. The exact staffing footprint will be determined in consultation with posts. It will be important to allocate programme resources according to the needs and existing capacity at each post, as well as the local availability of relevant skills and expertise. An indicative staff allocation based on DFID experience of managing programmes of a similar size and nature, and capturing preliminary planning with posts, is outlined in paragraphs 221-225 and tables 33 and 34.

Programme management resources for Pillars 1 and 2

222. The staffing footprint for Pillar 1 is expected to be 8.5-11 programme management roles across the centre and five posts. This level of staffing is in line with DFID expectations of resources needed to successfully manage and implement programme of this size and complexity. The allocation reflects guidance released following the recent DFID Supplier Review and accounts for the importance of HMG staff to manage different departmental requirements and reporting processes. The HMG staffing resource footprint proposed will enable the programme to have greater impact and ensure closer strategic alignment with the objectives of HMG across departments. It will allow the programme team to have a stronger oversight of the management contractors' work and activities in line with the outcomes of DFID's Supplier Review, and ability to leverage implementation activities through liaison with partner governments and other key stakeholders.
223. Of the 8.5-11 roles, 2.5-5 programme management roles will be based in-country to oversee integration and implementation of activities at the national level and 6 roles will be based in the UK delivering programme and financial management as well as technical knowledge and advisory guidance.

Programme delivery resources for Pillars 1 and 2

224. In addition to the programme management staffing outlined above, we propose 2.5 - 5 delivery roles to ensure the government-to-government engagement crucial to the successful implementation of Pillars 1 and 2. These roles will be essential in securing government buy-in and close inter-governmental relationships. These functions cannot be easily transferred to managing contractors as they require the ability to represent HMG in policy dialogue, and may include handling of sensitive information.

Programme management resources for Pillar 3

225. The five tech hubs delivered and staffed in-house by DCMS, necessitate a larger, more delivery-focused staff footprint for Pillar 3. The head of the Tech Hub network with the support of programme management and delivery staff will ensure coordination with the rest of the programme, leveraging DCMS expertise in delivering the UK Tech Hub model.

Programme delivery resources for Pillar 3

226. Pillar 3 will be implemented via programme-funded delivery staff. The network will be coordinated by five centrally-based delivery staff, who will facilitate the setup of the tech hubs network, and drive connections between hubs and wider international digital ecosystems. Three delivery staff based within each programme country will be responsible for country-specific tech hubs work.

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Figure 33: Programme management and delivery staff for Pillars 1 and 2

NOTE: The programme's staffing plan will be adapted based on evolving needs, different country contexts and results of the diagnostics. The programme SROs, in coordination with PF, will be responsible for approving the updated staff plans, including for XHMG co-funded programme staff in-country, at the time of programme implementation.

Programme management staff -- PROVISIONAL PLAN				
Department/ Location	Position	Grade (DFID/FCO)	Role	No. of FTEs
DFID (UK)	SRO and Lead Adviser (Senior Private Sector Adviser) Grade 6	DFID: A1 FCO: D7	Senior Responsible Owner, Lead Adviser and Team Leader for the DFID component of the programme, providing oversight of programme management and coordination; strategic guidance and specialist advice on Pillar 1 activities and on MREL; leading the overall programme governance structure; managing strategic relationships across HMG, with programme countries, management contractors, implementing partners and other key stakeholders[60]	1
	2 x HEO Programme Managers	DFID: B1 FCO: C4	Programme management including financial management and relationship management	2

[60] DFID will also actively leverage its own professional advisory cadres to seek guidance on specific programme issues as they arise. For example, a Social Development Adviser in the same DFID team of the SRO/Lead Adviser will provide inputs on the social inclusion dimension of the programme at crucial junctures (diagnostics; ToR design; reporting) and in strategic discussions of the programme governance structure.

