Innovation Policies for Inclusive Development

SCALING UP INCLUSIVE INNOVATIONS

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EXECUTIVE SUMMARY

Policy makers are confronted with the challenge to boost economic growth while making it socially inclusive. Addressing high levels of poverty remains critical. Innovation is a driver of income growth, which under certain conditions benefits everybody in society, but which under different conditions might reinforce social exclusion. Innovations themselves can directly improve well-being of different groups in society.

The contribution of inclusive innovations to social inclusiveness

"Inclusive innovation" projects are initiatives that directly serve the welfare of lower-income and excluded groups. Inclusive innovations often modify existing technologies, products or services to better meet the needs of those groups. Examples of inclusive innovations include the Tata Nano, a low-cost car produced in India based on a no-frills strategy, and the Narayana Hrudayalaya Cardiac Care Centre which provides heart surgery at a much lower price thanks to business process innovations.

Inclusive innovation will only be successful if it reaches a much larger segment of the poor and excluded population than it currently does. Scaling up requires initiatives that are built around: 1) financially sustainable business models; and 2) participation by lower-income and excluded groups.

Meeting this objective is challenging, however, as in many countries the income level of a large segment of the population is low, hindering citizens from taking advantage of innovation and new technologies. Companies also often lack adequate knowledge on the needs of poor populations. Infrastructure itself is in many cases inadequate, making it costly for companies to distribute products to poor customers.

Nevertheless, information and communication technologies (ICTs) as well as other emerging technologies have offered new opportunities. The growing importance of emerging markets, including China and India, also contributes by orienting business interests towards innovations that serve lower-income markets.

Inclusive innovations in education

Inclusive innovations in education can be particularly valuable, as they allow children and adults from socio-economically disadvantaged backgrounds to gain the knowledge and skills necessary to participate fully in the economy. An example of such an innovation is Text to Change which sends out text messages with information on issues such as health care, education and economic development.

While inclusive innovations in education share many of the characteristics of other inclusive innovations, there are some differences: innovative educational programmes are often developed within the public education system; they may also be privately developed not-for-profit initiatives, funded mainly through public budgets or philanthropic means, or hybrid projects using for-profit models to fund not-for-profit programmes. Strong not-for-profit funding in this sector makes reaching financial sustainability less important in this area than in others.

Policies in support of inclusive innovations

Governments can approach the topic of inclusive innovation through multiple channels. The following factors are particularly pertinent:

- Supporting the use of advanced technologies – including also those that can serve as platforms for multiple services (such as mobile telephony) by, for instance, incentivising research institutions to orient research to developing inclusive innovations;
  - The MIT D-Lab supports inclusive innovation from development to commercialisation by supplying technical expertise.
- Ensuring regulatory impediments do not prohibit or constrain innovations serving the poor (particularly with regard to public services) at the same time as critical quality standards are being met;
  - M-PESA, a mobile payment company that became virtually ubiquitous in Kenya, could not develop successfully elsewhere due to regulatory impediments.
- Addressing regulatory challenges that emerge when entrepreneurs that address the needs of low-income groups follow a perspective that is neither purely for-profit nor purely social;
- Developing credit options to smooth consumption patterns of the poor will also support catering to this market by providing firms with more stable income through predictable demand;
  - Microsaving and microcredit institutions render the very poor less vulnerable to income shocks.
- Developing financing mechanisms in support of inclusive innovation initiatives;
  - India's Inclusive Innovation Fund is a for-profit investment fund created to support enterprises and innovators that provide solutions to improve the welfare of India's lowest-income group.
- Supporting intermediary institutions and other means of knowledge exchange to provide technical expertise to grassroots innovators and information on the needs of the poor to pro-inclusive innovators.
  - The Honey Bee Network helps grassroots innovators by providing support needed to develop these innovators' inventions.
- Involving ministries beyond those in charge of innovation, such as ministries focusing on rural development and specific issues in education, health or infrastructure by creating joint programmes with collaborative governance structures;
- Firmly inserting inclusive innovation policies in the innovation policy agenda, thereby ensuring the joint objective of achieving growth and inclusiveness and policy coherence.

Search for excellence and democratisation of inclusive innovation

A broader question arises regarding innovation and its impacts on inclusive growth. Growth is critically important for emerging and developing economies and can contribute to social inclusiveness, notably by generating employment. Innovation as critical driver of growth and, as such, contributes substantially.

Innovation-led growth will also have implications for industrial and territorial inclusiveness, i.e. the extent to which the distribution of innovation capacities evolves evenly across the economy; between national firms, regions, universities and public research institutes. Different trends with regard to industrial and territorial inclusiveness can be observed in what are increasingly knowledge-based economies across developed, emerging and developing economies alike:

- Evidence from two knowledge outputs – patents and/or publications – shows that only a very small share of ideas have high value. A major factor why ideas translate into skewed value distribution relates to the nature of knowledge: marginal costs are low and, thus, successful ideas can easily capture entire markets, replacing all others. These dynamics may in turn lead to a stronger

concentration of innovation capacities among actors, since agglomeration and reputation benefits reward those generating winning ideas.

- By contrast, forces supporting greater industrial inclusiveness are also at work: ICTs have opened new opportunities for small-scale entrepreneurs to become successful innovators, supporting the "democratisation of innovation" i.e. the widening of the group of successful innovators to include actors who did not previously participate in innovation processes.

Industrial and territorial inclusiveness will also depend on policies, which affect innovation itself, the diffusion of innovation and framework conditions.

SCALING UP INCLUSIVE INNOVATIONS

This chapter reviews the possible contributions of inclusive innovation, i.e. innovations that support the welfare and entrepreneurship opportunities of lower-income and excluded groups. It describes how several trends, ranging from the widespread uptake of mobile telephony to growing business interest in inclusive innovations, have created more favourable conditions for inclusive innovation. It explores the obstacles and market failures facing inclusive innovations across five dimensions: 1) the types and scale of inclusive innovations; 2) access to expertise, knowledge and finance; 3) information about consumer needs; 4) the costs of providing innovations; and 5) market access conditions. Based on this description, it provides an overview of factors that facilitate scaling up inclusive innovations.

1. Introduction

"Inclusive innovation" projects are initiatives that serve the welfare of lower-income groups, including poor and excluded groups. While growth dynamics have lifted many people out of poverty, they have not eliminated poverty and exclusion, which continue to affect millions of people. Inclusive innovation has therefore become an imperative for countries' socio-economic development, especially in emerging and developing economies. In 2010, an estimated 4.3 billion people – 62% of the world's population – lived on less than USD 5 (United States dollars) per day (World Bank, 2014a). Exclusion and relative poverty are also challenges for advanced economies, and obstacles to growth opportunities for all economies (OECD, 2014a).

Inclusive innovation will only be successful if it reaches a much larger segment of the poor and excluded population than it currently does. Many innovations remain small in scale and scope. Scaling up innovation requires initiatives that are built around: 1) financially sustainable business models; and/or 2) participation by lower-income and excluded groups, thereby supporting their integration in the formal economy. Meeting this objective, however, is challenging. To begin with, in many countries the income levels of a large segment of the population are low, hindering citizens from taking advantage of innovation and new technologies. Second, companies lack adequate knowledge on the needs of poor populations. Third, the infrastructure itself – e.g. roads and distribution channels – is inadequate, making it costly for companies to serve poor customers. Nevertheless, information and communication technologies (ICTs) have offered new opportunities for inclusive innovation. Mobile banking services – such as M-PESA, a mobile phone-based money transfer and microfinance service operating in Kenya and other countries – are examples of products reaching "scale".

What are the characteristics of inclusive innovations? What factors enable "scale"? This chapter aims to define inclusive innovations, as well as outline the challenges and opportunities in scaling innovations to meet the needs of lower-income and excluded groups.

The chapter is structured as follows: Section 2 describes inclusive innovation and the ways in which technology, business and policy trends support it. Section 3 focuses on the characteristics of inclusive innovation compared to innovation that does not specifically supply lower-income and excluded groups. Section 4 discusses factors that support scaling up inclusive innovations. Section 5 concludes.

2. The context of inclusive innovation

2.1. Definitions

Inclusive innovations improve the welfare of lower-income and, more broadly, excluded groups. Inclusive innovations have different dimensions, detailed below.

"Pro-inclusive innovations" often modify existing technologies, products or services to supply lower and middle-income groups. Among them, "frugal" innovations allow setting lower unit product prices by preserving only the most critical functionalities, while retaining core quality characteristics. The lower price allows lower-income groups to purchase those innovations.

Examples of pro-inclusive innovations include the Tata Nano (in the goods category), a low-cost, no-frills car produced in India, and Narayana Health, which provides lower-cost heart surgery thanks to standardised procedures allowing for extended use of unskilled labour for all tasks that do not require a doctor's intervention.

Many different actors, including micro, small and medium enterprises, large domestic corporations, multinational enterprises, state enterprises and not-for-profit corporations, have introduced pro-inclusive innovations. Business model innovations in particular are critical to inclusive innovations. Table 1.1 provides examples.

"Grassroots innovations" are inclusive innovations emphasising the empowerment of lower-income groups (Heeks et al., 2013).[1] While they are undertaken by the poor, they can be supported by other actors in the innovation system, including universities, non-governmental organisations (NGOs) and private firms. Poor populations can be involved through minor roles (e.g. as product distributors) or more extensive ones (e.g. as joint producers).[2] Grassroots innovation is also closely related to innovation in the informal economy.

Examples of grassroots innovations include the well-known Honey Bee Network (Table 1.1) and the sanitary napkin-making machine.

Table 1.1 provides some examples of pro-inclusive and grassroots innovations.

