# Mobile for Development: a diverse stakeholder mix

- Mobile for Development growth has accelerated since 2009 as mobile ownership has increased to over 40% across the developing world (or around 600 million *new* people using mobile over the last 3 years)
- Despite this, scale has generally proved elusive in the absence of defined value chains, sustainable business models and market visibility
- This is not for want of trying or lack of interest; indeed, the sector enjoys a large and growing stakeholder group which currently numbers over 600 different organisations ranging from mobile operators to social investors to entrepreneurs to government
- While a large stakeholder group is encouraging and necessary from a long term investment and growth perspective, it means there are different and often competing incentives and objectives at play for investing in M4D, which can drive fragmentation

The Mobile for Development (M4D) sector has attracted much in the way of publications, research and commentary owing to its growth and dual opportunity for socio-economic improvement combined with good business. As a thought leader cutting across the sector, Mobile for Development Intelligence serves the entire stakeholder group of mobile operators, vendors and entrepreneurs, international development organisations, social investors, government and regulators, and the academic community. As such, we have designed this report to address less the sector itself, and more the stakeholders serving it. We begin by overviewing broad stakeholder involvement and the conflicting objectives and incentives, before discussing each stakeholder in turn (see contents) and commenting on the outlook for collaboration.

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www.mobiledevelopmentintelligence.com/insight

# Growing sector, competing interests

Over the last 5 years, the number of people actively subscribing to mobile services in the developing world has grown at over 10% annually[1]. We estimate from this that over 40% of the population now own a mobile phone, with the penetration over 50% considering those who have *access* to a phone in a household even though they don't own one. This ubiquity presents a unique opportunity for the mobile device to enable access to basic services (banking, sanitation, electricity, education, health) that, while universal in western markets, are unavailable to over 50% of people in several developing regions, such as sub-Saharan Africa. The number of these Mobile for Development services has accelerated since 2009 to bridge this gap, with recent growth driven by the mobile money, learning and entrepreneurship sectors (see Figure 1 and www.mobiledevelopmentintelligence.com/products)

**Figure 1. M4D evolution**
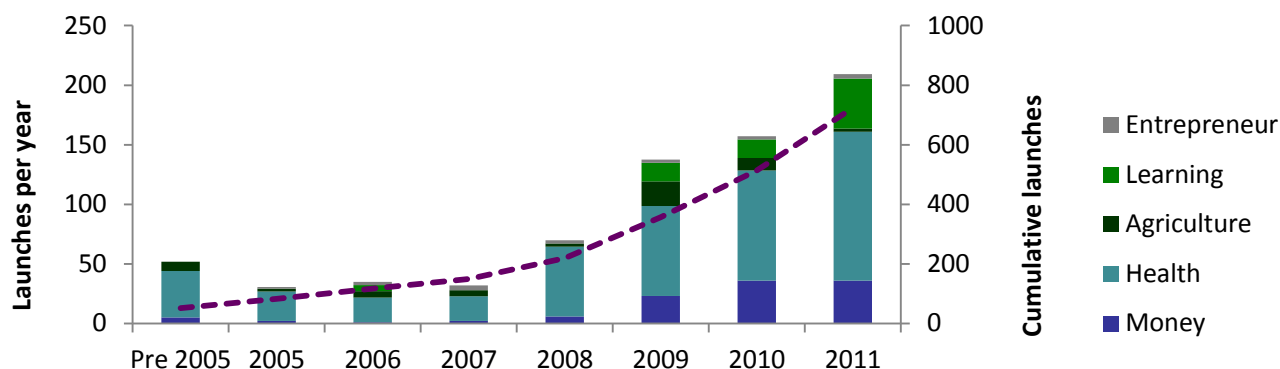


Note: mobile-enabled products and services in developing world tracked by GSMA (including those merged/closed)
Excludes services in pipeline with an impending launch
Source: GSMA-MDI Analysis

While growth has accelerated, there is still a general lack of scale across the M4D sector. The reasons for this are varied and complex, but we believe can be distilled into three general areas: lack of defined value chains, sustainable business models and visibility of market participants[2]. These factors are examined in detail in research led by MDI with support from the Rockefeller Foundation (soon to be published). However, it is important to understand the M4D stakeholder group to understand the latter two factors in particular. We believe this is also useful for existing and new participants in the sector to identify potential partners, and to understand the motivations of different stakeholder groups.

M4D involves a wide range of stakeholders. Broadly grouped, these fall into one of six categories: mobile operators (MNOs); vendors and entrepreneurs; development organisations (including donors, NGOs and other development groups); social investors; government and regulatory bodies; academics. Across the developing world based on services tracked by MDI, mobile operators lead

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[1] According to Wireless Intelligence

[2] Value chain: *Proven value proposition for participants at each stage of the value chain (e.g. M4D service provider, vendors, mobile operators)*

Sustainable business model: *Services with potential to become self-sufficient or to have funding underpinned on long term basis*

Visibility across markets and sectors: *Knowledge of adjacent participants in the sector and ability to partner in areas that expand reach or value of the service. Lack of consumer awareness also impacts take up of services*

the most M4D services with the average country operating subsidiary involved in M4D having over 2 services. Vendors and other firms providing M4D services have just under 2 services each, while government-led activity is still relatively undeveloped (see Figure 2)

**Figure 2. Stakeholder investments in M4D**
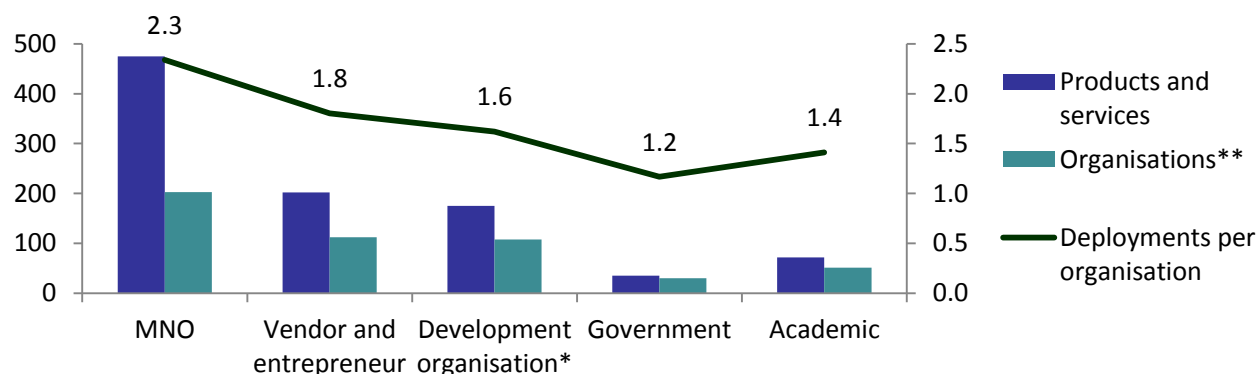


*Includes donors, NGOs and other development groups
**Number of unique organisations (country operating companies of MNOs each count as a unique organisation)
Source: GSMA-MDI analysis

A wide variety of stakeholders is both encouraging and challenging. Encouraging because the presence of defined value chains requires an ecosystem where at each point in the chain there is a proven value proposition to justify an organisation's involvement or investment. However, it is challenging because different stakeholder groups are motivated by differing, and in some cases disparate, incentives (see Figure 3).

**Figure 3. How important is scale vs. social impact?**

|  | Scale/profit | Social impact | Accountable to | Examples |
|---|---|---|---|---|
| MNO | High importance; leverage existing network and brand assets to market and deliver service | Generally desirable, but not driving force for investment | Investors | Bharti Airtel, Safaricom, Telefonica |
| Vendor and entrepreneur | High importance; ventures are generally for-profit | Generally desirable, but must be balanced with sustainable business models | Investors | Nokia Life Tools, M-Kopa, Souktel |
| Development organisation | Proof of concept at local pilot stage, but services not always implemented with sustainable business models required to achieve scale for commercial purposes | High importance; interventions require demonstrable potential to achieve incremental improvements in social impact (e.g. infant mortality, maternal health) | Overarching principles of organisation, international mandates (e.g. MDGs) | World Bank, USAID, DFID (UK), Save the Children |
| Social investor | High importance; investment used to scale up projects with potential for impact | High importance; investment decision criteria generally incorporate social impact metrics | Values and principles of organisations; own investors | Omidyar Network, Acumen, LeapFrog |
| Government and regulatory | Proof of concept at local pilot stage, but services not always implemented with sustainable business models required to achieve scale for commercial purposes | High importance; require demonstrable and measurable improvement in livelihood of target population | Electorate, international mandates | Departments of agriculture, health; mobile telecom regulators |
| Academic | Generally focus interventions in local areas to ensure analytical rigour is not compromised | High importance; require demonstrable and measurable improvement in livelihood of target population | University or other academic institution | Johns Hopkins, Georgetown, Santa Clara, University of Pretoria |

Objectives and incentives are generally segmented by the importance of achieving scale vs. social impact. For example, mobile operators leverage their existing network to deliver (or partner) M4D services, making defined, scalable business models the key decision making criteria, with social impact a desirable but lower priority factor. Development organisations often require demonstrable potential for an intervention in M4D to improve economic or social outcomes. While the potential for scalability has become increasingly important, grants are generally awarded based on impact first, ahead of the potential for longevity. Social investors sit broadly between these two groups, with investment requiring a return *and* a measurable improvement in development metrics.