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	Governance Adviser Grade 7	DFID: A2, B1 FCO: D6,C4	Specialist advice and technical guidance on government engagement for regulatory reform	1
FCO (UK)	FCO Programme Manager Grade 7	DFID: A2 FCO: D6	Programme management including financial management and relationship management (supported and overseen by FCO SRO and Lead Adviser resourced outside the programme)	1
	FCO Deputy Programme Manager EO	DFID: B2 FCO: B3	Support to programme management, including financial management and relationship management	1
FCO & DFID (in-country)	Country leads (0.5-1 per country - to combine with FCO delivery roles) SEO/HEO	DFID: B1/A2L FCO: C4, C5	Focal points for implementation and integration of activities at country level. Liaising with programme team at the centre. Coordinating with and monitoring management contractors' and implementing partners' work in-country.	2.5-5
TOTAL programme management staff				8.5-11
Programme delivery staff				

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Department/ location	Position	Grade (DFID/FCO)	Role	No. of FTEs
FCO (in-country)	Delivery officer - 0.5 -1.0 per country (to combine with FCO country manager roles) Grade 7/SEO/HEO (depending on requirements)	DFID: B1 FCO: C4	Deliver government-to-government engagement and policy influencing - crucial for the successful implementation of Pillar 2 and for regulatory reform work in Pillar 1.	2.5 - 5
Total delivery staff				2.5 - 5

Figure 34: Programme management and delivery staff for in-house implementation of Tech Hub network (Pillar 3)

Programme management staff				
Department / Location	Position	Grade (DFID / FCO)	Role	No. of FTEs

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DCMS (UK)	SEO Programme manager	DFID: A2L FCO: C5	Project management, including financial management. Support to coordination with other pillars of the programme	1
Total programme management staff				1
Programme delivery staff				
DCMS (in-country)	3 x locally-engaged staff per country to form Tech Hub teams (Grade 7, SEO/HEO and EO)	DFID: A2, A2L/B1, B2 FCO: D6, C5/C4, B3	Each Tech Hub team will include hub manager, project coordinator(s), sector specialists/analysts. They will be overseen and guided by central team in the UK and advised by the model UK-Israel Tech Hub.	15
DCMS (UK)	1 x Deputy Director (Head of Tech Hub Network) 2 x Grade 7 (Programme Delivery Lead, Head of Business Engagement) 1 x SEO/HEO (Business Engagement Manager) 1 x EO (Business Engagement Officer)	DFID: DD/A2/A2L/B1/B2 FCO: DD/D6/C5/C4/B3	The central team will include head of tech hub network (programme team leader), outreach managers, project coordinators. They will focus on connecting with international and UK companies, identify innovation and business needs, advise the tech hub network; connect with implementation partners:, e.g. accelerators, trainers, sponsors; plan and deliver activities in UK and in programme countries, including communications; interface with partner departments.	5

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Total delivery staff	20

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227. Within the current model, each country would have 0.5-1 programme management staff (Pillar 1-2), and 3-4 delivery staff (3 tech hub delivery officers, and 0.5-1 cyber delivery officer) - a total of 4.5 – 5.5 staff per post across each of the 5 countries. This is required because:
    a) A small number of locally-engaged delivery personnel, focused on government engagement and policy influencing, will be crucial to the successful implementation of both Pillar 1 (particularly regulatory reform and Internet governance elements) and Pillar 2 (Trust and Resilience). Institutional engagement (rather than through the management contractor) will ensure that sensitive issues surrounding cyber security or Internet governance are navigated effectively and with wider policy considerations in mind; and the UK government reputation as a global expert in cyber security is adequately leveraged.
    b) Some of the UK missions in the programme countries programme are not resourced to assume an active role in the management or delivery of a large-scale complex programme. Locally-based programme management and delivery staff will ensure adequate support at post and good coordination with the central programme team in the UK.
    c) Embedding HMG in delivery will ensure that lessons learned and relationships built through delivery of the Digital Access Programme are internalised.
    d) Pillar 3 (Tech Hubs) in-house delivery model is explained in the Appraisal Case (paragraph 84).

228. We will engage closely with posts as we finalise the local staffing models, and will explore ways to streamline and optimise staffing allocations across the three Digital Access programme pillars. We will also explore ways to synergise staffing across Prosperity Fund programmes in posts, where possible. All staffing costs overseas have been calculated based on FCO full economic costs.

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What are the risks and how would they be managed?