Table 1.1. Examples of pro-inclusive and grassroots innovations

	Nature of innovation		
	Service innovation		**Product innovation**
Pro-inclusive Innovation	**Empresas Públicas de Medellín** A utility company providing energy and water services. Low-income users can use prepaid cards to pay for the service according to their cash flow. Households do not pay fixed installation costs. **Innovation:** pay-per-use method. **Operator:** public utility company. **Sector:** energy and water. **Country:** Colombia. **Scale:** 43 000 low-income users have been connected since implementation in 2007.	**Narayana Health** One of India's largest healthcare services providers, Narayana Health offers low-cost cardiac surgeries and other healthcare services to the poor. It also caters to isolated communities via telemedicine. **Innovation**: business process innovations aimed at decreasing surgery costs. Use of ICTs to establish healthcare centres in remote locations for poor rural communities. **Operator:** private corporation. **Sector:** healthcare. **Country:** India. **Scale:** 6 200 beds are spread across 23 hospitals in 14 cities (up from an initial 300 beds in 2001).	**MoneyMaker irrigation pump** Low-cost manpowered irrigation pumps. **Innovation:** no electricity or fuel is required for functioning and operating cost is lower. **Operator:** US-based NGO (KickStart). **Sector:** agriculture. **Country:** Kenya, Mali, Tanzania. **Scale:** the pumps are distributed in local shops and sold to other NGOs for wider diffusion in the three countries.
Grassroots Innovation	**Honey Bee Network** The Honey Bee Network links grassroots innovators from low-income groups. **Sector:** all sectors relevant to low-income groups' livelihood. **Innovation:** the Network has developed an extensive database documenting innovations by the poorest, including in agricultural practices (e.g. natural pesticides), machinery and other sectors. The aim is to foster the diffusion of knowledge to a wider group of potential users. The Honey Bee Network also supports the protection of inventors' intellectual property and the commercialisation of marketable innovations by connecting informal innovators with formal institutions, including universities and public research institutions. **Country:** India; similar networks in China and other countries. **Scale:** the Honey Bee Network led to the creation of India's National Innovation Foundation, an autonomous body aimed at providing institutional support to grassroots innovation. The Network's newsletter is printed in seven Indian languages. **Grassroots involvement:** the poor are the innovators and are recognised as such. They determine the conditions of use of their creation, as well as its eventual commercialisation and scale-up.		**Sanitary napkin-making machine** A low-cost sanitary napkin-making machine that produces affordable sanitary pads for very poor women. **Sector:** health and manufacturing. **Innovation:** improves women's health and provides them with economic activity. **Country:** India. **Scale:** present in 1 300 villages in 23 states across India and developing abroad. **Grassroots involvement:** the product was developed by an uneducated worker. India's National Innovation Foundation helped him apply for intellectual property rights and provided the means for the innovation to reach scale.

Sources: safaricom.co.ke and *The Economist* (2012) for M-PESA; Suárez Franco, C.F. (2010) for Empresas Públicas de Medellín; Kothandaraman, P. and S. Mookerjee (2008) and www.narayanahealth.org for Narayana Health; OECD (2013) and www.kickstart.org for the MoneyMaker irrigation pump.

Inclusive innovation often features additional characteristics. Professor Raghunath Anant Mashelkar, chairman of the National Innovation Foundation of India and president of the Global Research Alliance, defines it as "any innovation that leads to affordable access of quality goods and services creating livelihood opportunities for the excluded population, primarily at the base of the pyramid, and on a long-term sustainable basis with a significant outreach" (Mashelkar, 2013). This definition, paraphrased below, identifies five core characteristics:

- **Affordable access:** affordability depends on where individuals are positioned along the economic pyramid, the objective being to serve lower-income people through "extreme reduction" in production and distribution costs.

- **Sustainability:** affordable long-term access should rely on market mechanisms, without continued government support.

- **Quality goods and services and livelihood opportunities:** inclusive innovation is not about developing lower-quality products for those who cannot afford quality, but rather about providing better quality to improve their quality of life. This is strongly contingent on innovation, since providing high quality at a low price requires introducing new products, rather than adapting existing ones.

- **Access to the excluded population:** depending on specific national and social contexts, as well as the policy objectives, inclusive innovation should primarily benefit the poor, the disabled, migrants, women, the elderly, certain ethnic groups, etc.

- **Significant outreach:** true inclusion can only be realised if the benefits of inclusive innovation reach a large scale, i.e. a significant portion of the population stands to benefit from specific inclusive innovations.

Defining the target group of "inclusive" innovations depends on national policy contexts. It is even more complex from a global perspective encompassing developing, emerging and advanced economies, where the poorest have very different income levels. An innovation that is accessible to the poorest in advanced economies may only be accessible to the emerging middle classes – rather than the poor – in emerging and developing countries. Innovations such as the Tata Nano – known as the world's cheapest car – and Narayana Health's healthcare services (described in Table 1.1 above) fall into this category, yet are often cited as examples of inclusive innovations, for two reasons. First, these products are potentially relevant to serving the needs of the poorest in advanced countries. Second – similarly to inclusive innovations aimed at the poorest – their objective is to reach groups of people with lower incomes. Hence, it is relevant to include them in an analysis aiming to identify policy lessons on inclusive innovations.

This chapter will therefore focus on innovations that provide opportunities to the poor and lower-income and excluded groups in developing and emerging economies.[3] These include mobile phone services, fertilisers and other basic products supporting small-scale agriculture and supply services from which the poor are often excluded.

2.2. Country characteristics

The specific characteristics of poverty shape national priorities with regard to inclusive innovation:

- **Poverty's impact on rural populations:** more generally, poverty's geographic distribution determines certain needs (e.g. those of agricultural communities) and costs (e.g. those of transportation to remote markets). It also influences the number of different markets – often

limited in size and with specific local demands, posing potential challenges for delivering certain types of inclusive innovations.

- **The population distribution across income groups:** where extreme poverty is widespread and markets are poorly developed, market-based inclusive innovations mechanisms face larger obstacles. The size of adjacent higher-income groups can help develop opportunities for cross-financing models, whereby the poorest pay a very low price, which is compensated by the higher price paid by the moderately poor of marginally higher income.

- **The overall national market size**: especially if accompanied by substantial economic growth, a relatively larger market can provide incentives for foreign multinational corporations in particular to supply it with innovations.

Box 1.1 describes poverty characteristics across five economies: China, Colombia, India, Indonesia and South Africa.

Box 1.1. Poverty in China, Colombia, India, Indonesia and South Africa

The **share of the population living in poverty varies substantially** among the five countries, although it is sensitive to the measure used. Based on a common threshold of constant 2005 USD 5 per day at purchasing power parity (PPP), 90% of Indonesia's population and 96% of India's population is poor, compared with 68% in China, 49% in Colombia and 62% in South Africa. Extreme poverty affects a large share of the population in each of the five countries and is particularly prevalent in India, Indonesia and South Africa.

The **geography of poverty differs as well**. Poverty touches mostly rural populations in India (71%) and China (73%). In Indonesia, virtually half of the poor (52%) are urban dwellers; the other half live in rural areas. With the exception of Indonesia, population groups living in extreme poverty (less than USD 1.25 per day) are mostly rural.

Finally, the **poor (i.e. those living on less than USD 5 per day) are not a homogenous group, and their distribution across the poverty scale** varies. In Colombia, more than half of the poor earn above USD 2.50 per day. In India, on the contrary, the majority (84%) of the poor live on less than USD 2.50 per day: thus, they are not only more numerous, but much poorer than their Colombian counterparts, which means that the pricing strategies of similar inclusive innovations will need to be adapted. In Indonesia and South Africa, the distribution of poverty is also weighted towards extreme poverty, albeit to a lesser extent: two-thirds of the poor live on less than USD 2.50 per day. In China, 53% of the poor live on less than USD 2.50 per day.

Note: Income segments are expressed in 2005 PPP. For India and Indonesia, national distribution is based on an aggregated Lorenz curve from original rural and urban distribution. Information is for 2010 for Colombia and Indonesia, 2009 for China and India and 2008 for South Africa.

Source: PovcalNet, Development Research Group, World Bank, http://iresearch.worldbank.org/PovcalNet/index.htm?0 (accessed on 30 May 2014). Data are based on primary household survey data obtained from government statistical agencies and World Bank country departments.

2.3. Opportunities for inclusive innovation

Several ongoing trends in technology, business, policy and macroeconomics create wider opportunities for successful inclusive innovation models compared to the past.

ICTs and other technologies

ICTs in general – and mobile phones in particular – have provided an opportunity for leapfrogging critical infrastructural shortcomings. By successfully connecting a much larger number of the poor to the mobile phone network, they have served as a platform for several "inclusive innovations" in the areas of health and education (Box 1.2), as well as a platform for activities involving the poor in agriculture and fishing.

ICTs also have the potential to further improve opportunities for mobile banking (OECD, 2013): as the cost of providing mobile services only involves developing the applications, the service itself can be distributed for free on a wide scale. However, it should be noted that "virtual" services will not be a bridge in all cases – the delivery of physical goods requires a physical infrastructure.

The growing number of new ICT-based business approaches provides novel opportunities for inclusive innovation. A recent innovation in financing microcredit is online microlending, where individual investors provide loan capital via the Internet. One example is Kiva.org, a not-for-profit organisation operating an online platform where individuals can lend money (from USD 25) to entrepreneurs of their choice in developing countries. The platform provides "profiles" of applicants' projects, which have been screened by Kiva's partners, international microfinance institutions (MFIs) and social businesses. Kiva has disbursed more than 678 000 loans since its inception in 2005, with an average loan size of USD 415 (Kiva, 2014).

Box 1.2. Examples of mobile health and education applications

Child Count+, Kenya: this application registers pregnant women and children under five and collects basic information on their health to organise visits by health workers.

Tamil Nadu Health Watch, India: this disease surveillance system, introduced after the tsunami in 2004, provides instant links between primary health centres in four districts to enable health experts and programme managers to co-ordinate activities more effectively and allocate resources more efficiently. Use of mobile phones allows health workers, even in remote areas, to report disease incidence data immediately to health officials, speeding up their ability to respond.

Project Masiluleke, South Africa: the project increases the volume of patients who are screened for HIV/AIDS and receive information on prevention and treatment. It sends out about 1 million messages per day and covers nearly all country mobile phone users in a year. The project is supported by the Praekelt Foundation, the PopTech innovation network, LifeLine Southern Africa (the government-backed provider of the helpline), iTEACH, Frog Design and MTN.

Text to Change, South Africa: this application uses mobile phone technology, specifically interactive and incentive-based SMS messaging, to send and receive information to educate, engage and empower people on issues related to well-being, e.g. health care, education and economic development. Text to Change also has campaigns in South America.

Virtual University of Pakistan (VUP): this ICT-based university currently offering 17 degree programmes uses the national telecommunications infrastructure and delivers lectures asynchronously through satellite broadcast TV channels, with interaction provided over the Internet.

Sources: OECD (2013), based on Melhem and Tandon (2009) and (www.sehatfirst.com) for Sehat First; Adler and Uppal (2008) for Tamil Nadu Health Watch; Zhenwei Qiang et al. (2012) for Project Masiluleke; CHAI/HP, Zhenwei Qiang et al. (2012) for WelTel, Child Count+; CII (2011) for ReMeDi; Zhenwei Qiang et al. (2011) for ProjectMind and text2teach; Baggaley and Belawati (2010) for the VUP.

Other frontier technologies can also support inclusive innovations, including the Foldscope (Box 1.3) and the use of solar power to provide more poor people with access to electricity.