Scale is important both to increase profitability by driving positive operating leverage (more revenue-generating activities spread across a fixed cost base) and to drive sustainable impact. However, the importance of partnerships in achieving scale (each stakeholder can exploit their comparative advantage) means that reconciling and managing the incentives of different stakeholder groups is a major challenge for the sector.

# Stakeholder overviews

To aid comparison, we overview each stakeholder group on the basis of their main functions, how they are structured and the assets each group brings to the M4D sector.

## Mobile operators

### Function

Mobile operators principally provide access to a cellular network. The network consists of a number of base stations, each providing connectivity to devices within a given radius. Voice and data traffic transmitted to base stations is then linked through a backhaul network that runs across the footprint of a given operating country.

Access is available to both personal and corporate customers. Operator networks allow for a range of connected devices to function using unique SIM cards, which include mobile handsets, dongles (which give internet access to a PC via the mobile network) and cellular tablets (e.g. iPads, Samsung Galaxy Tab). Network technology standards (such as GSM) are generally set on a regional basis so that economies of scale can be achieved in buying handsets, in theory resulting in lower prices for consumers. The range of standards that a given operator supports will depend on their network; for example, most European-based operators (such as Vodafone, Telefonica) support the GSM and UMTS (3G) standard, while other standards are supported by different operators (e.g. CDMA by China Mobile, Verizon and Sprint (US)).

Operators provide access to voice, SMS (text) and data (mobile internet) communications. Customers can access these through prepaid or contract plans. Contract plans are dominant in mature markets (e.g. Europe, US) given their higher customer lifetime value and operator subsidy that makes it cheaper for customers to acquire higher end handsets (e.g. smartphones). However, the vast majority (>90%) of people using a mobile phone in developing countries use prepaid plans. This is because they are more affordable, particularly important given that expenditure on mobile is a higher proportion of individual income, and there is a lower burden on producing identity documents and collateral (via bank account) most operators require for a contract (see Figure 4).
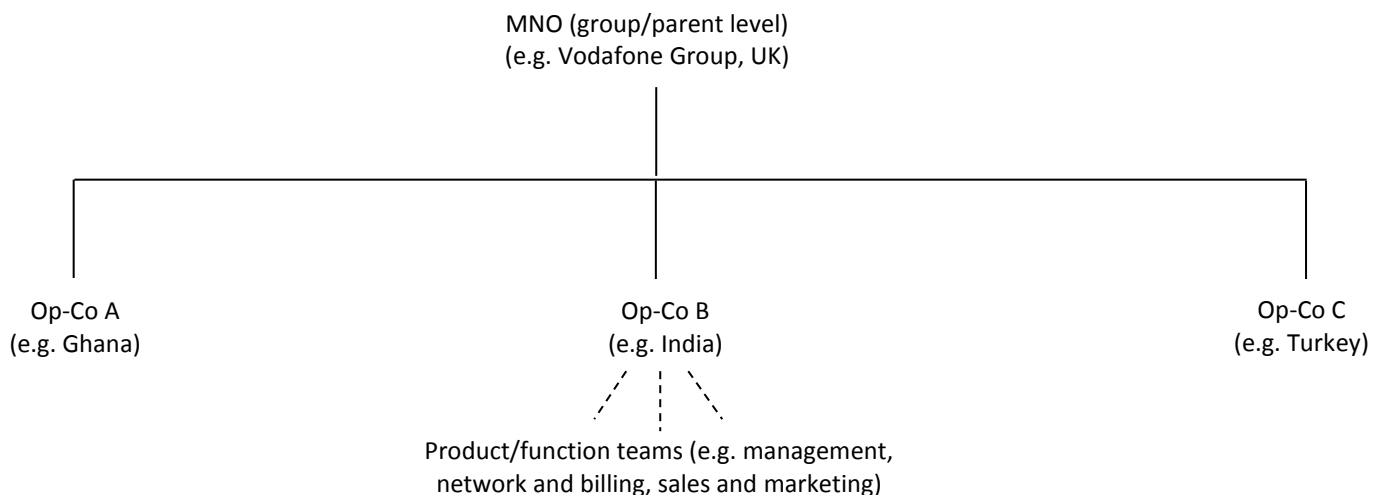
**Figure 4. Prepaid vs. contract access**

| | Prepaid | Contract |
|---|---|---|
| Contracted term | None | Commit to minimum (e.g. 18, 24 months) |
| Customer spend | Limited by size of top up (often $5 or under) | Minimum = contracted months x monthly tariff<br>Maximum = minimum + overage  + other (e.g. roaming) |
| Barriers to acquisition | Logistical (e.g. proximity to an airtime vendor) | Low income<br>Lack of identity documents<br>Poor or lack of credit history |
| Mobile operator view | Lower customer lifetime value on airtime fees; less willing to subsidise handsets<br>Limited customer loyalty<br>Lower data/VAS uptake | Higher customer lifetime value on airtime fees; more willing to subsidise handsets<br>Deeper knowledge/relationship with end users |
| **Is the dominant structure in** | **Africa, Middle East, Latam, parts of Asia (e.g. China, India)** | **North America, Western Europe, parts of Asia (e.g. South Korea, Taiwan)** |

**Structure**

An operator's profit margin is logarithmically related to its market share. New entrants to the market with low market share (less than 5%) will inevitably be loss-making until network scale is increased. For this reason, the majority of operators are generally large groups, with presences in multiple countries (e.g. Vodafone, MTN, Milicom), or with a dominant presence in a single country with a large population (e.g. AT&T and Verizon in the US, China Mobile in China).

The parent company has its own headquarters, with multi-country groups having a series of operating subsidiaries (op-co's). For example, France Telecom has 33 mobile operations worldwide, with 11 in Europe, 21 African and Middle Eastern markets and 1 in the Americas. Each op-co is generally made up of its own management group, which oversees product and service teams, including those dedicated to the country mobile network, sales and marketing, strategy and customer care (see Figure 5).

**Figure 5. Mobile operator structure**

MNO (group/parent level)
(e.g. Vodafone Group, UK)

Op-Co A
(e.g. Ghana)

Op-Co B
(e.g. India)

Op-Co C
(e.g. Turkey)

Product/function teams (e.g. management, network and billing, sales and marketing)

The strategic direction of the operator is usually set at group-level, with this implemented at the country operating level. Decisions on pricing, individual product and service launches, and M4D investments are made within the op-co at the local or regional level. It is at this level where M4D entrepreneurs and other service providers are best placed to negotiate with operators on partnering M4D services (to find a list of all operators at the country/op-co and group levels, visit www.mobiledevelopmentintelligence.com/organisations).

In financial terms, the operators are the largest stakeholder group, with combined global revenues of over $1 trillion – five times as much as the handset market, with Google and Facebook (market leaders in their own respective sectors) revenues less than 5% of the global mobile market.