Figure 35: Initial analysis of programme risk

Risk	Likelihood	Impact	Mitigation	Residual Risk
Delay in business case sign-off by involved departments results in unplanned major delay in spend for first FY, reduced outputs from inception activities an knock-on effect on remaining implementation period.	Almost certain	Severe	- Identify likely timeline for delivery given current sign-off processes and forecast accordingly - In-house design and delivery of diagnostic work - Bring forward some initial activities - Negotiate longer implementation timeframe with Prosperity Fund (till end of FY 2021/22).	Major
Divergent objectives across HMG departments lead to incoherent programme threatening impact of intervention	Likely	Major	- Cross-HMG working group during design and cross-departmental programme governance structure during delivery with close engagement of post and wider stakeholders as appropriate. - Identified synergies across pillars of activity to minimise procurement requirements and realise economies of scale where possible. - Explore option of MoU between contractors to co-ordinate delivery (overseen by HMG) - Ensure line management structures for programme staff at post will promote cross-departmental collaboration. - Programme governance ToRs and SRO letters will set out responsibility of each department for ensuring close collaboration and maintaining strategic coherence with DFID in the lead for coordination	Moderate
Economic growth opportunities are not realised in partner country, limiting the achievement of both primary purpose and secondary benefits.	Likely	Major	- Detailed analysis/inception phase to ensure pillar activity is adapted to achieve maximum impact and identify barriers and risks unique to each market. - Work with other sector teams (i.e. Future Cities, Energy, Telecoms) to identify related opportunities for international business. - Regular monitoring and evaluation in-country to assess outputs and adapt activities as needed.	Moderate
Lack of HMG post buy-in in selected countries weakens capability of	Unlikely	Severe	- Develop mechanisms to ensure regular strong engagement at both senior level	Minor

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programme to deliver intervention			(i.e. Ambassador/Head of Mission/Head of Country Office) and working level (i.e. Prosperity Fund team/ Programme manager/lead). - Agree management/reporting structures. - Work with posts to develop tailored solutions suited to context. - Ensure resource requirements at post are fully articulated and met as fully as possible by programme-funded staff, with central support available as needed.	
Partner Country government resistance to regulatory reform and/or lack of economic stability.	Possible	Severe	- Consultations with partner governments during diagnostics, activity design and implementation. - Dedicated in-country staffing allocation to ensure coordination with partner governments and policy influencing. - Scan for emerging risks and implement adaptive programme management by redesigning activities and reallocating resources strategically where needed.	Major
Limited understanding or misperception of Prosperity Fund programming.	Likely	Severe	- Work with comms teams in DFID, DCMS, FCO and PF to develop pro-active cross-HMG communications strategy to ensure concerns are addressed and questions answered adequately. - Ensure rationale and narrative in business case and other key programme documents (ARs, MTRs etc.) are clear and aligned with comms plans and for risk mitigation approach.	Moderate
Reputational risk related to the innovative content of the programme.	Likely	Severe	- Programme quality and targeting criteria developed and applied to ensure programme stays focused on the poor and vulnerable. - Develop a strong communications strategy, in collaboration with PFMO and departmental communications teams, to communicate clearly the rationale of supporting digital inclusion for development outcomes and increased efficiency/Value for Money of UK aid.	Moderate
Misuse of funds or fraud by implementing partners or fund recipients.	Possible	Severe	Strong financial management procedures will be adopted to prevent fraud and misuse of funds and implement a zero-tolerance approach, including robust due diligence procedures, close monitoring and suitably hands-on oversight of	Minor

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			programme.	
Weak understanding of the political economy in each country creates opportunities for elite capture and benefits fail to reach low-income/excluded groups creating inequality	Likely	Severe	- Initial diagnostic stage will be used to gain a deep understanding of the political economy in each country. This will be used to tailor activities and scan for emerging risks and opportunities. - Close partnership with HMG at post to identify risks early and tailor programme activity accordingly. - Success criteria reflecting inclusion of low-income and excluded groups to be continually monitored and used to drive programme activity.	Moderate
Delays to Prosperity Fund MREL mean that robust monitoring is not in place from programme inception.	Unlikely	Severe	- PF contract awarded to MREL contractor. Programme team liaising closely with PF to assure focus and timelines. - Ensure learning and insights work stream of the programme complements the work of the MREL contractors.	Minor
Longer than anticipated timeline for procuring DFID's management contractor, due in part to the need to implement the recommendations of the Supplier Review, results in unplanned major delay in spend for first FY and reduced outputs [61].	Likely	Severe	- Identify likely timeline for delivery given current sign-off processes and plan spend to forecast. - Consider options to begin diagnostic work and bring forward some initial activities to mitigate potential delays in full programme set-up. - Work closely with commercial advisor to ensure procurement process works as quickly and smoothly as possible.	Minor
British industry not aware of opportunities generated in more dynamic digital economies	Possible	Major	- Engage with trade associations and key industry partners to share information on digital economies in the programme countries. - Non-ODA research completed by FCO-contracted supplier to identify opportunities for UK business. - Present detailed analysis of partner countries' markets providing key information trade and investments in the digital economies of programme countries.	Moderate

[61] While there is a risk of delayed timelines in a longer procurement process, a more robust approach should lead to the best quality supplier for the programme, thereby increasing the probability of delivering high impact.

