

WHAT ARE THE ECONOMIC AND SOCIAL IMPACTS OF THE MOBILE PHONE SECTOR IN DEVELOPING COUNTRIES?

Proparco has financed a large number of mobile operators both in Africa and in Asia for a total amount of some EUR 200 million. In order to better evaluate the tangible impacts of these projects, AFD and Proparco commissioned a study on the economic and social impacts of the launch of a new mobile phone operator in Haiti. The results highlight effects on GDP growth and employment, as well as the direct impact on households and users.

The Economic Impact of the Development of Mobile Telephony: Results from a Case Study in Haiti

Haitian data confirm that mobile phone development acts as an engine for economic growth, what consequently brings a number of social benefits. However, a large part of the population remains excluded from mobile phone services due to a lack of resources, and those who can afford them mainly use mobile phones to contact their families and friends – mobile phone expenditures can nevertheless sometimes be to the detriment of food and clothing. Yet some evidence suggests that mobile phones can make poor populations less vulnerable by facilitating financial transfers and access to information in case of emergency.

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The past decade has seen a rapid expansion of mobile telephony in developing countries. In 2006, it was estimated that 56% of individuals in low-income countries were covered by one or several mobile networks, and 22% actually subscribed to such services, up from virtually zero at the end of the 1990s. With less than 5% of the population having access to a landline phone, mobile phones have made telecommunications available for the first time to hundreds of millions of people, either through the ownership of personal handsets or as users of rented phones in public access points.

While the development of mobile telephony in poor countries has often been driven by private investors, various international donors have also contributed to its expansion. In fact, several studies have highlighted the beneficial impact of communications infrastructure on growth (through better market integration for instance), but important risks and limited infrastructure have sometimes hampered the expansion of mobile telephony in countries facing particularly difficult conditions, prompting calls for active support in favour of its development. This was, for instance, the case in Haiti, where penetration rates remained extremely low at below 5% by the end of 2005. Since then, a third mobile operator, Digicel-Haiti, was launched with support from Proparco, the World Bank, as well as the Dutch and Canadian International Development agencies. As indicated in Figure 1, mobile phone penetration had risen to 30% of the population

in 2007 (with Digicel accounting for 60% of the market), and Haiti has caught up some more developed countries like Senegal.

Importantly, the increase of penetration rates in the country was not limited to urban areas, as is often the case when mobile phone infrastructure investment is driven by private interests. The expansion of network coverage has managed to cover 95% of the population by 2008, providing potential access for even the most isolated households in Haiti. In rural areas, access rates to cell-phones is now on par with that of radio, far above other means of communication such as landline telephones, phone kiosks, and television. As shown in Figure 2 however, penetration rates remain much lower in rural areas (18%)¹, precisely, in fact, where mobile phones are most needed – with a large share of the population having to endure higher transport costs due to their isolation.

The rapid development of Haiti's mobile phone coverage and penetration rates offers an opportunity to further study the effect of mobile telephony on the country's economy. Based on data from the Haitian Institute of Statistics, the World Bank and Digicel, along with a nationally representative sample of nearly 2000 households, this article summarizes the results of a joint study by FAFO International and BearingPoint (FAFO International, 2009; BearingPoint, 2009)². The study covered impact assessment at both macro and micro-level. The study did not, however, cover the likely effects of mobile phones on market ...

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... integration – Abraham (2006), Jensen (2007), Aker (2008) – nor did it assess the likely multiplier effects generated via Digicel-Haiti’s investments on job creation.

A contribution of 20% to Haiti’s GDP growth between 2006 and 2008

With an initial investment of USD 130 million, followed by another USD 130 million in the subsequent years, the development of Digicel-Haiti constitutes the single most important foreign direct investment in the country’s history. While most of the equipment was purchased abroad, local sourcing of products, assets and services amounted to USD 140 million (mainly spent on the installation of the BTS network, real-estate and the media).