Box 1.3. The Foldscope: A pro-inclusive innovation for inclusive science

The Foldscope is a folded-paper microscope offering 2 000 times magnification. While its power and quality equate those of desktop microscopes worth thousands of dollars, it can be manufactured for under USD 0.50 using three-dimensional (3D) printing. The microscope is made of cheap and abundant material (paper) and requires minimal assembly skills, keeping production costs low. Designed by Professor Manu Prakash of Stanford University,

the Foldscope is being tested in India and Uganda as a diagnostic tool for malaria and acute bacterial diseases. The Foldscope was designed as a platform technology: it aims to bring science to the masses and is adapted to different local contexts and uses. To this end, it is resilient and portable and does not require any power source. To achieve the Foldscope's objectives, the creators are giving away 10 000 microscopes to researchers and citizens around the world to test on potential applications. As of April 2014, they had received over 10 000 applications, including from a Mongolian farmer wishing to use the Foldscope to monitor milk quality and from the Canadian Space agency to use as a miniaturised microscope to send micro-organisms into space.

Sources: Markoff (2014); Dobrovolny (2014); Foldscope.com (2014).

Microfinance and policy

Substantial experimentation and favourable experiences with microfinance provide opportunities for stabilising poor people's revenue streams (McIntosh, 2011). Microfinance can also support investments and risk management by grassroots entrepreneurs, and has been found to positively affect business size (Angelucci et al., 2014). However, traditional microfinance models need adapting to suit the needs of grassroots entrepreneurs. For instance, rigid and/or short-term repayment schedules are ill-suited to farmers, since agricultural production cycles are commonly longer than in other industries (Dalla Pellegrina, 2011). Introducing a more flexible repayment schedule – which also offers a longer return on investment – can have positive impacts on business investment and creation (Field et al., 2013).

Successful pro-poor policy initiatives in the form of cash transfer programmes and extensive experience with public-private partnerships can also provide novel policy models supporting inclusive innovation. Based on such experience, pioneer innovators can develop hybrid models that make the involvement of the private sector in public activities much more viable by offering business opportunities.

Business and macroeconomics

The growing importance of emerging markets, including China, India and Indonesia, also contributes substantially to orienting business interests towards innovations serving lower-income markets. Prahalad and Hart (2002) have popularised the business case for social-value creation. They introduced the concept of the "bottom of the pyramid" (BoP), further developed in Prahalad (2005). The International Finance Corporation (IFC) and the World Resources Institute (Hammond et al., 2007) provide a systematic analysis of the BoP across different countries and sectors. They estimated that in 2002, the 4 billion people living in poverty constituted a USD 5 trillion global consumer market, of which the 5 economies of China, Colombia, India, Indonesia and South Africa represented USD 3.2 trillion. Another reason why large multinationals devote more attention to these markets is to build brand loyalties among the poor, as these consumers will likely belong to higher-income consumer groups in the future. Yet another factor facilitating the development of inclusive innovation initiatives is their greater emphasis on corporate social responsibility. The success of fair trade products, for example, reveals a willingness on the part of consumers in developed economies to support poverty alleviation efforts.[4]

3. In what ways are inclusive innovations different?

Inclusive innovations are not characterised by their incremental or radical nature – or whether they are new to the firm, the market or the world – but rather by their consumers and producers, that are different from other innovations. Inclusive – i.e. pro-inclusive and grassroots – innovations can be compared to standard innovations designed by entrepreneurs for higher-income markets.[5] Inclusive innovations differ from standard innovations aimed at middle or higher-income markets according to the following criteria: 1) type and scale of innovation; 2) information about consumer needs; 3) cost of providing innovation; 4) access to

expertise/knowledge and financing (for inclusive innovations); and 5) market conditions for innovators. These criteria point to the different challenges facing inclusive innovations.

3.1. Type and scale of inclusive innovations

The types and impacts of inclusive innovations differ from those of stylised innovations, as show in Table 1.2 (Column 1). This applies to both pro-inclusive innovations (innovations produced by companies, NGOs, and so on, for the poor) and grassroots innovations (innovation for the poor by the poor). Demand for pro-inclusive and grassroots innovations is more sensitive to price, and often more volatile. Lower education levels among the poor can also reduce uptake. In Colombia, for instance, the gap in the number of years of schooling between the first and fifth income quintile in 2011 was about 6.3 years (Center for Distributive, Labor and Social Studies [CEDLAS] and the World Bank).

Where the types of innovations are concerned, certain products are relatively more important for lower-income groups than others and their development should be a priority if the objective is to serve those groups. These include not only food (as suggested by the Engel curve, which shows that poorer households devote a larger share of their income to basic needs), but also public services such as health, transport and infrastructure, to which the poor often do not have access. Again in Colombia, 18% of the lowest-income population did not have access to water and 53% lacked access to sewage in 2012 (CEDLAS and the World Bank). By contrast, innovative products in domains that are less critical will be more difficult to finance via co-financing by the poor.

Unlike formal research and development processes, the **grassroots innovation** approach relies on needs-based user experimentation. It often leads to incremental innovations – some of which are adaptations of existing innovations. Grassroots innovations, however, are not necessarily non-technological and can often benefit from technology: one of the critical roles of the Honey Bee Network is to connect grassroots innovators with scientists and engineers to help develop their innovations.

Pro-inclusive innovations can also be highly technological, as illustrated by Protoprint, a pro-inclusive innovation bridging the gap between “high-level” innovation and inclusive innovation (Box 1.4).

Box 1.4. Linking high-level innovation with pro-inclusive innovation: Protoprint

In India, garbage collection is done at the dumpsite and garbage pickers sell raw plastic to intermediaries, often receiving less than USD 1 per day. Protoprint, an Indian company created by 2 MIT D-Lab students, developed a low-cost technology enabling garbage pickers to transform reclaimed plastic into 3D printing filament, increasing their income 15 times for a given amount of plastic collected. Protoprint has created two low-cost, easy-to-use machines that will eventually allow producing the printing filament: the Flakerbot, which shreds high density polyethylene plastic, and the RefilBot, which cooks the plastic flakes and extrudes a 3D printing filament. Protoprint currently has a pilot "filament lab" in Pune and partners with SWaCH (Solid Waste Collection and Handling), a co-operative of self-employed waste pickers. Product development is still ongoing and filaments are being tested on a variety of printers. Wider diffusion of the product is slated for early 2015.

Sources: www.protoprint.in (accessed on 6 November 2014); Mashelkar (2014).

When it comes to inclusive innovation, substantial costs linked to providing products to the poor can arise. The lack of access to electricity constrains the types of products available to them and requires innovative approaches to adapting products. Shortcomings in infrastructure further add to the costs of delivery in remote areas. For example, while 79% of roads were paved in OECD countries in 2011, only 53% were paved in middle-income economies and 21% in low-income economies (World Bank Development Indicators, 2014). These shortcomings in infrastructure quality compared with OECD countries affect poor and rural populations in particular. Table 1.2 describes in more detail the costs of providing innovations and provides examples.

Table 1.2. Characteristics and examples of inclusive innovations compared with standard innovations

	Types of innovation and their impact	Cost of providing innovations
Stylised "standard" innovations	• Opportunities provided for radical and incremental types of innovation and the full range of product, process, marketing and organisational innovations. Demand and supply conditions allow exploring a variety of demands. • Demand for individual firm characterised by volatility depending on income trends, competition and consumer uptake – but often less dependent on overall market size for a given innovation and less prone to exogenous shocks. This is due to a) larger market size, with individual demand less of an overall driver; and b) consumers commonly having higher incomes. • Higher incomes provide opportunities for consumption of products with longer-term benefits and corresponding investments. • Consumers are often better informed about product benefits and uses, allowing for more informed consumption (e.g. of health-related services).	• Larger opportunities for innovation development compared to inclusive innovators, as public goods – infrastructure, electricity, security and transport services – provide adequate market infrastructure.
Inclusive Innovations	• Demand requires innovations that substitute for absent public services (e.g. in health, education, infrastructure/transport and communication services). ➢ **Amanz Abantu** (South Africa) is a company specialising in providing water to undersupplied low-income communities by installing pay-per-use pumps in accessible locations. • Demand for innovations is characterised by uncertainty: new products often create new markets, whose prospects are hard to evaluate, and consumers rely on cash flows, which are subject to shocks (e.g. due to lack of work, illness and lack of insurance), for consumption.[6] ➢ **The Aishwarya solar lantern** (India) failed because its pricing scheme (high upfront lump-sum payment) was not compatible with the demand characteristics (volatile income). On the contrary, pay-per-use strategies are more adapted to the poor: **the EPM energy company** (Colombia) increased its outreach to the lowest-income groups by introducing a prepaid card system.	• Lack of baseline conditions – e.g. limited access to electricity – limit access to possible technologies for the poor (resulting in lower range of viable products compared to standard innovations) or make development costlier, thereby reducing uptake by imposing the need to invent around a challenge. • Lack of infrastructure raises costs ("poverty premium") of supplying the lowest-income market with products (compared to other markets of standard innovations); often "difficult-to-reach" markets (notably slums and remote rural areas) increase prices charged for products. ➢ **The MFI Fincomun (Mexico) partnered with Bimbo, a producer of bakery goods** with a large distribution network, so that the microfinance agents could take advantage of Bimbo supply trucks to reach potential clients (small low-income

	• Grassroots innovations need to emphasise economic activities relevant to the poor, such as agriculture, waste collection and handicrafts. ➢ **Tedcor** (South Africa) trains entrepreneurs from disadvantaged backgrounds to provide effective waste management. Tedcor obtains waste treatment contracts with municipalities and subcontracts tasks to these small businesses. The company thus ensures regular demand for the entrepreneurs' services, also ensuring the extension of waste collection services to previously underserved areas – made possible by a lower overall cost of the waste management survey. ➢ **The Honey Bee Network database** (India) records agricultural innovations, such as techniques to improve productivity and natural pest control. • Inclusive innovation provides returns to consumers; for grassroots innovations, additional contributions stem from integrating the poor into economic activities. ➢ **The Jayaashree Industries sanitary napkin-making machine** (India) creates economic activity and income for women; it improves their health and the welfare of their families. • The constrained budgets of the poor entail a low willingness and ability to pay for products and services without immediate tangible benefits. Additionally, they have less awareness about products' benefits and uses than higher-income groups, leading to low uptake. Education efforts and alternative financing schemes are required in these cases. ➢ In the case of the **Jayaashree Industries sanitary napkin-making machine** (India), ignorance and taboo were barriers to uptake of the sanitary products. Relying on word-of-mouth and women's self-help groups to spread information on the products' health benefits solved this issue.	shop owners) that would be costly to reach otherwise. ➢ Grassroots innovator **Jayaashree Industries** (India) sells the sanitary napkin-making machines to local self-help groups across India instead of producing them centrally, thereby avoiding large transportation costs.