**Figure 6. Global revenue ($ billion), 2011**
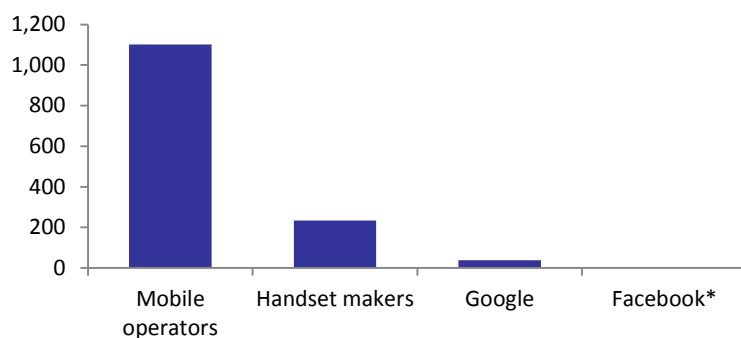


*Estimated by eMarketer
Source: Wireless Intelligence, Strategy Analytics, eMarketer, Google, GSMA-MDI analysis

Growth in mobile is being driven by developing countries, with the gap in growth between these and mature markets once again widening in 2011 (see Figure 7). This is largely a story of continuing subscriber growth (mature markets are saturated), which is likely to continue for several years given that still less than 50% of people own a mobile in the developing world. However, these markets are not immune to shifts in consumer behaviour, and as communications migrate from voice to text-based methods (email, social networking), operators need to mitigate the risk of lost revenues – this underlines one of the financial incentives for operators investing in M4D services.

**Figure 7. Mobile revenue growth**
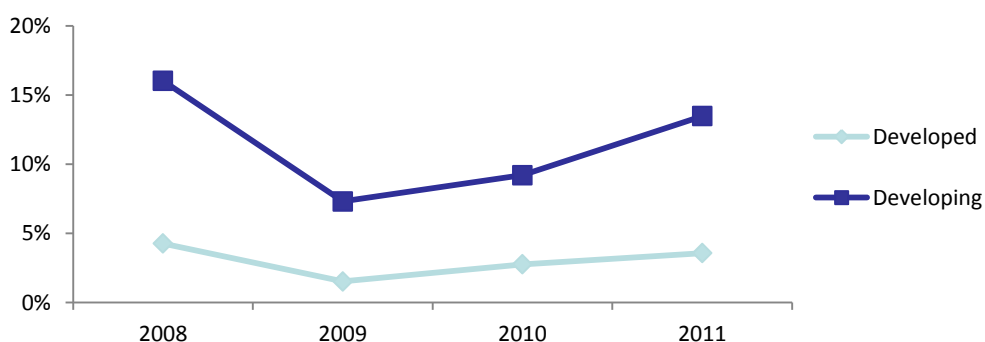


Source: Wireless Intelligence, GSMA-MDI analysis

**What they bring to M4D**

The operator presence in the M4D sector involves four general areas.

### i)      Network

Network coverage underpins all mobile-enabled services. 2G coverage is above 85% in most markets (voice and basic internet access), with 3G (for higher speed internet access) lower although growing with capital investment. For example, 3G coverage in the APAC region is forecasted to increase from 50% in 2011 to 90% by 2017[3] (it is worth noting that mobile data access is possible with both 2G and 3G networks. Quality of service can be compromised as more people use the network, but with low mobile internet penetration in many developing countries, this is not yet the problem it has become in mature markets). Operators may launch their own M4D service (e.g. Safaricom's m-Pesa), or partner with service providers through a revenue share agreement (e.g. Nokia Life Tools)

### ii)      Distribution network

Developing countries lack the bricks and mortar store networks of developed countries. Most people purchase mobile services through local distributors, or agents of the mobile network. This type of agent network is unique to the mobile operators in developing markets (the retail model in the UK/US is based on high street and big box stores, not kiosks in cities and villages), which means it can be reused as purchase/use points for other mobile-enabled services, such as financial access (Safaricom has around 39,000[4] agents in Kenya for its m-Pesa service).

### iii)     Capital investment

This is mainly targeted towards network roll-out. While mobile phone ownership is now over 40% across the developing world, there is a pronounced urban-rural divide (see Figure 8)

**Figure 8. Urban-rural divide (active mobile subscriber penetration)**
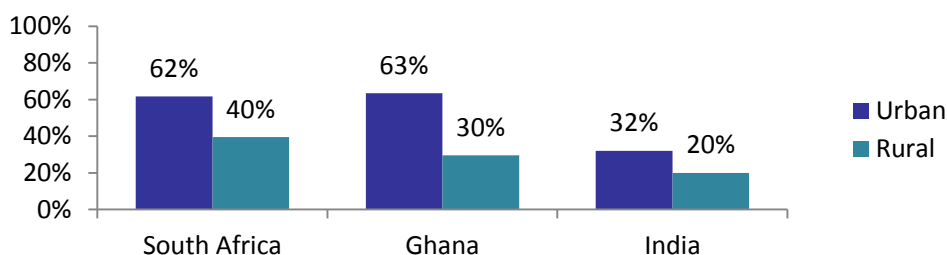


Source: GSMA Wireless Intelligence, AMPS, Ghana Statistical Service, GSMA-MDI Analysis

Capital investment will drive continued expansion of networks into rural areas. However, rural areas are often off the central electricity grid, which means base stations deployed in these areas must run off alternative power sources. Diesel is the most common of these, but also most expensive. There is increasing use of solar powered sites (and to a lesser extent other renewables), which carry a higher up-front investment, but lower operating cost in the long run for the mobile operator[5].

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[3] Ericsson Mobility Report, November 2012
[4] http://www.safaricom.co.ke/safaricom_annual_report/pdfs/what%20we%20do.pdf
[5] The GSMA's Green Power for Mobile programs has run extensive measurement and evaluation of these technologies; see www.gsma.com/mobilefordevelopment/programmes/green-power-for-mobile

### iv)    Audience and brand

Operators have large customer bases, often in the order of millions to tens of millions. With this comes access to customer data, both in terms of demographics (e.g. income, location) and behaviour (how people communicate, whether voice, SMS or other modes such as social networking or emailing). M4D partnerships able to leverage this data and audience reach are likely to improve the relevance and potential scale of the service.

While brand is an intangible quality, survey evidence suggests customers are more loyal to a mobile network than they are to a given handset (with some exceptions such as the iPhone).

## Vendors and entrepreneurs

Before discussing entrepreneurs that have started businesses in the M4D sector, it is important to overview the handset market in developing regions. While there are some examples of handset makers designing and marketing M4D services (e.g. Nokia Life Tools), these vendors generally sit in the wholesale section of the value chain, selling mobile phones to operators or other outlets, who then retail them to consumers.

Developing markets account for around 80% of handset sales worldwide, up from two thirds in 2007. Nokia and Samsung are the biggest manufacturers in terms of sales volume, although the rise of Chinese OEMs (Huawei and ZTE in particular, but also others positioned at the low end) has created a competitive dynamic based on convergence between high end featurephones and lower end smartphones (mainly running Android, see Figure 9). Apple is the only manufacturer that sells more in the US and Europe than it does in emerging markets – of course, this is because the price of the iPhone has remained around $600 since its launch in 2007, far too expensive for the average consumer in the developing world (most other handsets fall in price over time). However, given the increasing mobile penetration, wealth, and the presence of cheap handsets on the grey market (many of which are believed to come from China, often running Android) in developing regions, there is increasingly seen to be a case for a cheaper version of the phone geared towards an audience that would access the internet using prepaid mobile data.

**Figure 9. Handset sales, 2012**
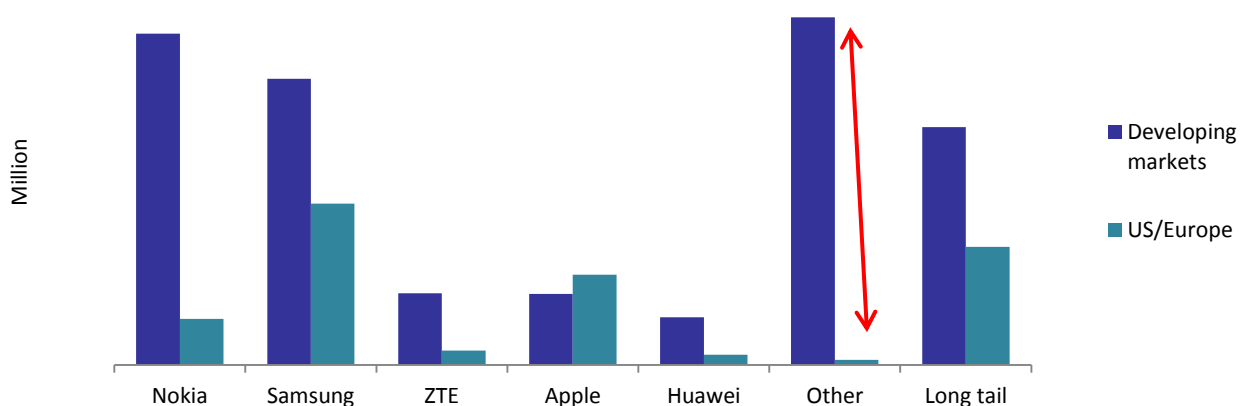


Source: Strategy Analytics, GSMA-MDI Analysis

Handsets made by manufacturers are generally sold wholesale to the mobile operators, who then retail them to consumers (see Figure 10). In most mature markets, the majority of handset sales are now contract-based, with the operator often subsidising the cost of the handset on the basis of earning that back over the course of a contract (usually 18 or 24 months). However, the prepay dominance in developing countries means that handsets are generally unsubsidised and sold separately, either through an operator store or through the agent network.