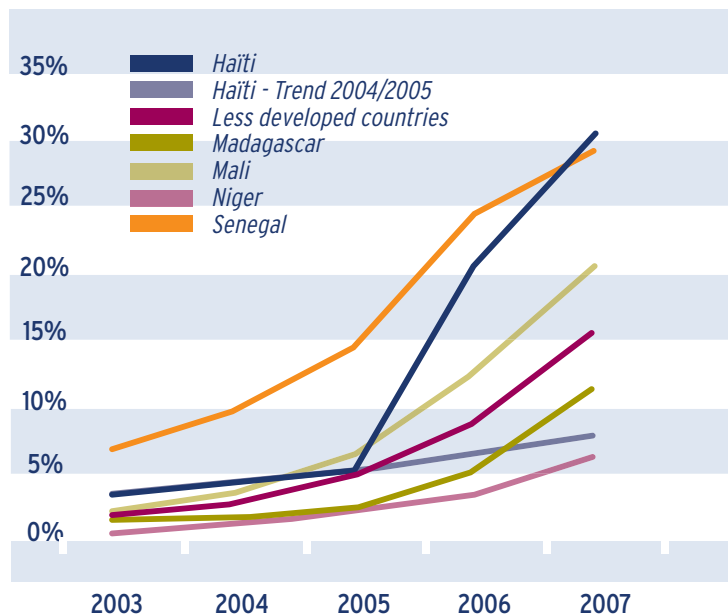
Digicel-Haiti’s development has also had a significant effect on employment. As of 2008, the company hired close to 1000 employees, and provides an income to 60,000 street vendors, each earning an average USD 24 per month income. Digicel-Haiti has rapidly become the country’s biggest tax-payer: with an amount of USD 24 million paid in 2007. Less than two years after Digicel-Haiti’s launch, this represents close to 15% of the country’s tax income. Looking at a macro-economic perspective, Digicel-Haiti has directly and indirectly contributed to a remarkable 20% of the country’s GDP growth between 2005 and 2007 (14% directly, 3% through suppliers and another 3% through retailers). In terms of percentage points, the contribution of Digicel actually represents 1.12 percentage points (ppt) of GDP growth out of the total 5.6 ppt recorded at the country level between 2005 and 2007.

This figure is consistent with the results that would be found by applying the ratios described in previous literature on the link between mobile penetration and GDP growth. For instance, Waverman *et alii* (2005) have found that a developing country with a 10% higher mobile penetration rate would have enjoyed an additional 0.6 ppt GDP growth compared to other developing countries, while a recent study issued by the World Bank estimates that a 10% increase in penetration rate would entail an additional 0.81 ppt of GDP growth (World Bank, 2009). Using both ...

¹ Penetration rates are computed using the total adult population in the country. Later statistics report the percentage of households with at least one telephone apparatus and are therefore higher.

² The authors of the study are Henri Tchong, a partner at BearingPoint in charge of telecoms and media, Jean-Michel Huet, a senior manager in the telecoms and media teams of BearingPoint, Isabelle Viennois, a manager in the telecoms and energy teams of Bearing Point, Pierre Labarthe, a consultant at BearingPoint and Tewodros Aragie Kebede a researcher at Fafo.

Figure 1: Mobile penetration rate in Haiti and low-income countries (% of the population)



Source: BearingPoint, 2009; Data based on World Bank and Digicel

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... metrics and considering that Digicel has been responsible for around 70% of the 25 ppt increase in penetration rate in Haiti between 2005 and 2007, the impact of Digicel on GDP growth would range between 1.05 and 1.42 ppt.