Differential policy approaches for inclusive innovation	• Ensure regulatory impediments do not prohibit or constrain innovations serving the poor (particularly with regard to public services). ➢ **Amanz Abantu** (South Africa): one of the main challenges facing the private water company was regulatory barriers, i.e. considerable red-tape for tendering to government projects and controversy on the private provision of water. ➢ **M-PESA**, a mobile payment company that became virtually ubiquitous in Kenya, could not develop successfully in South Africa due to regulatory impediments (stricter regulation to prevent money laundering). • Facilitate access to training and capital to improve contributions. ➢ **The National Innovation Foundation** (India) offers technical and financial support for developing grassroots innovations. • Developing credit options to smooth consumption patterns will also support catering to this market by providing firms with more stable income through predictable demand. ➢ **Microsaving and microcredit** opportunities render the very poor less vulnerable to income shocks. • Options for cross-subsidising consumption and other ways of lowering costs will be inevitable for some types of consumption (particularly for lowest-income groups). ➢ **Ziqitza Ambulances** (India) charge patients based on their income. Cross-subsidisation allows them to extend services to the poorest. • Training/providing consumer information (e.g. through information campaigns and group training to share information with others) is critical to the uptake of relevant products.	• Product provision should be devised in a way that either does not require basic infrastructure (making mobile phone-based services particularly attractive) or simultaneously supplies infrastructure (e.g. by developing joint delivery processes). ➢ **ReMeDi – remote medical diagnostics** (India) uses existing Internet kiosks to set up remote consultation with doctors for low-income patients in isolated areas. • Continued efforts to provide basic infrastructure can raise opportunities for inclusive innovations, as will efforts – possibly based on alternative approaches (e.g. solar power) – to provide access to electricity. ➢ **Terrasys Energy** (Indonesia) provides electricity to hard-to-reach communities using run-of the river hydropower stations.

3.2. Consumer needs

Obtaining information about consumer needs is particularly challenging for most pro-inclusive innovators. First, there is a larger gap between producers and consumers, who are often located in remote areas or urban slums. Second, informal and limited records of consumption patterns (which are also affected by volatile incomes) require specific approaches to information gathering. The example of the Tata Nano illustrates that understanding consumers' needs does not simply relate to price. The product was less successful than expected not only because of the price increase,[7] but also because of safety shortcomings and – more importantly – the fact that it was marketed as a "cheap" car, which did not appeal to lower-income consumers in search of good-quality products.

"Standard" innovators have easier access to consumer information because 1) the distance between users and producers is shorter than it is for pro-inclusive innovators; and 2) producers have access to more information on consumers drawn from consumption preferences (e.g. through phone surveys, analysis of online consumption behaviour or registered purchasing behaviour).

Grassroots innovators are often direct users of their innovations, and hence have better knowledge about their needs than outsiders. They may, however, lack knowledge about needs elsewhere, thus missing opportunities to diffuse their invention more widely. The Honey Bee Network in India supports many grassroots innovations (e.g. a time-saving pedal-powered washing machine that requires no electricity) answering specific local requirements.

Partnerships between small/grassroots entrepreneurs and large companies (which have the advantage of scale, but lack insight into poor consumers' needs) can be relevant to developing tailored products both at the local and larger scale. Governments can play a role in fostering such partnerships (Prabhu, 2014). Constructing platforms for collecting examples of successful developments of inclusive innovation projects, as well as devising innovative ways of involving the poor in the product development process (as with some types of grassroots innovations), can be helpful. The Massachusetts Institute of Technology's D-Lab (MIT D-Lab) in the United States channels researchers' creativity towards pro-inclusive innovation and collaborates closely with low-income groups in developing countries to adapt innovations to local needs.

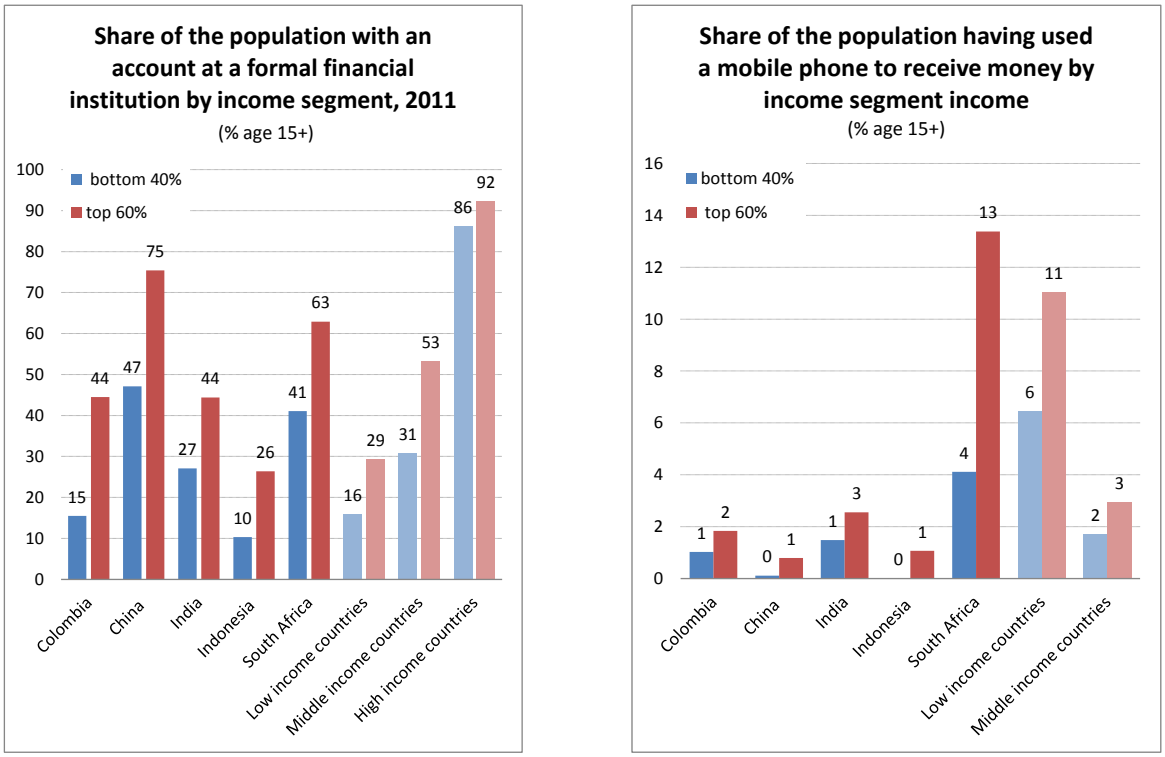
3.3. Access to expertise, knowledge and finance

The conditions for accessing expertise and knowledge differ across standard, pro-inclusive and grassroots innovators (whose generally better knowledge of user needs compared to pro-inclusive innovators gives them a critical advantage). However, grassroots innovators often face greater difficulty in finding the technical expertise they lack in-house and have more limited access to external knowledge sources. It is worth noting the parallels with open-innovation initiatives: Von Hippel (2005) emphasises that lead users with expertise are critical of open innovation. The stereotypical users are leading experts in their fields, e.g. skilled computer programmers (for the much-cited example of the open-source innovator community), but also extreme sports fanatics whose intimate knowledge of specific problems gives them higher capacities than the sports companies to design customised products. Grassroots innovators also have deep knowledge of the challenges they face, but lack the expertise. The first column of Table 1.3 shows the major differences among the different kinds of innovators, illustrated by policy examples.

Inclusive innovators have access to different financing conditions than grassroots innovators (Table 1.3, Column 2). These challenges compound the already restricted financing opportunities available to them in developing and emerging economies. As Figure 1.1 shows, the share of the poor holding an account in a financial institution is much lower than among higher-income groups. The size of the gap varies across countries: in Colombia, individuals with an income above 60% were almost 3 times more likely to hold an

account at a financial institution than the remaining 40%. In South Africa, the gap is less important: borrowing rates tend to be modest, incomes are generally low and volatile, and savings are limited. As a result, the lack of access to banking services is a major obstacle both to grassroots innovators and consumers. As a general rule, novel financial tools (e.g. mobile banking) are still only rarely used (Figure 1.1), with some exceptions: in Kenya, only 19% of the poorest 40% of the population had an account in a financial institution, but 53% used a mobile phone to receive money and 43% to send money (World Bank Global Financial Inclusion Database).

Figure 1.1. Financial inclusion of the population (2011) (% age 15+)



Source: *Global Financial Inclusion (Global Findex) Database (World Bank, 2011)*, based on Demirgüç-Kunt and Klapper (2012).

Notes: "An account at a formal financial institution" includes all accounts (owned singly or with another person) held at a bank, credit union, another financial institution (e.g. co-operative or MFI), or the post office (if applicable); this category includes respondents who reported owning a debit card. The sample for India excludes the north-eastern states and remote islands, which combined represent around 10% of the total adult population. Unless otherwise noted, data for Indonesia include Timor-Leste through 1999. Low-income economies are those in which 2010 gross national income (GNI) per capita was USD $1 005 or less. Middle-income economies are those in which 2010 GNI per capita ranged between USD 1 006 and USD 2 275. High-income economies are those in which 2010 GNI per capita was USD 12 276 or more.

3.4. Market conditions for firms

As Table 1.3 (Column 3) shows, grassroots innovators face different market conditions than traditional and pro-inclusive innovators. Grassroots innovators often operate as informal businesses. Given their importance within national economies, however, policy makers would do well to foster innovation in their local context: in 2007, the informal economy amounted to 14.3% of gross domestic product (GDP) in China, 45.1% of GDP in Colombia, 25.6% in India, 20.9% in Indonesia and 31.7% in South Africa (Schneider et al., 2010). The informal sector employs 84% of the non-agricultural workforce in India, 60% in Colombia, 33% in South Africa (International Labour Organization [ILO], 2011) and 68% in Indonesia (OECD, 2014a). Most informal enterprises are small, with fewer than nine employees (IFC, 2013a). Companies in the informal sector face substantial obstacles, both financial – e.g. gaining access to external

resources (IFC, 2013b) – and infrastructural – e.g. access to electricity. Nevertheless, the significant uptake of mobile phones (59% over 2006-11) among informal enterprises has a positive correlation with their sales (Paunov and Rollo, 2014).

The differential characteristics discussed above mean that the market for inclusive innovations is particularly difficult to enter. Innovators face larger uncertainty and information asymmetries, as well as larger sunk costs (since markets are often created from scratch and require infrastructure/ecosystem development to become profitable), all of which result in missed markets. Moreover, among the relatively large pool of potentially successful inclusive innovations that have been developed, few have managed to reach a large enough scale to make a sizeable impact.