**Figure 10. How are handsets sold?**
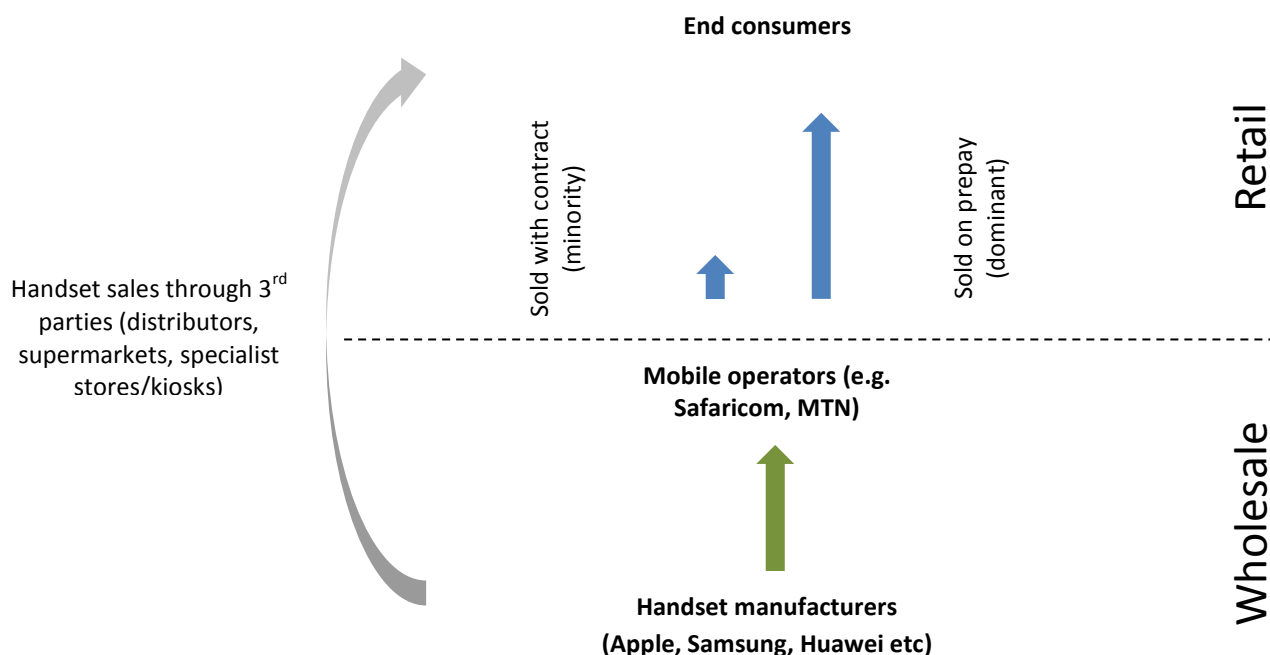


Handsets can also be sold through 3rd parties, such as specialist stores/kiosks in cities and villages, or supermarkets (some are also acquired as hand-me-downs, particularly to young people as first time owners).

The rise in handsets produced by grey market manufacturers is startling, with most of these likely sold outside of the mobile operator sales channels (see Figure 11).From an M4D perspective, this is important because some of these handsets will be running Android, and are likely to be priced at the low end (below $150), more accessible for consumers in these markets (e.g. small business owners, farm co-operative heads). While there are few M4D services tracked by MDI that are led and branded by global handset vendors (a key exception is Nokia Life Tools), this cohort of cheaper Android devices presents both opportunities (e.g. growing user base, services designed for apps) and challenges (e.g. potentially lower build quality and battery life) for M4D entrepreneurs.

**Figure 11. Handset sales in Asia-Pacific**
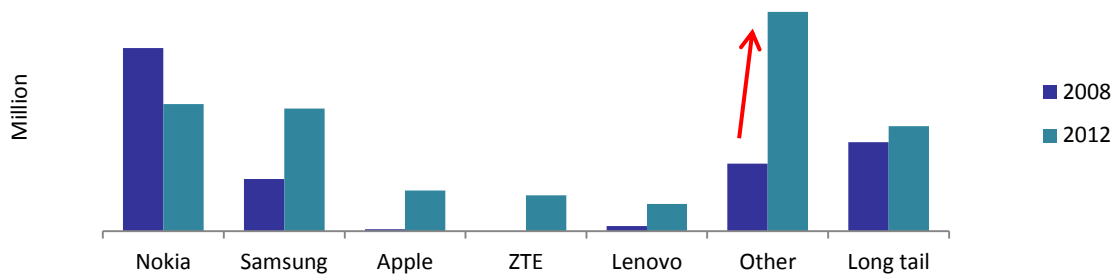


Source: Strategy Analytics, GSMA-MDI Analysis

**Entrepreneurs and other vendors**

**Function**

Entrepreneurs design M4D services, either branding it directly or partnering with a mobile operator. Within this broad function, there are a range of business areas (see Figure 12). In recent years, the term 'social entrepreneur' has come into usage, a term that broadly encompasses an entrepreneur whose goals include a social as well as financial return.

**Figure 12. Types of vendors and entrepreneurs in M4D (developing world)**



Source: GSMA-MDI analysis

The relatively low barriers to launching a start-up (compared to, say, an operator) and the rise in mobile phone ownership across the developing world have stimulated a large amount of entrepreneurial activity in the mobile sector. While most products continue to be focused around basic or featurephones, there is a lot of variation in the functionality delivered; push content (mainly via SMS) is widely used across all M4D sectors, with payments, P2P and inventory management solutions more common in specific sectors (see Figure 13).

**Figure 13. Functionality of M4D services**

| | Money | Health | Agriculture | Learning | Enterprise | Total |
|---|---|---|---|---|---|---|
| Interactive content | | | | | | |
| Push content | | | | | | |
| Payments | | | | | | |
| P2P | | | | | | |
| Data collection | | | | | | |
| Call centre | | | | | | |
| Inventory management | | | | | | |

Source: GSMA-MDI analysis

Geographically, this group is concentrated in India and sub-Saharan Africa (see Figure 14). East Africa – most notably Kenya – has emerged as a particular innovation hotspot. However, there are signs that previously inactive parts of the world are undergoing a growth in mobile entrepreneurship. For example, in Latin America encouraging signs include the vibrant Porto Digital area of Recife in Brazil and concerted government action in Chile to attract mobile and internet start-ups[6].

**Figure 14. Top 10 countries for M4D deployments (developing world)**
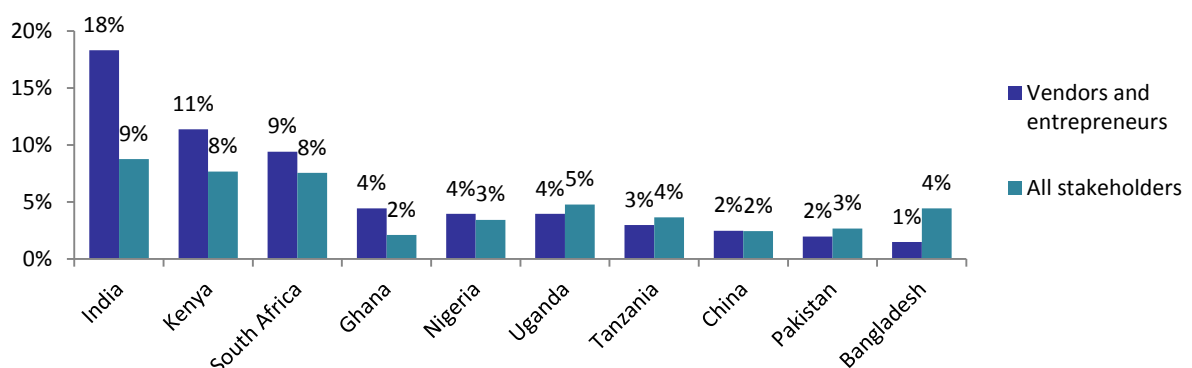


Note: includes M4D products and services tracked by GSMA
Source: GSMA-MDI analysis

**Structure**

Start-ups and small businesses are generally small (less than 50 people) with a relatively 'flat' structure (typically there are two or three levels in the hierarchy). This includes a small management team with operational focused personnel below. A typical example of this is Souktel (less than 20 people), the Middle Eastern job and aid connection tool, which has a Team Leader for Business Development, Software Development and for their two products: Job Match and Aid Link (see MDI's case study at www.mobiledevelopmentintelligence.com/insight)
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[6] Entrepreneurs in Latin America: The Lure of Chilecon Valley; The Economist, October 2012, see
http://www.economist.com/node/21564589

Most organisations are run along product rather than geographical lines (even for global handset makers, M4D service teams have a product focus across multiple countries). This is partly organisational and partly due to a focus on a small number of country markets. While some firms have offices in more than one country (e.g. Frogtek in Spain, Columbia and Mexico), most run operations out of one location (even those with globally focused products such as Frontline SMS or Nokia Life Tools).