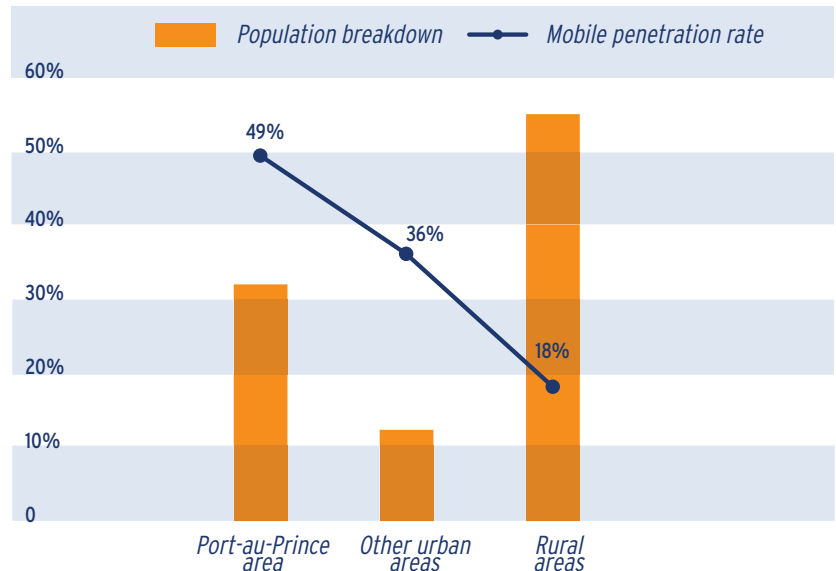
The challenge of assessing the impact of mobile phone development at individual and household-level

At individual and household-level, measuring the impact of the development of mobile telephony essentially depends on how access is defined, and the type of usage that people have for cell phones.

As described above, cell phone ownership patterns differ significantly between urban and rural areas. There various reasons behind this. For instance, all other things being equal, rural traders are 16% more likely to own a handset than farmers; while those with direct access to an asphalted road are 30% more likely to own a telephone than those without a direct access to such a road. These differences may in turn be related to different levels of income. In fact, for 80% of non-subscribers, the very first reason cited for not owning a cell phone has to do with their limited financial capacities, with 69% claiming they cannot afford to buy a handset, while 11% say they cannot afford to pay the bills for using it. This is further confirmed in Table 1 where one clearly observes a correlation between higher income quintile and telephone ownership.

In fact, the purchase of a handset and its utilization is a very expensive proposition for the mostly poor Haitian population: the cost of a handset is at least USD 40, and median cost of use would range between USD 6 and USD 7.5 per month in rural and urban areas respectively. In comparison, median income of households with a telephone reaches USD 105 to USD 125 per month (rural-urban), which means that cell-phone usage in itself represents about 5% of households' total expenditures. Evidence points to tradeoffs in consumption patterns as a result: more than 50% of the households in the poorest quintile owning a telephone report that they had to reduce other expense items in order to afford their usage. Although the study could not quantify the effective amount of these reductions, it concludes that they mostly occurred for expenditures related to food and clothes. Recent studies have documented that usage of cell phones in developing countries is mostly limited to non-income-generating activities (Donner, 2005; Donner, 2006; Souter *et alii*, 2005; Chowdhury, ...

Figure 2: Penetration rate in Haiti by rural/urban areas



Source: BearingPoint, 2009; Data based on World Bank and Digicel

Table 1: Percentage of households equipped with mobile telephony

	Budget quintiles	Without mobile	With mobile
Rural	<1 quintile	67	33
	1-2 quintiles	56	44
	2-3 quintiles	60	40
	3-4 quintiles	36	64
	4-5 quintiles	23	77
Urban	<1 quintile	30	70
	1-2 quintiles	20	80
	2-3 quintiles	10	90
	3-4 quintiles	6	94
	4-5 quintiles	1	99