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229. All risks identified so far are within the risk appetite of the Prosperity Fund and of DFID for similar interventions. The top risks are also included in the programme risk map in Annex 8 to this business case.
230. Additional, country-specific risks will be identified during the country diagnostics, inception phase and throughout implementation. The appropriate risk management approach will be adopted and reviewed regularly.
231. As lead department for this programme, DFID will maintain a programme-wide risk register and actively collaborate with partner departments to assess and manage risks.

Risks of violation of human rights

232. Pillar 2 of this programme falls into the category of justice and security sector programming. An assessment of the risk that the assistance provided under Pillar 2 could directly or significantly contribute to a violation of human rights and/or international humanitarian law will be undertaken for each programme country, following the HMG Oversees Security and Justice Assistance Human Rights Guidance, once programme activity is more clearly defined after country-level diagnostics and inception phase. It is currently expected that there will be no such contribution, based on indicative activities.

How will the programme be monitored and evaluated?

233. Responsibility for data capture, baselining and reporting sits with the programme managers and implementing partners. Indicators will be agreed with the Prosperity Fund's independent monitoring and reporting contractors, the evaluators and the programme implementers. The monitoring and reporting contractors will identify the data requirement in terms of format and quality. The programme team will keep a close oversight and quality assurance of the management contractors' work in order to ensure timely and accurate reporting.
234. Progress will be monitored against the theory of change and log-frame, which will be finalised during the inception phase in collaboration with the Prosperity Fund's MREL independent contractors. Results and progress will be monitored through quarterly and annual progress reports. These will feed into the Prosperity Fund yearly review process and DFID annual reviews.
235. The programme will include a 'learning and insights' component that will generate lessons on the effectiveness of the holistic approach to promoting digital access as tested by the intervention. This will include a separate contract for detailed programme-level gathering and analysis of evidence, which would not be covered by the Prosperity Fund MREL contractors. The learning and insights work-stream will have an evaluative research-focussed approach. It could include in-depth case studies and field-level research to ensure learning and innovation is at the core of programme implementation. Additional activities may include focused action learning by the main management contractor; and liaising with key stakeholders to share and disseminate lessons.
236. If annual or quarterly progress reports by the management contractors reveal that the programme is not meeting the targets, the necessary adjustments will be made. In extreme cases where corrective action is not successful, funding will be curtailed or stopped.

Prosperity Fund monitoring, reporting, evaluating and learning (MREL)

237. Consistent with the Prosperity Fund requirements, we will instruct the management contractor for the programme to develop a quarterly results reporting system. We will work with the Prosperity Fund MREL contractors to ensure consistency with Prosperity Fund processes and systems – particularly around data quality and consistency. Programme data capture and baselining will be the responsibility of the programme and its implementers. As instructed by the Prosperity Fund, we will charge the costs of this activity to the central MREL budget. This element of the programme is capped at 1% of programme allocation.
238. If this programme is selected to be included in the sample for Prosperity Fund-level evaluation, we will work with the fund evaluation contractor to develop the strategic questions that will be required for both the evaluation exercise and for feedback to programme managers, implementers and stakeholders. The

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overarching evaluation methodology will be set out by the Prosperity Fund evaluation contractor. We will work to deliver the required coordination between the various contractors at programme level.

239. If the programme is not selected for Fund level evaluation, we will work with the programme-level learning and insights contractor to develop a set of strategic questions that we will want to answer through the process.