Partnerships with other M4D stakeholders are common. The mobile agricultural market price distribution firm Esoko are an illustrative example of this (see Figure 15). In Ghana, they are currently working with donors such as USAID and GIZ as well as Intergovernmental Organisations such as FAO and IFAD. Private firms provide information on market prices (e.g. Prestat provides cocao sector prices), while research organisations such as New York University use the data provided for research. Another case in point is the Kenyan solar financing firm M-KOPA who have received funding  from an international aid agency (DFID) and private foundations (Lundin and Shell), with a product reliant on mobile money (m-Pesa) devised by a mobile operator (Safaricom).

**Figure 15. A web of partnerships**
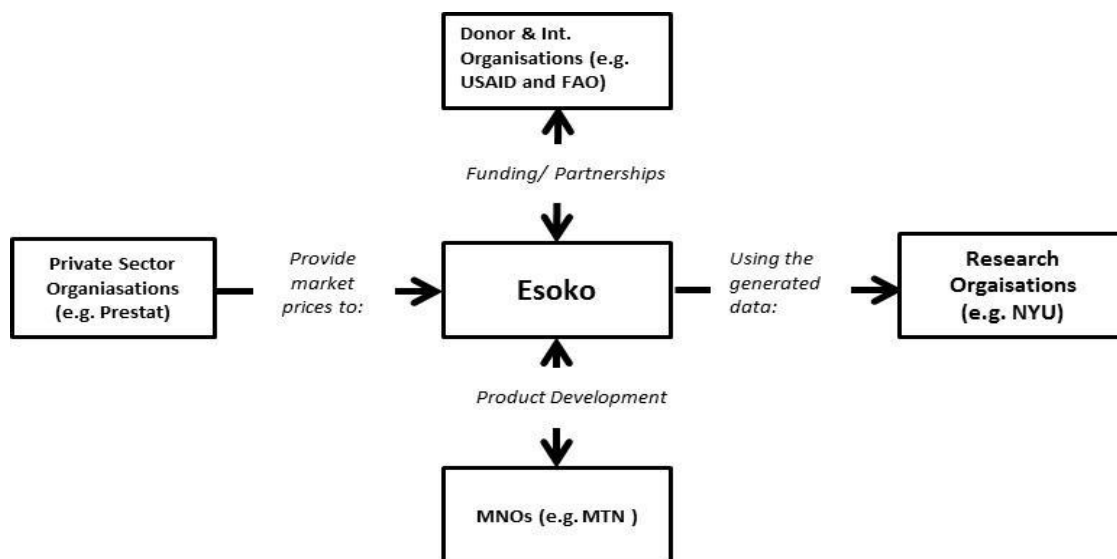


**What they bring to M4D**

Vendors and entrepreneurs bring passion, an understanding of an identifiable problem and how a mobile-enabled solution solves it. From there, investors can provide capital to support management teams in executing the business plan.

In recent years a number of 'Mobile Labs' have sprung up around Africa such as Mobile Web Ghana, mLab East Africa, EMS (Entrepreneurs du Mobile au Sénégal) and iHub in Kenya (see Figure 16).

**Figure 16. Innovation hubs in Africa**
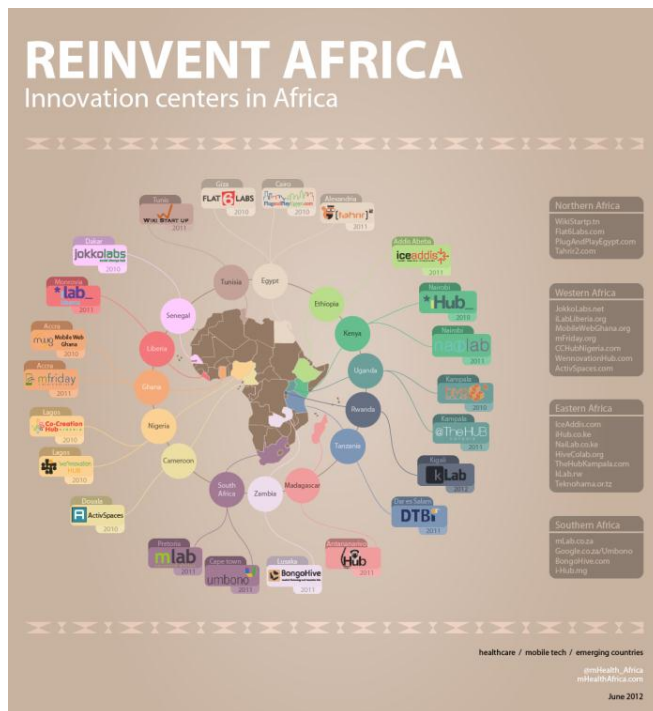


Source: mHealthAfrica.com

These organisations provide workspaces where mobile technology entrepreneurs often receive training and mentoring as well as network with other organisations and individuals. These spaces are generally considered to be the focal point or unofficial headquarters of local entrepreneurial activity in the tech space, and are a good starting point for those interested in identifying local entrepreneurial talent and promising ideas.

# Development organisations

**Function**

Donor organisations can be divided into two broad categories: i) government departments or agencies (e.g. the UK Department for International Development (DfID), United States Agency for International Development (USAID)), and ii) large private foundations (e.g. the Bill and Melinda Gates and Rockefeller Foundations), initially funded by philanthropists and legacies.

Funding, in the form of non-commercial grants, can be awarded to developing world governments, NGOs, charities, academic institutions, entrepreneurs, and other donors.  Private foundations are likely to donate bilaterally, forging direct relationships with grantees; government agencies fund projects both bilaterally and multilaterally through other large donors with proven track records such as the EU.  Donors and NGOs currently concentrate the majority of their funding on M4D deployments in Africa (see Figure 17), although the sub-regional and country distribution is dependent on the priorities of the organisation: financials for DfID in 2010-11 suggest that 66% of the value of their bilateral aid spending went to east, west and central Africa[7] while in 2012, the

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[7] Guardian interactive map of DfID bilateral spending for the next five years
http://www.guardian.co.uk/global-development/interactive/2011/oct/05/dfid-future-aid-plans-interactive

largest portion of USAID net costs were spent in Afghanistan and Pakistan (25%), followed by Africa (16%)[8].