Table 1.3. Particularities of grassroots innovations compared with standard and pro-inclusive innovations

	Access to expertise and knowledge	Access to financing	Market conditions
Stylised standard and pro-inclusive innovators	• Possess greater expertise (absorptive capacity) on the technologies available "in-house". ➢ **Terrasys Energy** (Indonesia) uses state-of-the-art hydroelectricity production techniques to produce electricity locally in remote areas. • Have wider opportunities to connect to expertise at other firms, universities and public research institutions. • Pro-inclusive innovators may face a greater challenge in tapping into user expertise, given the larger distance between users and developers. ➢ The household appliance company **Haier** (China) developed a network of franchises in rural areas and tapped into franchisees' knowledge to adapt its products to end users.	• Financial resources for innovation are determined by market trends, i.e. economic trends, consumer uptake, and competitors. While some volatility exists regarding investments, it is lower than for grassroots innovators, since risks are generally not "personal". • Standard innovators have greater opportunities for receiving loans from formal financial institutions than pro-inclusive innovators due to the following: - There are fewer delays/risk regarding product uptake; the larger scale of future production allows greater opportunities for larger loans or investments (particularly where innovations target specific small markets). - Some opportunities exist for risk financing, including venture capital and other types of innovation financing. • Further differences for pro-inclusive innovators arise because of the following: - Product uptake is longer/riskier, since these innovations often create new markets with larger information asymmetries (compared to standard innovators). - The potentially low scale of the future market and uptake limits the potential for standard loans. - Opportunities for non-standard financing include impact investment (financial resources for inclusive innovation), but future opportunities should be explored.	• Firms' formal status: - Facilitates access to public services – including public support policies – required for operations and innovation activities. - Provides wider opportunities for contracting with suppliers and consumers. - Offers opportunities for protecting the innovations created, particularly by securing intellectual property (IP), which in turn can facilitate expanding activities and up-scaling (e.g. patents can facilitate access to finance by signalling the value of a company's invention). - Lowers exposure to various infrastructural constraints (access to finance, costs of providing innovation or connection to knowledge networks). ➢ The pro-inclusive innovator **Moladi** (South **Africa**) patented its re-usable plastic moulds that allow building fast and durable housing for and by low-income people.

Grassroots innovators	• Users are by definition involved in the innovation process (to different degrees, however; see Table 1.1). • Expertise is largely related to experience/knowledge of problems and specific circumstances. • The informal nature of business entails limited knowledge of technologies and absorptive capacities, and fewer opportunities for tapping into "knowledge networks". ➢ The inventor of **the Jayaashree Industries** sanitary napkin-making machine (India) experienced difficulties in obtaining information from firms in the formal sector, delaying the development of his product.	• Their financial resources are determined partly by market trends, but also by investment opportunities dependent on "personal" conditions. • Volatility can be substantial and investments are needed to improve personal living conditions. As a result, subsistence-driven activities may reduce willingness to experiment and take risks. • The lending conditions are challenging because: - Informality makes contract enforcement difficult, and thus reduces credit opportunities. - Product uptake is longer/riskier, since these innovations often create new markets. - The potentially low scale of many future markets, combined with the correspondingly low loan requirements and opportunities, limits the potential for standards loans. - Opportunities for non-standard financing include impact investment (financial resources for inclusive innovation), but future opportunities should be explored.	• Firms/innovators' informal status: - Makes accessing public services more difficult. - Reduces contracting to informal settings, raising costs and leading to potentially less optimal agreements. - Provides limited opportunities for protecting inventions, exposing innovators to a greater risk of theft and desire to keep inventions secret, thereby reducing opportunities for scale; possible side-selling can also lower uptake (if lower-quality alternatives are provided). - Entails higher exposure to infrastructural constraints, increasing supply costs. • For the poorest groups, time available for engaging in activities might be reduced (e.g. if basic livelihood requires seeking drinking water, ensuring basic food supplies), limited opportunities for engaging in other economic activities.

Differential policy approaches for inclusive innovation	• Support intermediary institutions and other means of knowledge exchange to provide technical expertise to grassroots innovators and information on the needs of the poor to pro-inclusive innovators. ➢ The **China Innovation Network,** established in collaboration with the Honey Bee Network and the Tianjin University of Finance and Economics, aims to support grassroots innovations. • Stimulate/support research institutions that foster inclusive innovation. ➢ The **MIT D-Lab** supports inclusive innovation from development to commercialisation by supplying technical expertise (e.g. the Creative Capacity Building programme for pro-inclusive entrepreneurs and open-source technologies for grassroots entrepreneurs). ➢ The **Techpedia project of the Honey Bee Network** (India) promotes links between technology students and innovators in the informal sector. • Train the poor to build absorptive capacities.	• Identify opportunities for small-scale activities, avoiding volatility and moral hazard; this points to a close connection with microfinance models. ➢ The MFI **Swayam Krishi Sangam (SKS)** (India) partnered with Nokia and Bharti Airtel (services provider) to provide mobile phones, jointly with a microloan to pay for them in areas with no mobile phone penetration. • Explore novel social financing models for inclusive innovation that ensure efficient financial operations. • Major risk of uptake, combined with information challenges and the costs of supplying markets, requires support and funding beyond the initial product development stages (traditionally seen as the most critical phase). ➢ The **India Inclusive Innovation Fund** pledged to spend 50% of its first investment on SMEs.	• Investigate policy approaches relative to the informal sector aiming to better integrate informal activities by enhancing access to services, exploring opportunities for IP and addressing infrastructural constraints. ➢ The **Oro Verde** co-operative (Colombia) supports traditional gold and platinum miners and helps them reach international markets at premium prices thanks to their ecological practices. Oro Verde uses IP to protect and promote its brand specificity.

Note: Further information on specific examples is provided in Appendix 1 of Paunov and Lavison (2014) or in a corresponding box, if indicated.

4. What is the impact of inclusive innovations?

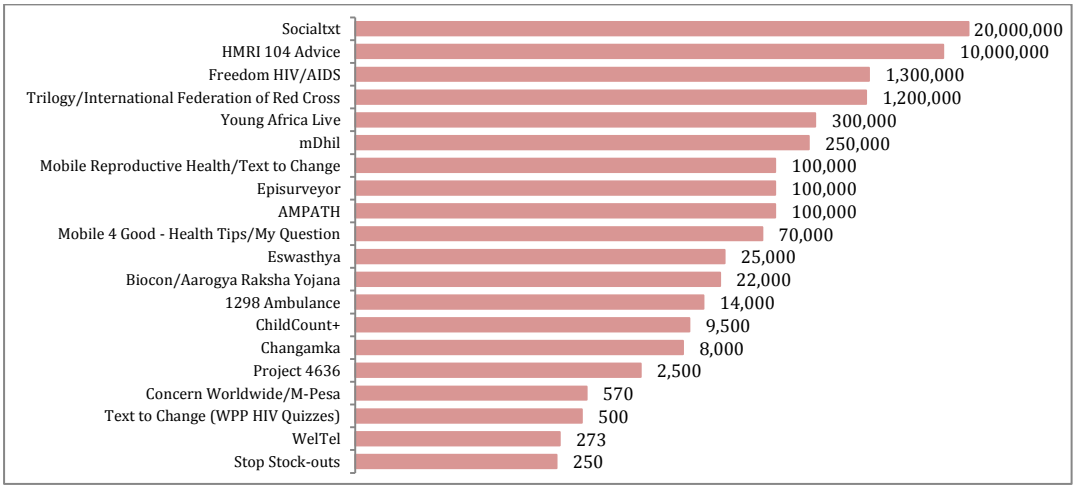
4.1. Scaling up

An innovation's scale depends on market segmentation or consumer location. Localisation can be critical (e.g. for agricultural activities) not only to improve local production techniques, but also to adapt them to specific rural contexts. Given their potential consumers' income and numbers, standard innovators may have better opportunities than inclusive innovators to attain production scale and product standardisation (since agriculture plays a lesser role and local specificities have less impact on products not typically required by the poor). Inclusive innovators, on the other hand, may face cost-based challenges, which ICT-based services (among others) can help address.

In the absence of representative statistics, the evidence to date suggests that few cases have reached scale. Kubzansky, Cooper and Barbari (2011) surveyed 439 inclusive businesses and found that only 37% were commercially viable and had the potential to achieve scale. Only 13% were operating at scale, with operating volatile margins between 10% and 15%. Similarly, a detailed assessment of mobile healthcare applications shows substantial differences in scale (Figure 1.2). These numbers, however, do not necessarily point to higher failure rates for inclusive innovations, as standard innovators also show a substantial failure rate.

The type of innovation is very much a factor when it comes to scaling up. Reaching maximum scale depends strongly on demand – which will be quite low for localised products, but may involve millions of customers for broader-based services, e.g. mobile banking. Furthermore, product-level scaling is not an absolute necessity: the very process of designing local innovations to serve local needs may support an inherently small-scale market, while also contributing to poverty alleviation. One solution can consist in creating networks to explore opportunities to enhance uptake of localised solutions through customisation. In India, the Honey Bee Network licensed the Groundnut Digger – a groundnut-sorting machine developed by a farmer – to an entrepreneur for the purpose of cleaning beaches. Such networks are particularly relevant to the discussion of policy options supporting inclusive innovation, as national-level support for small-scale projects is difficult to obtain, while policy support for reaching scale can be substantial.

Figure 1.2. Scale of mobile health applications in Haiti, India and Kenya, 2010 (number of unique users or transactions)



Source: Dahlberg research and analysis, quoted in Zhenwei Qiang et al. (2012).

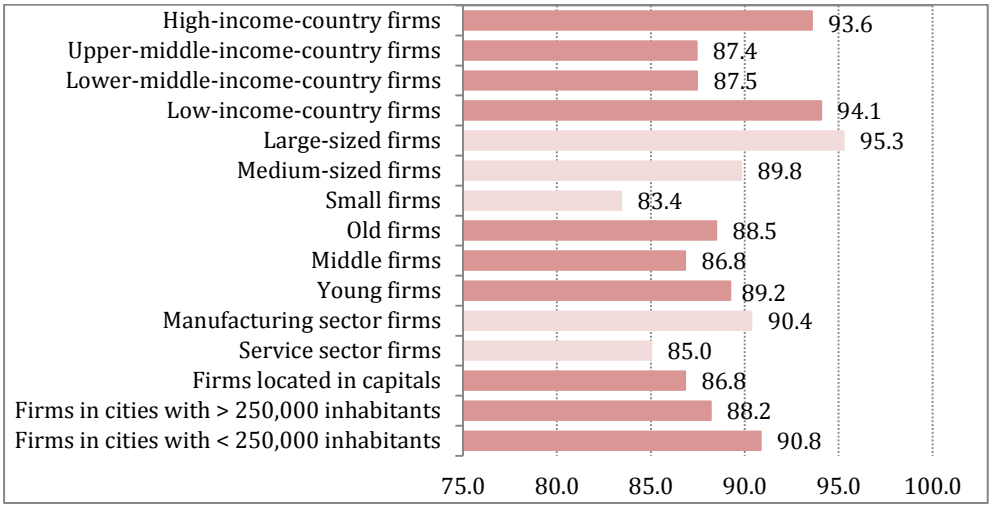
As is the case for standard innovations, developing sustainability can vary across the various development stages, with greater risks at the early stages of the innovation process. M-PESA is an example of an initially not-for-profit inclusive innovation that reached commercial viability, as well as soft funding and government support, after several years of trial and error (Foster and Heeks, 2013). Drawing conclusions on the share of inclusive innovations that have successfully scaled up is arduous, since the main analysis to date is based on case studies. However, the fact that only a few of the cases (see Section 4.2. below), even among the frequently quoted examples, have reached scale suggests it is a persistent challenge – a conclusion also reached at the OECD Symposium on Innovation for Inclusive Growth (OECD, 2014b).