Programme adaptation and flexibility

240. It is recognised that programme implementation cannot be standardised across all five countries given their very different contexts and needs. Whilst the overall three-pillar model will be implemented in each of the countries, that specific content and balance between the pillars will be designed to respond to country needs as identified during the diagnostic stage. An operational learning approach will be adopted to enable the programme to adjust to lessons from implementation, both within country and across the programme as a whole.
241. The delivery of technical assistance packages and the issue of any competitive grants will be phased against agreed milestones to incentivise delivery, enable early decisions on viability and focus resources on those demonstrating results. The local political context and partner government engagement (including through HMG-led policy dialogue) will also be relevant factors, as will the focus of other HMG activity and priorities in-country.
242. The programme design provides a range of options to scale up or down, depending on available budget and timeframe. For example funding could be increased or decreased for individual pillars or the number of countries could be adjusted.
243. Terms of Reference for the management contractors will reflect the importance of an adaptive approach to programming and the potential for adjustment to the scale of time or budget.

Communications

244. Given the potentially sensitive nature of a digital inclusion programme of this scale, as well as the need to ensure effective visibility for the programme to achieve its impact, a proactive communications strategy will be developed, working with the media departments in DFID, FCO and DCMS, and with the Prosperity Fund's communications team.
245. Dissemination of learning and insights from programme implementation, including the validity of the overall approach as well as individual interventions, will be undertaken. This may include a separate contract to provide support in this area.

Indicative results framework / logical framework

246. The monitoring, reporting, evaluation and learning (MREL) for this programme will be consistent with the Prosperity Fund's approach to MREL. We will work with the Fund contractors to develop critical indicators for fund-level and programme-level reporting, identifying aggregable indicators for regular reporting and management indicators to allow programme managers to assess progress and outcomes. The programme MREL will be consistent with the programme theory of change and the log-frame analysis. We will report monthly in expenditure and quarterly on results, in line with the Prosperity Fund reporting cycle.
247. An indicative results framework has been developed with M&E support through DFID's EQUALS framework to ensure the measurability of indicators, as this programme falls outside the standard results areas. As further diagnostic work is undertaken, and tailored interventions designed at the country level, individual country level log-frames will be developed to feed into the main programme log-frame to ensure sufficient granularity of information.

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Figure 36: Indicative results framework

	Results	Indicators*
Impact	Improved digital access supports poverty reduction and inclusive economic growth	Subnational/local economic growth and poverty reduction figures (i.e. at the level of project interventions)
		ITU ICT Development Index
		ITU Regulatory Tracker
Outcome 1	Strengthened national enabling environments deliver increased and more inclusive digital access, especially for socio-economically disadvantaged populations	# additional users connected, directly attributable to the support to inclusive business models; by socio-economic groups
		Affordability as measured by cost by user, MB; at national level and in regions where inclusive business models have been supported
		Improved understanding of interaction between digital access, economic growth and poverty reduction
Outcome 2	Strengthened UK leadership on digital inclusion for development, and in the ICT sector	Perception of UK's international position and role in digital inclusion for development
		Perception of UK's international position and role in ICT sector
		# connections to UK businesses in the local digital ecosystems
Output 1	Developed, validated and scaled-up innovative models delivering affordable digital access for underserved populations	# innovative models tested and developed through programme interventions
		# innovative models validated and rolled out as a result of programme interventions
		Leverage ratio of additional finance crowded in to innovative models supported by the programme, directly attributable to project interventions (by national, international, UK)
		Leverage ratio of additional finance crowded in to innovative models supported by the programme, partly attributable to programme interventions (by national, international, UK)
Output 2	Improved enabling environment for digital access, including regulatory environment, appropriate market access reforms, stronger Internet governance and availability of locally-relevant content for target populations.	ITU Regulatory Tracker - individual indicators
		Perception of regulatory environment
		# people who have accessed locally-relevant content through the supported innovative models or through interventions of implementing partners

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Output 3	Increased resilience to cyber-crime and cyber-security threats	Perception of national cyber-security environment Change in the internationally-recognised indicators related to national cyber-security capacity in programme countries Change in # of cyber-security incidents (where applicable)
Output 4	Stronger national digital ecosystems, cultivated through skills development, entrepreneurship support and improved business networks	# firms supported (by number of employees, turnover or assets)
		# business-business connections facilitated through project interventions (by national, international, UK)
		Leverage ratio of finance raised for firms in local digital ecosystem, directly attributable programme activity (by national, international, UK)
		Leverage ratio of finance raised for firms in local digital ecosystem, partly attributable to programme activity (by national, international, UK)
		# people trained through project interventions (by socio-economic group)
		Selected indicators from the ITU Regulatory Tracker
* *Data for users will be disaggregated by gender and other indicators such as age, ethnicity, deprivation. The option of weighting for target groups will be considered.*		