**Figure 17. Regional distribution of M4D deployments**
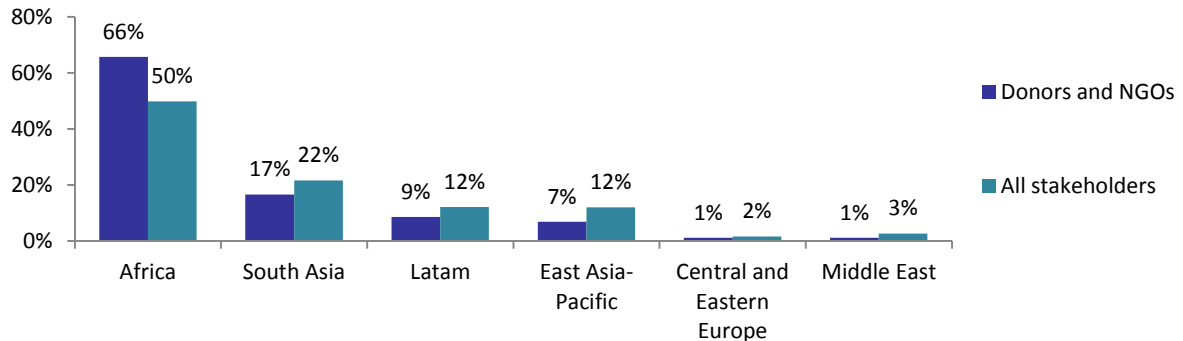


Source: GSMA-MDI analysis

Larger foundations (donating billions in aid every year across M4D and other sectors) tend to focus on a broad range of complementary issues. Smaller donors (generally donating less than $500 million per year) tend to invest in a more focused set of issues (e.g. the MasterCard Foundation specialises in the areas of youth learning and micro-finance). There are also instances where large organisations come together to provide funding for single issues, such as Saving Lives at Birth, a drive to improve mother and baby survival rates in the few days after birth, which is funded by USAID, the Norwegian Ministry of Current Affairs, the Bill & Melinda Gates Foundation, Grand Challenges Canada, and DfID, in association with the World Bank.

Broadly, donor funding in the M4D sector is directed towards two main market areas: i) improving developing world infrastructure to permit growth (e.g. DFID supported the SeaCom intercontinental fibre optic cable which "dramatically increased connectivity for east Africa"[9]), and ii) funding projects with a demonstrable social impact, generally at the local or sub-regional scale, although sometimes through established organisations with proven track records rather than start-ups (e.g. DfID funded Vodafone for the m-Pesa scheme[10]).

Scaling the organisation once innovation is demonstrable has traditionally been the realm of investors, as this area provides the greatest opportunity for a return on investment. However, there is increasing recognition of the need to view donor funds as risk capital (financial returns are not formally included in decision criteria) to help scale services that, while early stage, have clearly defined potential for sustainability and impact.

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[8] USAID Fiscal Year 2012 Agency Financial Report
[9] The Engine of Development: the private sector and Prosperity for poor people, DfID, 2012
[10] Priming the Pump – the case for a sector based approach to impact investing, Omidyar Network, Bannick and Goldman, 2012

**Structure**

### i)  Geographic vs. product

In both large private and government organisations, departments tend to be distinguished by geographic area and by issue (e.g. USAID[11]). Geographic divisions may be based in regional offices (e.g. in Asia and Africa at the Rockefeller Foundation[12]), although head offices are almost exclusively in the developed world. In smaller, issue driven foundations (e.g. the Hewlett Foundation[13]), it is common to find departments headed by experts in specific project areas.

### ii)  Grant application and dispersal process

Larger foundations invite letters of inquiry (LOI) or grant applications from relevant grant-seekers, or approach projects they feel are relevant based on their own strategies or nominations.  Smaller grants may also be available to self-promoters (e.g. UK Aid Match grants, where DFID matches the amount an organisation is able to fundraise from the public).  The 12 organisations sampled for this research donated amounts between $10,000 and $12,500,000 to projects involving mobile technology during 2012. This total grant allowance tends to be divided into smaller amounts, which are distributed annually, subject to a review of the previous year's achievements against planned progress.  In some cases there is a soft bias towards funding incumbents, where something has to go badly wrong with the project to warrant funding withdrawal.

The duration of funded projects also has a wide range, six months to ten years in our sample for this report.  Some private donors (e.g. Omidyar Network[14]) favour short projects (maximum two years), with the goal of an exit strategy that leaves self-sustaining businesses.  Some also remain available for advisory access after a project ends, with this more common for donors who invest in social entrepreneurs, such as the Skoll Foundation.  Other donors (e.g. USAID) do not typically maintain a hands-on relationship post project.

**What they bring to M4D**

### i)  Funds and guidance for specific M4D projects

Finance provided by donors differs from that of investors in that the measurable outcomes expected from interventions include defined socio-economic indicators rather than focussing predominantly on sustainability. This allows the potential for funding non-profits as well as higher risk for-profit ventures during the early stages of development. Alongside these, engagement with governments to drive improvements in the physical and market infrastructure aims to ensure that projects will be sustainable for the future.  For example, DfID backed m-Pesa in the development/trial phase, whilst also funding the Financial Sector Deepening Trust to illustrate to the Kenyan regulator (its Central Bank) the financial access gap the service would help to close[15].

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[11] Organisational structure of USAID http://www.usaid.gov/who-we-are/organization
[12] Organisational structure of the Rockefeller Foundation http://www.rockefellerfoundation.org/about-us/our-team
[13] Organisational structure of the Hewlett Foundation http://www.hewlett.org/about-the-william-and-flora-hewlett-foundation/foundation-staff
[14] Omidyar Network makes investments in both for-profit and not-for-profit firms, and so can be classified both as a social investor and donor
[15] From Blueprint to Scale –The Case for Philanthropy in Impact Investing  Koh, Karamchandani and Katz, 2012

Donors employ experts in the fields in which they intervene who can offer advice and guidance. They are also able to offer mentoring to develop the business acumen of grantees, and provide a network of connections with global non-profits, businesses and governments. Social entrepreneur donors such as the Skoll Foundation also offer connections to peers.

### ii) Raise awareness of key issue areas

Impartial research funded by donors is crucial in the still nascent M4D sector to improve understanding of issues and markets. For example, GSMA's Mobile Money for the Unbaked (MMU) report is funded by the MasterCard Foundation, the Bill and Melinda Gates Foundation and the Omidyar Network to "generate knowledge to overcome specific barriers inhibiting client uptake and usage of mobile money services"[16]. Based on research of this kind, and on their own experiences, donor organisations focus on key issue areas, raising the profile of these issues through their established position in the development landscape.

## Social investors

### Function

Social investors, also commonly referred to as 'impact investors', make investments in firms or organisations across a range of development sectors. These investors generally require a return in addition to demonstrable improvements in social outcomes, in contrast to donors and other development organisations whose focus is primarily on impact[17]. Their investments are also different from traditional institutional investment products in the Socially Responsible Investing (SRI) space, mostly because they are smaller scale, but also in the underlying ethos of the investing organisation (SRI managers do invest in mobile, but these are not included in the scope of this work). The definition provided by the Global Impact Investing Network (GIIN) articulates this balance:

> "Impact investments are investments made into companies, organizations, and funds with the intention to generate measurable social and environmental impact alongside a financial return. They can be made in both emerging and developed markets, and target a range of returns from below market to market rate, depending upon the circumstances"[18]

A recent report by the GIIN and JP Morgan based on a survey of around 90 investors estimated the value of social impact investments across all sectors at $8bn in 2012, with an expectation of this rising to $9bn in 2013[19]. There are no reported data on the total amount of capital invested from social investors in mobile-related firms, although 31% of investors reported an ICT sector focus[23].

Social investors generally look to invest in growth (78%[23]) or venture stage firms (51%[23]), as opposed to very immature or mature firms. This ties in with the need to scale up investee firms, and the balance between risk and return; at the seed stage, firms are often little more than a concept,

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[16] MasterCard Foundation on MMU Annual Report http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2012/10/2012_MMU_Annual-Report.pdf

[17] Impact Reporting Investing Standards (IRIS) are widely used across the social investment sector, and provide a benchmark set of social impact metrics, see www.iris.thegiin.org

[18] GIIN, see www.thegiin.org

[19] Perspectives on Progress: The Impact Investor Survey; GIIN and JP Morgan, January 2013 http://www.thegiin.org/cgi-bin/iowa/download?row=489&field=gated_download_1

warranting a high risk premium, while at the mature (sometimes publicly-traded) stage, there is less prospect for a return that meets investment criteria because most of the growth that can be enjoyed by investors has already been achieved).

**Structure**

Most social investors are headquartered in North America or Europe (over 80%[23]), but make investments in developing world countries. Of these, sub-Saharan Africa is most popular (34% of investors), followed by Latin America (32%), US/Canada (32%), East and Southeast Asia (27%) and South Asia (26%)[23].

Investing firms may be structured along geographic or product lines. For example, LeapFrog is geographically segmented, with regional offices in Africa, Asia and Europe, each of which make investment decisions for multiple sectors in their region. Others provide investment specifically for certain products or causes, such as EcoEnterprises Fund, which focuses its investment capital into agricultural, ecotourism and sustainable forestry projects which promote sustainable natural resource management.

