
Project Title: Urgent need of a "National Backbone Network/Metro Ethernet"
to allow Internet social impacts in Djibouti

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Brief Description:

This document focuses on presenting the significance to develop the core network of Djibouti, in order to democratize broadband access in Djibouti.

The project aims to enable and enhance community-led development efforts to achieve the Millennium Development Goals (MDGs) by harnessing cutting-edge ICT technologies.

Urgent need of a
"National Backbone Network/Metro Ethernet"
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Prepared for:
Djibouti



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Urgent need of a "National Backbone Network/Metro Ethernet" to allow Internet social impacts in Djibouti.

Introduction: Djibouti is located in a key position on the East Africa Coast, already connected **by** fiber with the neighboring countries, and is the landing point of major submarine cable systems like SMW3, Eassy, Seacom and EIG.

Djibouti is the perfect hub where naturally converge the IP needs of the African countries that face the Indian Ocean.

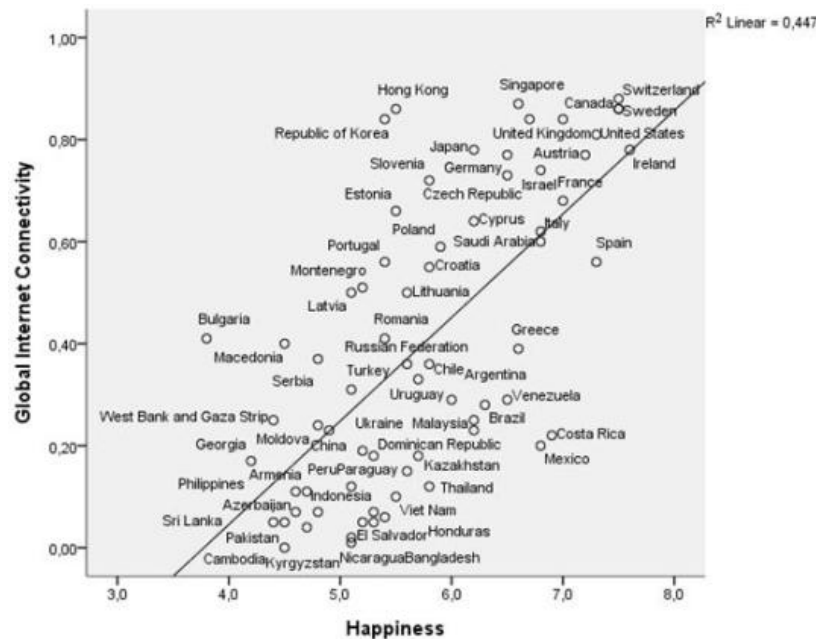
- However, even if access to International bandwidth is facilitated in Djibouti, in comparison with many advanced countries, bandwidth is still expensive because :
 - Submarine capacity costs much more than **terrestrial** capacity
 - Djibouti Market is not so **large in order** to optimize a national backbone which **allows** quick return of investments
 - **Purchasing power of nationals** is not **as high** as the one in developed countries
 - Infrastructure for access network toward the end-user **is** limited and expensive (copper is 32 times expensive than optical fiber, but fiber connectivity **needs** expensive public works),
- Consequently, Internet bandwidth for end-user is still expensive for everyone in Djibouti. Internet is not a priority for many citizens; it targets an elite class who can afford it.

➔ On the contrary, it is known that Internet philosophy aims to merge everyone, as in a global village with all social classes joined. Thus, it is paradoxical that only few people can access it ...
- How to lower its price and democratize Internet in Djibouti: A well-built national backbone/metro Ethernet ring should be planned, in order to allow everyone to have minimum Internet access at reasonable price with good quality of service. We should not forget that minimum standards quality of service is a main part of the social effect (e-learning, voip, social media ...)

A) How can Internet access allow social development and more?

1. What use can an internet site have, to help the low income population, when the poor have no internet access?
 - a. But... why the assumption that they are completely disconnected? Travel in **under developed** countries and you'll **still** see internet cafes in cities and villages.
*A home internet connection **could** be too expensive for local incomes, but saving up money **for being connected through** an internet cafe **could be affordable** for some.*
 - b. "This is the major challenge for the government and the national ISP, which should develop a national backbone allowing everyone to have a landline access at home".
 - c. Mobile phones are widespread. Text messages and phone calls are surprisingly cheap in some countries. This matters because of **a lot** of applications for mobile phones that support development, and because there are **far** more phones than computers. A story was told in 2008, by a Google employee who had been in Africa and asked a **countryman**: "Have you heard of Google?" the local replied "Yes, of course." But when he asked "Have you searched Google from a mobile phone?" the **man** was confused. In Africa especially, users are skipping land connections, and cell phones are getting smart quickly.
 - d. "You only need one phone or a TV set in a home or a village with this capability to significantly increase people's ability to find information and to allow new ideas to reach them and spread".