4.2. Success factors for scaling

Inclusive innovations that have scaled up successfully include mobile phones and some mobile services (such as M-PESA), several microfinance initiatives (discussed in Section 1.3), as well as Jaipur Foot, Fuel from the Fields and Narayana Health. This success has occurred for several reasons.

- The product responded to **strong demand**, as demonstrated by the poor's willingness to pay for such services. Mobile phones, for instance, were taken up even where electricity supply was a challenge, because communication needs were substantial. In 2013, mobile phone subscriptions per 100 inhabitants amounted to 89.4% in developing countries (International Telecommunication Union [ITU], 2014). Uptake among firms, including informal enterprises, was considerable, as shown in Figure 1.3 (Paunov and Rollo, 2014). The mobile banking service M-PESA is another widely adopted product that answered strong demand.

Figure 1.3. Share of firms using mobile phones for business, 2009-11 (percentages)



Note: Statistics are based on 16 777 observations in 38 countries. See Paunov and Rollo (2014) for further details.

Source: Paunov and Rollo (2014), based on World Bank Enterprise Surveys.

- Successful innovators **invested in gaining a deep understanding of the requirements of the poor**, which can be achieved by involving them directly in innovation processes. Starting from the demand side (i.e. by observing consumer habits and stated needs) to design a product is an advanced way to include end users, which has driven the success of MFI initiatives and identified opportunities to include end users.

- **Developing profitable business models** was a priority. This process often involves multiple iterations, aimed at identifying opportunities for success, which might be described as "**thinking out of the box**". MFIs are a good example of how evaluating and experimenting with different models has helped build success. Innovative **pricing and financing strategies**, as well as modified business processes, have also proved critical. Tables 1.4 and 1.5 illustrate these issues. They show that while cost reduction was generally the main criterion, other factors (including ensuring product quality and the application's usefulness) were critical too. Cost effectiveness and profit-driven objectives have often underpinned successful initiatives.

Table 1.4. Pricing and financing strategies

Strategy	Examples
Pay-as-you go: users pay in small units instead of high fixed costs for service access.	• In India, the **Byrraju Foundation** provides water purification services through community filtration plants at half the price of alternative methods. The business model is pay-per-use. • In Medellin (Colombia), the main electricity provider **EPM** has developed a pay-as-you-go card for customers whose service was cut for reasons of non–payment. This initiative has reconnected these customers to the system.
Tiered pricing: price discrimination whereby higher-income users cross-subsidise lower-income users in exchange for extra services, or through other forms of market segmentation.	• In India, **Ziqitza** operates the 1298 programme, a network of fully equipped advanced and basic life support ambulances. The 1298 business model uses a sliding price scale based on patients' ability to pay, determined by the kind of hospital to which they choose to be taken. Financial sustainability is ensured through cross-subsidisation.
Microleasing: potential customer purchase usage rights rather than ownership of product.	• In India, **SELCO** provides solar power to the rural poor. To offset the high one-off cost of installing a solar panel, it treats it as a service rather than as a product. Solar lights are leased out to customers – e.g. farmers or sellers in rural areas – on a nightly basis.
Chain financing: provides innovations and access to financial solutions.	• CEMEX Patrimonio Hoy operates in various countries in Latin America. The programme provides access to construction goods, as well as financing and counselling services, stimulating investments of poor households in the housing sector. • In Colombia, Pavco Colpozos promotes efficiency in agricultural production by selling technological solutions for water management to farmers, using flexible payment models. • In Mexico, bakery goods producer Bimbo (which has a large distribution network) has entered into a partnership with the MFI Fincomun. Fincomun agents avail themselves of transport by Bimbo supply trucks to reach their potential clients, small low-income shop owners. Access to the shop owners' payment history when purchasing Bimbo products serves as a first filter for future credit candidates. Bimbo also benefits, since its consumers have enhanced access to credit and are more likely to pay for its products on time.
Credit, savings and insurance improve the purchasing power of lower-income groups.	• Microfinance is perhaps the most important means of reaching the poor. The successful example of the Grameen Bank in Bangladesh has led to its replication in a variety of contexts. Many microfinance experiences around the world testify that this contracting innovation, through the concept of joint liability, changes the behaviour of borrowers, reduces monitoring costs and enforces payment through peer pressure – all of which help make credit more available to the poor. • By indexing insurance to measurable scenarios that cannot be manipulated by customers, monitoring and inspection costs decrease and customised insurance solutions can lower risks for the poor. The BASIX index-based weather insurance, which reduces monitoring and farm level inspection to confirm crop losses, is one example of this trend.

Source: OECD (2013).

Table 1.5. Changing production practices

Strategy	Examples
No frills: focuses on uses that are truly valuable to the poor.	• **Tata Nano**, the world's cheapest car priced at around USD 2 500 in 2012, is based on various business innovations, the most important of which is the no-frills approach. It is a very simple car with few of the "extras" offered by modern cars.
Deskilling and standardisation: divides processes into simple tasks that can be accomplished by low-skilled workers after some training; uses highly skilled workers only for highly specialised tasks.	• **Narayana Health**, a private corporation located in Bangalore, charges patients USD 1 500 for heart surgery that would cost USD 4 500 on the Indian market and USD 45 000 on the US market. Profits are achieved through internal process innovations: 1) specialisation, based on "deskilling" some processes so they can be performed by low-skilled workers; and 1) identifying the complex processes to be performed by specialists rather than generalists. Training low-skilled workers – mainly women – to perform simple tasks allows integrating the poor into the value chain.
Specialisation: standardises processes to make them easily scalable and traceable.	• **LifeSpring**, a public-private joint venture between Hindustan Latex Ltd and the Acumen Fund (India), is a network of low-cost maternity and children's hospitals for the poor. By specialising in healthcare for mothers and children, LifeSpring uses only a narrow range of drugs, which it purchases in bulk at a lower cost. LifeSpring has also identified 90 standard clinical procedures and protocols that are used for process innovations. Doctors devote their time to the tasks requiring their expertise, while other workers perform less demanding tasks. • The NGO **Gyan Shala** in India provides primary education at low cost by using standardised curricula and lesson plans to exploit economies of scale. The approach has also made it easier to monitor the quality of the education provided.
Soft networks: use community networks and their knowledge (including door-to-door distribution and advertising strategies) to address low demand due to limited access to information.	• **VisionSpring** (USA, India, El Salvador) is a network of women selling low-cost eyeglasses through the Vision Entrepreneur programme. • **Hindustan Unilever** (India), through the Shakty Initiative, trains women to become micro-entrepreneurs by selling personal care products. Consumers benefit through better personal hygiene and illness prevention, while women improve their bargaining positions within their households and communities. • The **Arogya Ghar Clinics** for Mass Care (India) are based on a system of mobile kiosk-based clinics operated by women with a high-school education who deliver door-to-door care. • Under the **Grameen Village Phone initiative**, women in Bangladesh and Uganda sell retail phone services within their villages.
Value chain inclusion: leverages the poor to enhance producers' access to resources and knowledge (contract production, deep procurement and demand-led training).	• **Tata Nano** (India) used different cost-reduction strategies, such as an innovative distribution system of establishing assembly units closer to customers in distant areas. Local production allowed Tata to eliminate one step in the distribution chain, helping to improve its relationship with customers and enhancing its corporate image. • The **Aakash Ganga River** initiative (also in India) has helped 10 000 villagers gain access to clean water by renting rooftops from the poor to collect, channel and sell rainwater. • **Nestle Pakistan** has developed a deep procurement model that collects milk directly from 160 000 small farmers. • **Indupalma** (Colombia) integrates farmers in the supply chain for palm oil production. It helps them become landowners, create associations, buy inputs and machinery, and gain access to credit to improve the overall business process.

Source: OECD (2013).

- **Favourable regulatory conditions** and experimentation with different approaches were often critical. For instance, public-private partnerships (e.g. the Aashkar tablet in India[8]) were used to support outreach to poorer communities in India or South Africa. In Kenya, the success of M-PESA would not have been possible without regulations enabling this type of service development.

- **Private entrepreneurial initiative** was a driver of scale. Private companies (e.g. Nokia and Motorola) have adapted handsets for the developing world, while MFIs have received a substantial boost from participation by commercial banks. Other actors – notably NGOs, not-for-profit organisations and universities and/or public research institutes – have often contributed adjustments to supply a wider market with a better product. Jaipur Foot, an affordable prosthetic foot (currently sold for USD 45) developed by the NGO **Bhagwan Mahaveer Viklang Sahayata Samiti**, has been widely adopted as a result of product innovations involving various research organisations. Similarly, collaboration with Stanford University led to the development of the Jaipur Knee. Thus, private entrepreneurial initiative has been a driver of scale and a core condition for success.

- Building on **existing infrastructures helped achieve scale** by overcoming obstacles through relying on existing delivery networks for the poor (e.g. using small community-based shops) and existing knowledge sources (e.g. NGOs operating in the field). Fuel from the Fields, a grassroots entrepreneurship initiative that allows producing charcoal from agricultural waste, relies on partner institutions to disseminate the technology and know-how to diverse communities (Paunov and Lavison, 2014).

4.3. Microcredit: A successful inclusive innovation

Microcredit – the granting of small loans rarely amounting to more than a few hundred USD – is an interesting case because unlike other inclusive innovations, it is a more mature product that has undergone substantial experimentation and managed to reach significant scale. According to estimates, about 200 million people worldwide took out loans at an MFI in December 2010, of which over 130 million were living in extreme poverty – i.e. on less than USD 1.25 per day, or less than half the national poverty line (Microcredit Summit Campaign, 2012). The microfinance market, estimated at USD 60 billion to USD 100 billion in 2013, caters to about 20% of demand for credit by the poor worldwide (IFC, 2013b). Among the various MFIs, the Grameen model (Box 1.6) is quite widespread, with the Grameen Bank numbering over 8.37 million members in 2012 (Grameen Bank, 2013).[9] Microfinance is also interesting because it facilitates the uptake of inclusive innovations.

