Introduction

This article discusses the importance of using public–private partnerships (PPPs) as a tool for developing broadband infrastructure in rural areas. The cases mentioned are aimed at serving as an inspiration to the use of PPP for broadband infrastructure development in the Commonwealth. Efforts in funding huge broadband infrastructures by either public or private financing alone have not been very successful in rural areas. Market reforms in the telecoms sector have resulted in the proliferation of infrastructure development in cities and little or no development in rural areas. Broadband in rural areas is not commercially viable and the risk of investing there is high. Therefore there is a need for governments to adopt a new strategy for broadband infrastructure financing. One form of infrastructure financing not used much in developing broadband infrastructure is PPP.

In various regions of the world, public-private partnerships have been used as a tool of financing major infrastructure projects and they are becoming more popular by the day (Williams and Falch, 2012). The EU leads the way with €11.7 billion and €17.9 billion worth of PPP transactions in 2012 and 2011, respectively (EPEC, 2013). Notable EU projects for 2012 were the Intercity Express Programme (Phase 1) in the UK, valued at €3.2 billion; the Nîmes–Montpellier high speed rail bypass in France, valued at €1.8 billion; the Rotterdam World Gateway port expansion (Maasvlakte 2) in the Netherlands, valued at €720 million; and the Tribunal de Grande Instance de Paris courthouse PPP in France, valued at €563 million (EPEC, 2013). In the Commonwealth, PPP has been identified as a tool to develop infrastructure quickly rather than relying on either aid or economic growth (Hamilton and Holcomb, 2013). Hence PPPs are suitable for funding huge and complex infrastructure projects.

The PPP concept

The concept of PPP has been muddled with ambiguities as the term is open ended, but the most accepted idea behind the concept is a ‘contract between the public and private sector aimed at developing public infrastructure, where the private sector assumes the financial, technical and operational risk’ (Cook, 2007). PPPs are often said to be intermediates between, on the one hand, outright public ownership and control (with procurement from private providers being tactical/operational) and, on the other, outright privatisation (a strategic withdrawal of the state from a market or firm, or creation of a market where there was not one previously). However, the exact determination of these boundaries has been open to some debate. But it is important to note that, from their inception, PPPs were aimed at attracting private investment to develop public infrastructure. In some cases governments invest as stakeholders in PPPs to retain (or regain) partial ownership or control in the perceived public/national interest; in others they are simply seeking returns like any other kind of investor.

There are many ways of implementing PPP; an example of some can be found in Table 1.

PPPs are mostly implemented via a concessionary business model such as, but not limited to: build–operate–transfer (BOT), build–transfer–operate (BTO), build–own–operate (BOO), build–own–operate–transfer (BOOT), build–lease–transfer (BLT), design–build–finance–operate (DBFO) and design–construct–manage–finance (DCMF) (Williams and Falch, 2012). Some forms of joint venture and public outsourcing, depending on the nature of contract signed and the roles assigned to both the public and
private sectors, could be termed PPP. This may be controversial but worth mentioning.

The importance of PPP to large-scale broadband infrastructure funding

It is difficult at the present time to declare PPP as a ‘eureka’ concept for infrastructure development. There have been questions as to whether there is actually ‘value for money’ in PPPs (Grimsey and Lewis, 2005). One can’t overlook the huge transaction cost incurred in establishing and maintaining the partnership (Dudkin and Välilä, 2005). In some cases, there have been some cost savings with PPP (Thomson and Goodwin, 2005). It is also important to note that a PPP cannot be the savior of a poorly planned project. However the important aspect of a PPP is its potential in aiding the delivery of large-scale projects that are beyond the national treasury.

Market forces at present do not work in favor of broadband infrastructure delivery in rural areas, especially in developing countries. Therefore PPP may be the only way to achieve national aspirations for broadband and next generation infrastructure in a timely fashion. The advantage of PPPs is that private investors can pool resources to finance, maintain and develop a project. They are also at liberty to come up with an innovative business model to plan how they can recoup their investment based on the percentages of their investment in the project. Forming a consortium is not always a smooth process and calls for less government and more governance.

<table>
<thead>
<tr>
<th>Table 1: Forms of PPP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private design–build–operate</td>
</tr>
<tr>
<td>Public funding to private company</td>
</tr>
<tr>
<td>(+) Low public sector burden</td>
</tr>
<tr>
<td>(+) Participation of commercial operator</td>
</tr>
<tr>
<td>(-) Limited public control</td>
</tr>
<tr>
<td>(-) Funding level must be attractive</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 2: Some PPP projects in Commonwealth countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>TEAMS</td>
</tr>
<tr>
<td>EASSy</td>
</tr>
<tr>
<td>*Malaysia Broadband Initiative</td>
</tr>
<tr>
<td>Next Generation Nationwide Broadband Network</td>
</tr>
</tbody>
</table>

Sources: UNESCOAP, 2013; ITU, 2010; Williams and Falch, 2012
*Ongoing projects
**RM = Malaysian Ringgit (Malaysian Currency)
The national approach to broadband infrastructure financing has generally been the liberalisation of the broadband market, but the reality in many developing and some developed countries is that rural areas are often not commercially viable and remain unserved. The reason is simply that the telecoms companies consider these areas risky for investment given the rapid change in technology. In some, but not all, cases a once-off subsidy may help a telecoms company to push its infrastructure to those areas.