Source: FAFO International, 2009

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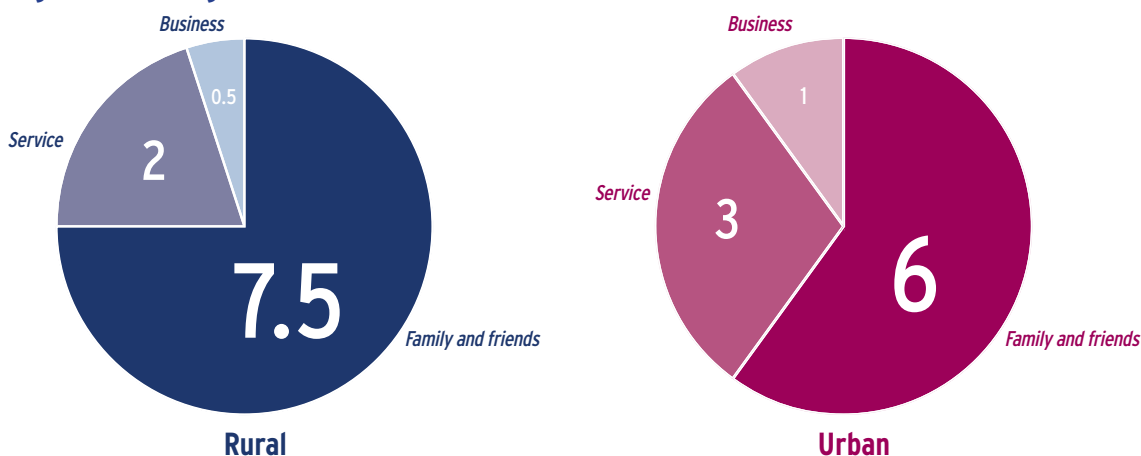
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... 2006). While certain activities such as trading clearly benefit from having permanent access to distant information and partners, the overwhelming majority of cell phone subscribers use their mobile phone service for social purposes (Frost & Sullivan, 2006; Samuel *et alii*, 2005; Goodman and Walia, 2006; Morawczynski, 2008). This is also the case in Haiti. As shown in Figure 3, the vast majority of phone calls do not clearly relate to any income-generating activities but to social purposes, or to administrative services: six out of 10 calls are made to family and friends, while an average of three calls are made to service related activities such as getting medical assistance, calling school teachers and officials for administrative related issues in urban areas. However, business related calls in urban areas are limited on average to just one call, implying that the use of mobile phones in

Haiti is mainly for social and administrative purposes. The average number of calls made for social purposes is slightly higher in rural areas while the average number of business calls is lower compared to urban areas. Virtually no respondents reported making direct profit from letting non-subscribers use their handsets (as is the case, for example, in Bangladesh with the Grameen phone models), and fewer than 30% of cell-phone owners in urban areas and 10% in rural areas declare using their telephone for any business-related activities.

The use of cell-phones for social reasons may however carry significant economic importance, particularly in terms of reduced vulnerability. In fact, as displayed in Table 2, a significant proportion of these calls are used to connect with family and friends at time of emergency and to ...

Figure 3: Average number of calls (out of 10 usual calls)



Source: FAFO International, 2009

Table 2: Reasons for social calls and their importance

Reasons for social calls	1 st most important		2 nd most important	
	Rural	Urban	Rural	Urban
Better coordinate visits and meetings	25	28	17	12
Collect news on distant family more often	57	55	30	27
Help quickly in cases of emergency	5	6	27	30
Call family to send/receive money faster	7	6	13	16
Call family abroad to send money if need	4	4	5	5

Source: FAFO International, 2009

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... ease money transfers. In a country where natural disasters are relatively frequent, subscribers recognise the importance of telephones when it comes to being alerted or alerting others about impending catastrophes, or to call for help during emergencies. Finally, mobile banking and money transfers may still not be developed, but cell phones do allow to reach family members faster in times of need.

The data presented in this overview of the Haitian context support the growing evidence that the development of mobile telephony can have a positive effect on overall economic growth and hence indirectly impact a large portion of the population. However, when it comes to assessing the direct effects on the well-being of households, it also shows that a significant share of the population remains excluded from cell phone services,

essentially due to a lack of sufficient resources. For those who do have access, with a few exceptions, cell phones essentially involve social services to link subscribers with their families and friends, possibly at the expense of spending on food and clothing. Some evidence suggest however that cell phones may positively affect income through ease of transfers, and access to information at time of emergencies, although further research is needed.

From a donor perspective, the present results suggest that supporting the development of mobile telephony in difficult conditions such as Haiti is in fact feasible. In terms of poverty reduction however, results are mixed. Finally, from a public good perspective, they show that the most economically fragile individuals remain excluded from this technology, calling for adapted solutions. ●

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