➔ Imagine the social effects if many low income families can have an Internet access?



Source: Gallup World Poll, 2008.

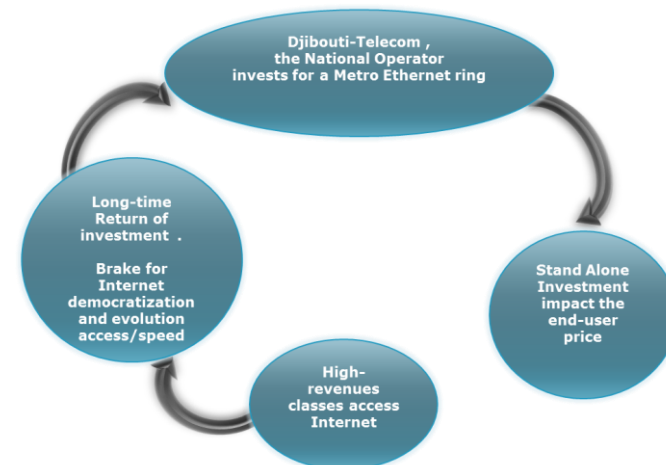
2. We observe clearly a world where technology does help the poor.
 - a. The question is no longer whether the poor can benefit from Internet, but how can they have access to it at a reasonable price in an under developed environment.
 - b. Landline access (fiber or copper) is still expensive because many African ISPs have not enough funds to invest in a sizable network, which will not have a detrimental repercussion on price.
 - c. Internet access for everyone **powerfully** develops a country regarding its social and well being
 - d. A national backbone **adequately** sized should allow Internet to impact socially everyone.

→ "Studies shows that large-scale investments for metro Ethernet rings can lower the cost from 20-30\$ at the end-user's price, which is highly significant ".

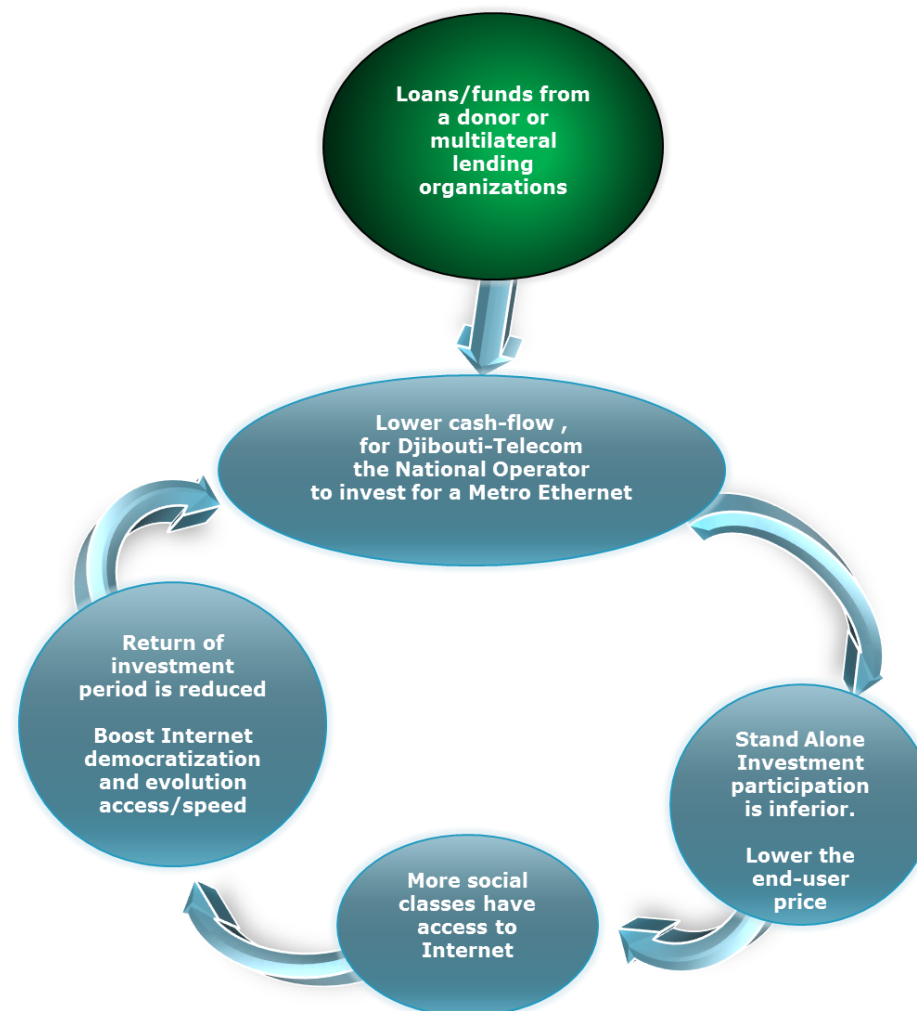
→ Unfortunately national ISP and government (for public works) cannot afford to invest a big amount at the beginning ...