Broadband PPP projects in the Commonwealth

In some Commonwealth countries, PPPs are common. As of May 2013, Australia recorded eight PPP projects for the year (Infrastructure Australia, 2013). Last year, the UK recorded more than 25 PPP deals at almost €600 million (EPEC, 2013). In Commonwealth Africa, PPPs are gradually being used as tools for infrastructure development. As of February 2013, 25 PPP projects were signed by the South African Government (PPP Unit, 2013).

Most PPPs in the Commonwealth do not target broadband development, however there are examples of completed and ongoing projects that can be counted as successes, if not in value for money terms then at least in the narrow sense of achieving delivery.

**TEAMS:** TEAMS cable system was an international bandwidth project facilitated by the Government of Kenya. The 5,000 km fibre-optic undersea cable links the Kenyan port of Mombasa with Fujairah in the UAE. The PPP involves a consortium led by the Kenyan Government (TEAMS Kenya Ltd). The consortium initially consisted of 15 network operators and ISPs. They held 85 per cent equity of the project while Etsisalt invested the remaining 15 per cent. This network was completed in 2009.

**EASSy:** This was a multinational PPP project to develop a 10,000 km fibre-optic undersea cable between Port Sudan in Sudan to Mtunzini in South Africa. The governments of East and Southern Africa were involved. Kenya, South Africa, Uganda, Rwanda, Namibia, Mozambique, Botswana, Malawi, Tanzania and Zambia were involved in this project. The players were a combination of development banks, international development partners and private telecoms companies, and were represented by their national telecoms companies. The African shareholders hold 92 per cent equity while the international shareholders hold eight per cent equity. This project was completed in 2010 and is still in use.

**Malaysia Broadband Initiative:** The Malaysian broadband backhaul initiative is aimed at developing fibre-to-the-home, ADSL, UMTS and WiMAX networks in Malaysia. The Government of Malaysia signed a PPP agreement with Telekom Malaysia aimed at jointly funding the infrastructure development. The aim of the project is to provide high speed broadband to Malaysians. This project is ongoing.

**Singapore:** Singapore is upgrading capacity by building what it calls fibre-to-anywhere (ITU, 2010). This next generation development effort is targeted at achieving 1Gbit/s download and 500Mbit/s upload speed (Yardley, 2012). The PPP involves a design–build–operate business model funded by the Government of Singapore. The expected market involves the fibre-optic development, the active architecture (the routers, switches and

Mobile coverage is good in most cities, but rural areas are often not commercially viable and remain unserved.
access network equipment) development and the retail service providers. In the project, the fibre-optic developer is called the NetCo (Network Company) and the active architecture developer is called the OpCo (Operational Company). The PPP occurs at the NetCo level and the OpCo level. This project has been progressing rapidly and is almost in its final stages (ITU, 2010).

Outside of the Commonwealth, the EU has initiated the future internet PPP. The aim of this project is to ‘make infrastructure and business processes smarter through tighter integration with internet networking and computing capabilities’ (European Commission, 2013). In this way it addresses all parts of the value chain and not only the infrastructure. This is a three-phase programme running from 2011 to 2016 with an estimated budget of €300 million. The funding is from the EU Commission and programme participants (partner organisations, industry and academic institutions). Twenty-three countries are represented with two outside the EU. One-hundred-and-twenty-eight partner organisations are on board. Eighteen academic institutions are also on board. Industry owns 68 per cent equity in the project (European Commission, 2013).

However, it is important to note that, despite these examples, telecoms PPPs are few compared to other sectors.

**Conclusion**

In the 1990s when PPP was introduced, it was all about enabling public savings, encouraging efficiency in infrastructure delivery and providing value for money for infrastructure delivery. On occasion, however, it has proven to be an expensive means of infrastructure delivery – underscoring the need for carefully negotiated agreements, risk management and a focus on efficiency. Building on the different PPP business models that exist today and which continue to be refined, PPP is one means of addressing the rural broadband infrastructure deficit. It also holds the key to upgrading broadband infrastructure to next generation networks and therefore the future advancement of ICT in any country.

**REFERENCES**


**IDONGESIT WILLIAMS** (idong@es.au.dk) is a PhD fellow and a guest lecturer at the Center for Communication Media and Information Technologies (CMI), Aalborg University (Copenhagen, Denmark). He holds a bachelor in physics and a master’s degree in information and communication technology. His research has been focused on the collaboration of public and private institutions in the development of ICTs.

**MORTEN FALCH** (falch@cmi.aau.dk) is associate professor at the Center for Communication, Media and Information Technologies, also at CMI, Aalborg University. He holds a bachelor in mathematics, a master’s degree in economics and a PhD. His research has been focused on socio-economic issues related to information and communication technology. He has participated in many EU funded research projects in the telematics area. He has also conducted a large number of consultations for national and international organisations such as ITU, UNCTAD, the World Bank and the national telecoms agencies in Denmark, Norway and Sweden.