Most of the capital invested is placed directly into the investee firms (89% of investors[23]) as opposed to going through intermediaries. It is clear social investors prefer to develop closer relationships with the firms they are backing than would be afforded by investing through indirect means, such as mutual funds.

**What they bring to M4D**

  **i)        Finance and commercial acumen**

Social investors provide the capital required to scale up projects or firms with small-scale operations into firms that can leverage a fixed asset base to drive growth in the take-up of a service. Investment values fall into a wide range, but are generally much smaller than those made into indirect funds, with the average investment into a company usually less than $10m.

There is increasing recognition among the social investor community of recognising innovation and the potential for large scale impact, even if firms are relatively immature. Omidyar Network articulated this in a recent report, stating "the paucity of financial and human capital available for high-risk, early-stage ventures (what we call "innovators") and for sector-specific industry infrastructure poses a massive impediment to the healthy growth of the impact investing sector"[20]. This is particularly true in M4D, where the GSMA now tracks over 200 service launches per year, but with relatively few services having reached appreciable scale.

  **ii)       Mentorship and support**

Given their investment mandate to invest in socially-driven firms with scalable business models, social investors are able to offer experience and guidance to the management of their investee firms. In some cases, this can mean staff being seconded to assist with the on-the-ground management of investee firms, to mitigate business model execution risk.

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[20] Priming the Pump: The Case for a Sector Based Approach to Impact Investing, September 2012 (http://www.omidyar.com/sites/default/files/Priming%20the%20Pump_Omidyar%20Network_Sept_2012.pdf)
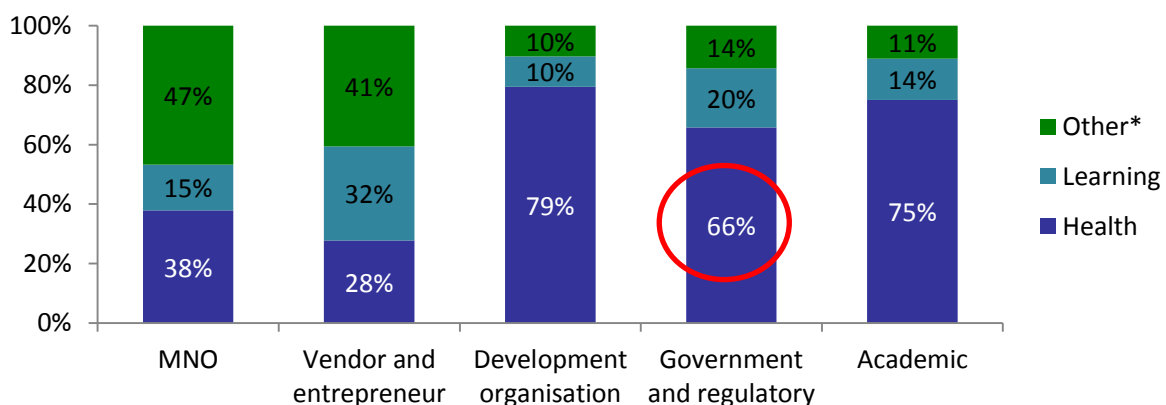
# Governments and regulators

**Function**

Within the mobile communications sector, the role of government is generally focused on regulation and encouraging investment from the private sector.

Each country has its own regulatory body for a number of industries/sectors, including telecommunications (MDI tracks 174 communication regulators in the developing world, see https://mobiledevelopmentintelligence.com/organisations for a full list with links to their websites). In the telecommunications sector, regulators are mandated with promoting competition, with the end consumer the key stakeholder. Regulators are responsible for clearing radio spectrum for mobile voice and data use, auctioning the spectrum off to market participants (mainly mobile operators) and enforcing spectrum coverage obligations. This is particularly important in developing countries where rural coverage is often much lower than in urban centres. While regulators do not typically set guidelines or limits on the prices mobile operators can charge consumers, they do have the power to influence wholesale prices mobile operators charge each other to connect calls between different networks (Mobile Termination Rates). Regulators in most regions (developed and developing) have set these on a decline to conclude by 2015, with the intention that lower wholesale prices will lead to lower retail voice call prices for consumers.

Investment in mobile-enabled services can be made directly by government ministries, or indirectly by encouraging mobile operators and other participants with tax incentives, subsidies, partnerships and finance. Direct investments in M4D tracked by MDI have been mostly focused on the health sector (see Figure 18), underscoring health care as a public good with government responsible for service delivery.

**Figure 18. M4D deployments (developing world)**



*Includes mobile money, agriculture, entrepreneurship, green powered networks and mobile-enabled community services
Source: GSMA-MDI analysis

**Structure**

Regulators are usually at arms-length to the government, with the power to issue mandates through legal statutes. Given that they set and adjudicate on issues specific to the telecoms sector, they are staffed by experts from industry, competition and legal backgrounds. In addition to issuing regulations, regulators publish freely available market reports based on data provided by the mobile operators and other industry participants.

Governments involved in setting up or partnering a mobile-enabled service generally do so through ministries (e.g. health, agriculture). However, the capital intensive nature of some services merits partnerships being formed. For example, the SPEED disaster response program set up by the Philippines Department of Health that uses SMS to transmit early detection of disease outbreak following natural disasters involved several donor partners (Rockefeller Foundation and International Finance Corporation)[21]. Likewise, Project Mwana is designed to speed detection of HIV in babies by utilising RapidSMS, and was set up jointly by the health ministries in Zambia and Malawi with the support of UNICEF[22].

**What they bring to M4D**

It is important that regulation is clear, transparent and consistent among all M4D participants. While regulation that supports free and open competition is to be welcomed, there are currently several regulatory barriers impacting specific M4D sectors. For example, mobile health services often involve transmitting sensitive patient data across a mobile network. However, in some markets there is confusion and uncertainty regarding the privacy and security regulations of transmitting and hosting data. Mobile operators offering an mHealth service are required to transmit patient data over the mobile network, but by *hosting* data may be subject to additional privacy regulation when it would make more sense for the country government to host data on its own servers.

Direct service deployment tracked by MDI is focused on the health sector, with services often providing information both to medical practitioners and patients via SMS. Education is the only other sector with an appreciable presence (around 20% of deployments).

In addition to direct involvement through M4D deployments, governments can play a role indirectly. Network coverage rollout is one common area. Given the high cost of rollout and lower value customers in remote rural locations, operators are often unable to justify investment on economic grounds. Subsidies mitigate the rollout costs borne by operators, with many governments also making use of Universal Service Funds (USFs) as a way of ensuring coverage is provided in areas that would otherwise be not-spots (lack mobile coverage). SIM registration requirements are an additional consideration, particularly for prepay dominant regions (e.g. India, sub Saharan Africa), although these bring both positives (more data on mobile users, which can be used to develop and refine M4D services through user-centric design) and negatives (would-be mobile phone owners may lack the requisite identity documents, creating a barrier to ownership).

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[21] Australian Agency for International Development (AusAID), USAID, Government of Finland and the EU. See https://mobiledevelopmentintelligence.com/products and http://www.wpro.who.int/philippines/areas/emergencies_disasters/speed/en/index.html
[22] See https://mobiledevelopmentintelligence.com/products and http://projectmwana.posterous.com/

# Academics

## Function

Academic stakeholders have a dual role within the M4D sector. They both critically evaluate the work done by others in the sector while also driving a variety of projects, products and innovations. The majority of academic-led M4D services are in the mHealth sector (as with government), with a smaller presence in education and agriculture (see Figure 19). Around half of the activity from this stakeholder group is actually funded by developed world institutions (mostly in the US, such as MIT, Harvard, Yale and Berkeley), with South African universities most involved among those based in the developing world, with those covered by MDI concentrated around health initiatives (e.g. University of Pretoria, see Figure 19)