Sustainability

Microfinance has proven to be a viable and sustainable business model. A 2006 survey of 702 MFIs in 83 countries suggests that 84% of all MFI clients were served by profitable MFIs, including for-profits and not-for-profits (Quayes, 2012).[10] Research on 14 Ethiopian MFIs suggests that the largest MFIs have cost efficiency scores on a par with commercial banks (Kebede and Berhanu, 2012). Many MFIs receive additional resources – only circa 23% of MFIs worldwide operate without any subsidies (D'Espallier et al., 2013).

There has been some debate about the profitability and role of MFIs in providing a tool to support the poor and ensure sustainability. "Moderately poor" households, rather than the "very poor", have been among the most active participants (Hashemi and de Montesquiou, 2011, as cited in Ledgerwood et al., 2013; see Ghalib, 2013 for evidence on Pakistan). This is partly related to the low scale of serving the poorest (given the smaller loan size), which hinders the development of sustainable business models. To remedy this,

formal financial institutions in particular rely on cross-subsidisation, whereby larger-scale funding for higher-income groups provides the necessary inputs for sustainability. Certain characteristics (such as higher repayment rates among the poor) might also, if well managed, provide better opportunities to provide the poor with sustainable business services (Quayes, 2012; Kumar-Kar, 2011). However, adopting the for-profit model might also increase the cost of raising capital, as it will not allow those businesses to access "soft" loans (e.g. provided by social investment funds) and donations, as well as different tax treatments.[11] Thus, a situation where a small number of MFIs catering to special-needs clients co-exist with profitable larger MFIs might be most inclusive in serving poor clients.

Finally, ensuring sustainability will depend on framework conditions – including interest rate ceilings, the status and corresponding tax treatment of MFIs, and the conditions for operating an MFI (which will determine to what extent non-financial entities are involved). These factors affect the opportunities available to develop sustainable microfinance businesses (Imai et al., 2012; Ahlina et al., 2013). Registering as a formal financial institution allows an MFI to accept and mobilise savings for financing purposes. Similarly, commercialisation can help MFIs raise more capital through the regular financial market, in line with the growth of socially responsible investment. The uptake of microfinancing by various entities has allowed adjusting to a diversity of regional contexts and circumstances. Some entities – e.g. financial co-operatives, NGOs and village banks – operate under regulatory frameworks, but not under the supervision of the national financial authorities. Such arrangements have allowed reaching a wider group of the poor than would have been possible otherwise.

Successful innovations behind microfinance

The success of the microfinance model is based on constant efforts to provide sustainable credit services to geographically scattered and remote poor clients. Unlike higher-income groups, these people often have neither collateral nor a credit history and may even sometimes lack verifiable identities. To avoid moral hazard, MFIs needed to find alternatives to traditional approaches (e.g. collateral-based loans to ensure borrowers do not have incentives to default). Providing low-income groups with access to credit group lending with joint liability has been one critical solution, based on three types of models (Box 1.5). Another solution has been to provide dynamic incentives – e.g. the promise of larger future loans conditional on timely repayment of the initial smaller loans. Other types of innovations have also helped improve the performance of MFIs, as illustrated by the example of SKS (Box 1.6).

Box 1.5. Group lending innovations behind the success of microfinance

Microlending models that have proved most successful include the following:

- **The solidarity group model:** a small group (generally four or five individuals) takes out a joint loan. The payback instalment is usually short and starts very close to the loan's disbursement. Because they are jointly responsible for timely repayment, the borrowers have incentives to select group members with similar risk profiles. Peer pressure heightens the recovery rate.
- **The Grameen model:** an MFI created in a village caters to 15 to 20 villages. The MFI grants joint-responsibility loans to self-formed groups of about five borrowers (as in the solidarity group model). The loans are issued in waves; the first members get their loans, and then the next – if the first members have repaid their due – and so on. One mechanism to improve repayment is peer pressure within the group.
- **The village banking** model is a community-based credit and savings association. A large group (25 to 50 villagers) takes out a joint loan from an MFI and forms a smaller village committee to allocate smaller loans from this common loan. The role of the MFI is limited to administrative and technical issues. **Women's self-help groups**, comprising up to 15 women under the guidance of an NGO or other public actor, generally operate under this model.
- **The individual model:** after screening within informal networks (community leaders, friends, family), the MFI grants a loan to a single borrower. A bailer is sometimes required to compensate for the lack of collateral. Because this model entails larger costs for the MFI and is plagued by more important information asymmetries, it was originally unpopular.

Source: Guntz (2011).

Box 1.6. SKS in India

SKS is an MFI providing small loans (ranging from approximately USD 44 to USD 260) to poor rural women. Launched as a not-for-profit in 1998, it became a for-profit company in 2005. It is present in 6 Indian states and had over 5 million members as of 2013. To reach this scale and remain sustainable despite catering to a very segmented market and to the very poor in particular, SKS relied on innovative business practices. Various innovations were introduced to adjust processes to the characteristics of their target customers and keep costs down:

- **As many poor customers are illiterate**, SKS developed a visual system to record applicants' information: instead of filling out a written form, applicants declare their wealth by using dashes on pictograms representing different assets (cattle, etc.). This improves trust and facilitates the registration process.
- **SKS adapted its operations to client schedules.** All weekly meetings are organised from 7.00 to 9.30 so as not to interfere with women's work in the fields. Similarly, SKS adopted a "door-step banking" model where the loan officer travels from village to village so that the clients do not have to waste valuable time commuting to and from the branch.
- SKS employs loan officers from the same village as the customers (**65% of the workforce is from the same disadvantaged communities as the clients**). This facilitates interaction with clients, reduces asymmetry, cuts costs and empowers the community.
- SKS took additional steps, including standardising all of its processes (from organising meetings to training new agents).
- **SKS developed a custom management system**. The software is easy to use for uneducated people, as well as fast – no more than 30 minutes are needed to record the weekly payment and other required data, allowing its use in areas with limited power. The system automatically transfers all information – relatively fast even on very slow connections – to the central computer in the head office for compilation.

Sources: Mohan and Potnis, 2010; www.sksindia.com (accessed in March 2014).

5. Conclusion

Inclusive innovations demonstrate that innovation can effectively improve the welfare of lower-income and excluded groups. New technologies, in particular ICTs, have heightened opportunities to develop inclusive innovations. The private sector's interest in serving the growing middle-income groups in emerging economies in particular offers opportunities for inclusive innovations to successfully reach scale despite the many challenges they face – from the lack of financing and technical expertise for grassroots innovators to limited information about actual consumer needs for pro-inclusive innovators. Policy plays a role in creating a favourable environment for inclusive innovations to develop scale, effectively leveraging market-based creativity to tackle these development challenges more efficiently.

References

Adler, R. and M. Uppal (2008), *m-Powering India: Mobile Communications for Inclusive Growth*, Report of the Third Annual Joint Roundtable on Communications Policy, The Aspen Institute India.

Ahlina, C. J., Linb and M. Maioc (2011), "Where does microfinance flourish? Microfinance institution performance in macroeconomic context", *Journal of Development Economics*, Vol. 95 (2011), pp. 105-120.

Angelucci, M., D. Karlan and J. Zinman (2014), "Microcredit Impacts: Evidence from a Randomized Microcredit Program Placement Experiment by Compartamos Banco", *NBER Working Paper*, No. 19827.

Ashraf, N., D. Karlan and W. Yin (2006), "Tying Odysseus to the Mast: Evidence from a Commitment Savings Product in the Philippines", *Quarterly Journal of Economics*, Vol. 121, No. 2, p. 635–672.

Baggeley, J. and T. Belawati (eds.) (2010), *Distance Education Technologies in Asia*, IDRC, Sage Publications, India.

Banerjee A.V. and S. Mullainathan (2010), "The Shape of Temptation: Implications for the Economic lives of the Poor", *NBER Working Paper*, No. 15973.

Banerjee, A.V. and E. Duflo (2010), "Giving Credit Where It Is Due", *Journal of Economic Perspectives*, Vol. 24, No. 3, p. 61–80.

Baumüller, H., C. Hausmann and J. von Braun (forthcoming), "Innovative Business Approaches for the Reduction of Extreme Poverty and Marginality", in von Braun, J. and F.W. Gatzweiler, *Marginality: Addressing the Nexus of Poverty, Exclusion and Ecology*, Springer, Ch. 20.

Cull, R., A. Demirgüç-Kunt and J. Morduch (2009), "Does Regulatory Supervision Curtail Microfinance Profitability and Outreach?", *World Bank Policy Research Working Paper*, No. 4748, *dx.doi.org/10.1596/1813-9450-4948.*

Dalla Pellegrina, L. (2011), "Microfinance and Investment: A Comparison with Bank and Informal Lending", *World Development*, Vol. 39/6, pp. 882–897.

D'Espallier B., M. Hudon and A. Szafarz (2013), "Unsubsidized Microfinance Institutions", *Economics Letters*, Vol. 120/ 2, pp. 174-76.

Dobrovolny, M. (2014), "Citizen scientists pitch new uses for paper microscope", SciDev.Net, www.scidev.net/global/biotechnology/news/citizen-scientists-pitch-new-uses-for-paper-microscope.html.

Duflo, E., M. Kremer and J. Robinson (2011), "Nudging Farmers to Use Fertilizer:Theory and Experiemenal Evidence from Kenya", *American Economic Review*, Vol. 101, No. 6, October.

Field, E., R. Pande, J. Papp and N. Rigol (2013), "Does the Classic Microfinance Model Discourage Entrepreneurship Among the Poor? Experimental Evidence from India", *American Economic Review*, 103/6, pp. 2196-2226.

Foldscope (2014), Foldscope website, www.foldscope.com (accessed June 2014)

Foster, C. and R. Heeks (2013), "Analyzing Policy for Inclusive business: The Mobile Sector and the Base-of-the-Pyramid Markets in Kenya", *Innovation and Development Journal*, Vol. 3/1, April, pp. 103-119.

Ghalib, A. K. (2013), "How Effective Is Microfinance in Reaching the Poorest? Empirical Evidence on Programme Outreach in Rural Pakistan", *Journal of Business Economics and Management*, Vol. 14/3, pp. 467-80.

Grameen Bank (2013), *Annual Report 2012*, Grameen Bank.

Guntz, S. (2011), "Sustainability and profitability of microfinance institutions", Research paper, Center for Applied International Finance and Development (CAIFD), Georg Simon Ohm University of Applied Sciences, Nuremberg .

Hammond, A.L. et al. (2007), *The Next Four Billion. Market Size and Business Strategy at the Base of the Pyramid*, International Finance Corporation and World Resources Institute.