**Figure 19. Academic-led deployments in M4D**
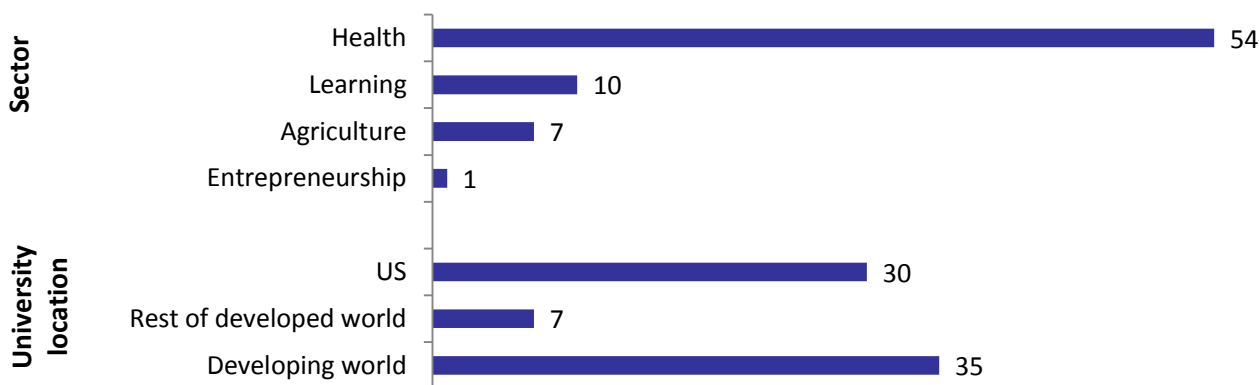


Note: mobile-enabled products and services in developing world tracked by GSMA (including those merged/closed)
Source: GSMA-MDI Analysis

## Structure

Academic-led M4D initiatives generally operate within centres, programmes and projects run out of universities. These function with a degree of independence from the university to which they are connected, albeit with strong financial and administrative ties. The predominance of mHealth initiatives mean a large number of relevant stakeholders sit within departments of public health or medicine.  The most visible in MDI is the John Hopkins Centre for Clinical Global Health Education, which leverages the expertise of the University's Schools of Medicine, Nursing and Public Health. Computer science and engineering departments are further important sources of mobile innovation (e.g. University of Washington's 'Open Data Kit', a multi-purpose data collection software solution.)

**What they bring to M4D**

### i)       Research

Academia brings a rigorous, scientific evaluation of M4D initiatives. The peer review process which is undertaken following the submission of work to academic journals is one of the key elements of what differentiates academic research. This ensures rigor, which can validate the social impact of products and services in the M4D space. However, it also means that there is generally an extended length of time between submission and publication (longer than for NGOs, foundations or MNOs). An example of this is the burgeoning use of Randomised Controlled Trials (RCTs) within the development economics field, championed by centres such as MIT's Poverty Action Lab[23]. These kinds of trials are regarded as the scientific gold standard for comparing intervention effectiveness[24]. However, designing and implementing such studies is a time intensive process. A relatively simple piece of research, 'SMS-Based Mobile System Learning System: A Veritable Tool for English Language Tuition in Rural Nigeria', was based on results collected over the winter of 2008-09 but not published until December 2010[25]. As a result, the quality of the research produced has to be balanced against turnaround time given the mobile phone industry, which is in a constant state of innovation and development.

### ii)       Collaboration and on-the-ground involvement

The M4D products produced by academics can be broadly broken down into those concerned with information or education and those that are innovative solutions to a particular issue. Education services are often SMS or voice-based (e.g. Mozambiquan Universidade Eduardo Mondlane's (UEM) planned 'SMS for Farmers' service). Similar initiatives exist in other sectors (an example being the Kenyan software company M-Farm) and include a range of services relating to legislation, taxation, prices in different markets and sector-specific content (crop prices, soil agronomy etc).

Innovative products are also concentrated within the health vertical. Examples include the Belgian Institute of Tropical Medicine's 'Ultrasound for Africa', which develops an ultrasound app for low cost smartphones, and  the Berkley application CellScope, which turns a camera phone into a fully operational microscope.

Finally, universities have the capacity to assist up and coming entrepreneurs. A prominent example of this is the Global Social Benefit Incubator at the University of Santa Clara, which provides training, support and networking with academics, investors and tech executives.  Kopo Kopo (a mobile payment system for SMEs) and SMS Labour Link (a tool that monitors the earnings and welfare of workers) are two examples of successful M4D projects supported by the centre.

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[23] All the published RCTs conducted can be read on the Poverty Action Lab website, see http://www.povertyactionlab.org/publication

[24] A simple guide to the use of RCTs in social research is:  Test, Learn, Adapt: Developing Public Policy with Randomised Controlled Trials; Cabinet Office,  June 2012, see http://www.cabinetoffice.gov.uk/sites/defaul t/files/resources/TLA-1906126.pdf

[25] SMS-Based Mobile System Learning System: A Veritable Tool for English Language Tuition in Rural Nigeria; Vivian Nwaocha, December 2010, see http://www.mobileactive.org/research/sms-based-mobile-learning-system-veritable-tool-english-language-education-rural-nigeria

# Outlook

Given investment in M4D over the last 5-7 years and the launches currently in the pipeline, we expect the number of services to continue to grow over the medium term across the Asian, Africa/Middle East and Latin American regions. While there is a unique opportunity to leverage mobile in this service delivery, it is increasingly important that different stakeholder groups understand how best to use their assets and partner with others in areas where they lack expertise to deliver sustainable business models.

This requires clear visibility of other market participants, including their motivations for investment in the sector and value drivers to use in negotiations in forming partnerships (see MDI case studies of M4D organisations www.mobiledevelopmentintelligence.com/insight), a key part of the visibility argument that drives scale.

Beyond value drivers, part of the problem is in logistics and negotiations. Consider an entrepreneur running a start up in Nairobi, employing less than 50 people. To launch a service, they would like to enter into an agreement with a national mobile operator, say to deliver content via SMS to small holder farmers. The country op-co of the mobile operator employs 5,000 people, with several departments having direct or indirect responsibility for Value Added Services (VAS). Where does the entrepreneur start? Souktel is a good example, having been through negotiations with both the CSR and VAS teams in mobile operators, but gaining momentum off the back of one agreement (Paltel in Palestine) to secure others with different operator groups. The other key element is negotiation on business models. Operators partnering on a service generally enter into a revenue share agreement, however the negotiation on this becomes more important the longer the term given that start-ups may wish to change the business model as their customer needs evolve.

This flexibility is also ingrained in the approach from impact investors. Capital is funding people as much as it is a given product. This is particularly true for start-up/seed stage M4D organisations, which carry a high risk profile but also in many cases a high potential for impact due to the strength of their innovation. Investors (and even some foundations) have identified this market segment as suffering a funding gap, with a recognition that more capital needs to be put behind these organisations as opposed to a focus on mature models (of which there are few, see Figure 20).

**Figure 20. Reaching maturity**
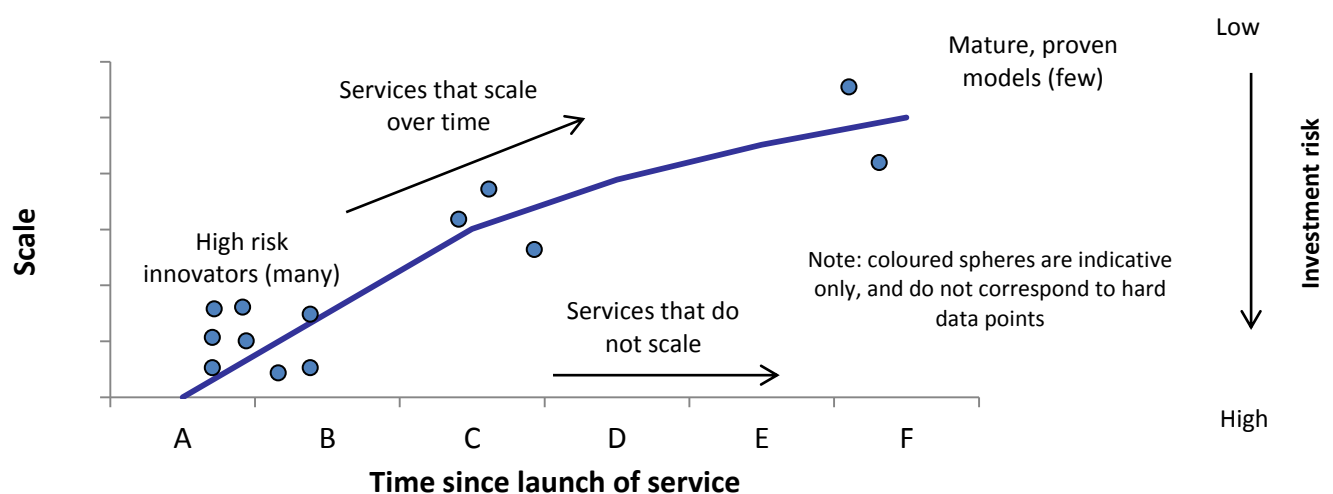


Source: GSMA-MDI Analysis, Omidyar Network