Heeks, R., M. Amalia, R. Kintu and N. Shah (2013), "Inclusive Innovation: Definition, Conceptualisation and Future Research Priorities", *Development Informatics Working Paper Series*, No. 53, Centre for Development Informatics, Institute for Development Policy and Management, SEED, Manchester.

IFC (2013a), *Access to Credit among Micro, Small and Medium Enterprises*, IFC Advisory Services | Access to Finance.

IFC (2013b), *IFC and Microfinance*, fact sheet, IFC, October 2013, www.ifc.org/wps/wcm/connect/0cf7a70042429b19845aac0dc33b630b/Fact+Sheet+Microfinance+_October+2013.pdf?MOD=AJPERES.

ILO (2011), *Statistical update on employment in the informal economy*, ILO Department of Statistics, June 2011, www.ilo.org/public/libdoc//ilo/2011/111B09_241_engl.pdf .

Imai, K. S., R. Gaiha, G. Thapa & S. K. Annim (2012), "Microfinance and Poverty – A Macro Perspective", *World Development*, Vol. 40/8, pp. 1675-1689.

ITU (2014), "Key ICT indicators for developed and developing countries and the world (totals and penetration rates)", World Telecommunication/ICT Indicators database.

Kebede, H. and W. Berhanu (2013), "How Efficient Are the Ethiopian Microfinance Institutions in Extending Financial Services to the Poor? A Comparison with the Commercial Banks", *Journal of African Economics*, 22/1, pp. 112-135, http://dx.doi.org/10.1093/jae/ejs012.

Kickstart (2014), www.kickstart.org (accessed in June 2014).

Kiva (2014), www.Kiva.org (accessed on 7 November 2014).

Kothandaraman, P. and S. Mookerjee (2008), "Healthcare for All: Narayana Hrudayalaya, Bangalore", *Growing Inclusive Markets Case Study*, United Nations Development Programme.

Kubzansky, M., A. Cooper and V. Barbari (2011), *Promise and Progress. Market-Based Solutions to Poverty in Africa*, The Monitor Group.

Kumar Kar, A. (2011), "Microfinance Institutions: A Cross-Country Empirical Investigation of Outreach and Sustainability", *Journal of Small Business & Entrepreneurship*, Vol. 24/3, pp. 427-446.

Ledgerwood, J., J. Earne, C. Nelson (2013), *The New Microfinance Handbook: A Financial Market System Perspective*, World Bank, Washington, DC, http://dx.doi.org/10.1596/978-0-8213-8927-0, License: Creative Commons Attribution CC BY 3.0.

Maes, J.P., L.R. Reed (2012), *State of the Microcredit Summit Campaign Report 2012*, Microcredit Summit Campaign (MCS), Washington, DC.

Markoff, J. (2014), "Science Tools Anyone Can Afford", *The New York Times*, New York.

Mashelkar, R. A. (2014), "Accelerated Inclusive Growth through Inclusive Innovation", presentation at the OECD-Growth Dialogue Symposium on Innovation and Inclusive Growth, 20 March 2014, Paris, www.oecd.org/sti/inno/Session_3_Mashelkar_Keynote.pdf .

McIntosh, C. (2011), "Microfinance and Home Improvement: Using Retrospective Panel Data to Measure Program Effects on Fundamental Events", *World Development*, Vol. 39/6, pp. 922-937.

Melhem, S. and N. Tandon (2009), "Information and Communication Technologies for Women's Socio-Economic Empowerment", *World Bank Group Working Paper Series*.

Ministry of Human Resource Development (2013), *NMEICT– National Mission on Education Through Information and Communication Technology*, Ministry of Human Resource Development, India.

Mohan L. and D. Potnis (2010), "Catalytic Innovation in Microfinance for Inclusive Growth: Insights from SKS Microfinance", *Journal of Asia-Pacific Business*, Vol. 11/3, pp. 218-239.

Narayana Health (2014), Narayana health website, www.narayanahealth.org (accessed in July 2014)

OECD (2014a), *All on Board: Making Inclusive Growth Happen*, April 2014, OECD, Paris.

OECD (2014b), *Symposium on Innovation and Inclusive Growth: Summary Record*, OECD, Paris. www.oecd.org/sti/inno/Symposium%2020-21%20March_Summary_Record.pdf

OECD (2013), *Innovation and Inclusive Development, Discussion Report*, OECD, Paris.

Paunov, C. and C. Lavison (2014), "How to Scale-Up Inclusive Innovation? Policy Lessons from a Cross-Country Perspective", unpublished manuscript.

Paunov, C. and V. Rollo (2014), "Has the Internet fostered inclusive innovation in the developing world?", *OECD STI Working Paper Series*, OECD, Paris.

Prabhu, J. (2014), "Scaling Up Inclusive Innovation Activities", presentation given at the OECD – Growth Dialogue Symposium On Innovation And Inclusive Growth on 20 March 2014, Paris, www.oecd.org/sti/inno/Session_3_Prabhu.pdf .

Prahalad, C.K. (2005), *The Fortune at the Bottom of the Pyramid. Eradicating Poverty through Profits: Enabling Dignity and Choice through Markets*, Wharton School Publications, Upper Saddle River, NJ.

Prahalad, C.K. and S.L. Hart (2002), "The Fortune at the Bottom of the Pyramid", *Strategy + Business*, No. 6, pp. 54-67.

Protoprint (2014), Protoprint website, www.protoprint.in (accessed in October 2014)

Quayes, S. (2012), "Depth of outreach and financial sustainability of microfinance institutions", *Applied Economics*, Vol. 44/26, pp. 3421-3433.

Safaricom (2014), Safaricom website, www.safaricom.co.ke (accessed in June 2014).

Schneider, F., A. Buehn and C. E. Montenegro (2010), "Shadow Economies All over the World, New Estimates for 162 Countries from 1999 to 2007", *Policy Research Working Paper*, No. 5356, World Bank Development Research Group Poverty and Inequality Team & Europe and Central Asia Region Development Economics Unit.

Sen, A. (1988), "The Concept of Development", in *Handbook of Development Economics*, ed. by H. B. Chenery, and T. N. Srinivasan, Vol. 1, Amsterdam, The Netherlands, North Holland, Chapter

SKS Microfinance (2014), SKS India website, www. sksindia.com (accessed in March 2014)

Smith, A. (2014), "Scaling-up inclusive innovation: asking the right questions?", contribution to the OECD – Growth Dialogue Symposium on Innovation and Inclusive Growth on 20-21 March 2014, Paris, www.oecd.org/sti/inno/Session_3_Adrian%20Smith%20(paper).pdf.

Suárez Franco, C.F. (2010), "EPM: Antioquia Iluminada", *Growing Inclusive Markets Case Study*, No. C109, United Nations Development Programme.

Tarozzi, A. et al. (2011), "Micro-Loans, Insecticide-Treated Nets and Malaria: Evidence from a Randomized Controlled Trial in Orissa (India)", *Economic Research Initiatives at Duke (ERID) Working Paper*, No. 104.

The Economist (2012), "Mobile-money services let us in", *The Economist Newspaper Limited*, 25 August.

Von Hippel, E. (2005), *Democratizing Innovation*, MIT Press, Cambridge (MA).

World Bank (2014a), Poverty and Inequality Database, http://databank.worldbank.org/data/views/variableselection/selectvariables.aspx?source=Poverty-and-Inequality-Database (accessed in May 2014)

World Bank (2014b), World Development Indicators (database), http://data.worldbank.org/data-catalog/world-development-indicators (accessed in May 2014).

World Bank (2011), World Bank Global Financial Inclusion Microdata 2011, World Bank, Washington, DC, http://microdata.worldbank.org/index.php/catalog/global-findex/about.

Zhenwei Qiang, C., M. Yamamichi, V. Hausman, R. Miller. and D. Altman (2012), *Mobile Applications for the Health Sector*, ICT Sector Unit, World Bank, Washington, DC.

Zhenwei Qiang, C., S. C. Kuek, A. Dymond and S. Esselaar (2011), *Mobile Applications for Agriculture and Rural Development*, ICT Sector Unit, World Bank, Washington, DC.

NOTES

[1] The different levels reflects increased inclusion: 1) the pure intention of serving excluded groups; 2) their use and adoption by excluded groups; 3) which, if it then results in improving livelihoods, will be inclusive from an impact perspective. The higher levels include a more intense development of the poor in 4) processes; 5) structure; and 6) beyond.

[2] While grassroots innovation has gained more interest recently, it has some historical antecedents in the "appropriate technology" movement of the 1970s and the Indian People's Science Movement of the 1980s (Smith et al., 2013).

[3] Poverty is understood here as the lack of valuable opportunities and liberties (Sen, 1988), which results in different ways of marginalisation.

[4] Social value creation is increasingly being considered as a core business strategy in support of profits and competitive advantage (Baumüller et al., forthcoming). This is very different from "corporate social responsibility", which became prominent in the 1960s and 1970s with the rise of multinational enterprises and was largely driven by the need to mitigate tensions between multinationals and society.

[5] Regarding the standardised case, it bears noting that some of these innovators' products have effectively become inclusive innovations, not by design but simply by the product cycle dynamics based on which ultimately products become affordable. The most famous example here is mobile phones, which have become a critical tool for other service-based inclusive innovations.

[6] The poor have many other necessities to satisfy in the short run (Banerjee and Duflo, 2010). The result is that poor individuals' consumption and investment decisions tend to be persistently inefficient. Other papers that treat this problem include Banerjee and Mullainathan (2010); Banerjee et al. (2010); Tarozzi et al. (2011); Duflo, Kremer and Robinson (2010); and Ashraf, Karlan and Yin (2006).

[7] Although the initial target was USD 2 000, the car's final retail price was USD 2 600 for the most basic model and USD 4 000 for the better version (with power windows and air conditioning). The car is much more expensive than a scooter and unattainable for the very poor (businessweek.com, 2014).

[8] The Aashkar tablet is a low-cost tablet developed as part of an initiative by India's Ministry of Human Resource Development. Its aim is to serve as a tool to access tailored e-learning content and applications and replace the computer (notably for programming and robotics) (Ministry of Human Resource Development, 2013).

[9] Microfinance also has the potential to positively affect non-monetary aspects of inclusive development, such as quality of life, access to education, child labour and women's status in the household and society. The latter is particularly relevant, as microcredit was first designed as a tool to empower women; in 2010, about 82% of the very poor clients of MFIs were women (Maes and Reed, 2012). See, for example, Angelucci et al. (2014) for a discussion of achievements in that respect.

[10] Estimates of MFIs for 2002-04 showed that 57% of all MFIs and 53% of not-for-profit MFIs were profitable (Cull et al., 2009).

[11] A study of 346 institutions across 67 countries suggests that compliance with prudential supervision heightens costs for MFIs and leads profit-oriented MFIs to reduce outreach as a way to lower costs (Cull et al., 2009).