B) How a suitable sized national backbone or metro Ethernet ring, can help Internet to have a social impact?

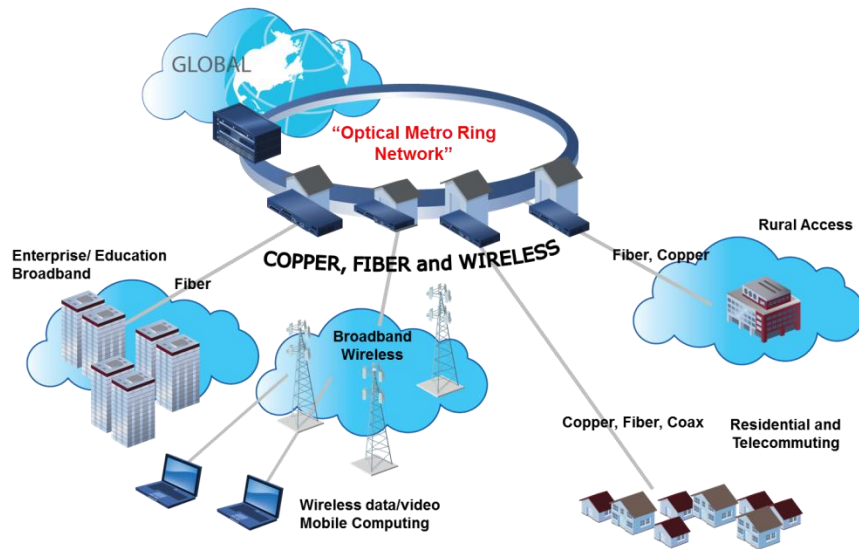
1. In many developed countries, Internet is seen as a base necessity such as water and electricity. It opens many gates which allow various social and economic opportunities.
 - a. Two major issues hinders the democratization of Internet in Africa : the access to the International connectivity and the build of solid distribution network, which allows reasonable long term return of investment, and which ,as a result, lowers the access price to the end-user.
 - b. Regarding the submarine connectivity, upgrades and evolution of the market will lower themselves the cost. We cannot influence it ...
2. However concerning network and access distributions, in order to deliver reasonable QoS for the access, investments for ISPs and purchasing power of East African citizens constraint the public democratization of Internet.



3. A proper national backbone, in other words a metro Ethernet ring (which consists of the core, distribution and access) correctly thought and sized, will ask a high investment at the beginning, but on a long term period, will bring many social advantages to end-users, all social classes included.
4. How Internet can boost the struggle against poverty :
 - a. educational network , virtual library
 - b. job application
 - c. Disaster risk management communication,
 - d. Professional and various training,
 - e. administrative information, e-government,
 - f. telecommuting,
 - g. culture,
 - h. e-learning (particularly for the low-skilled or out of school, because it reduces the complexities of learning in a group)
 - i. e medical applications (example diagnosis and treatment in an isolated place by a health in charge connected by internet with a doctor at the main centre for treatment of common wide spread tropical diseases cf. Brazil, Venezuela etc.)
 - j. IT and new technologies



Conclusion:



We need to develop the national backbone in Djibouti town first. On the one hand, the deployment of a metro Ethernet ring will have more impact in the capital since a large majority of the population dwells in Djibouti Town; and on the other hand it will feed the regional population.

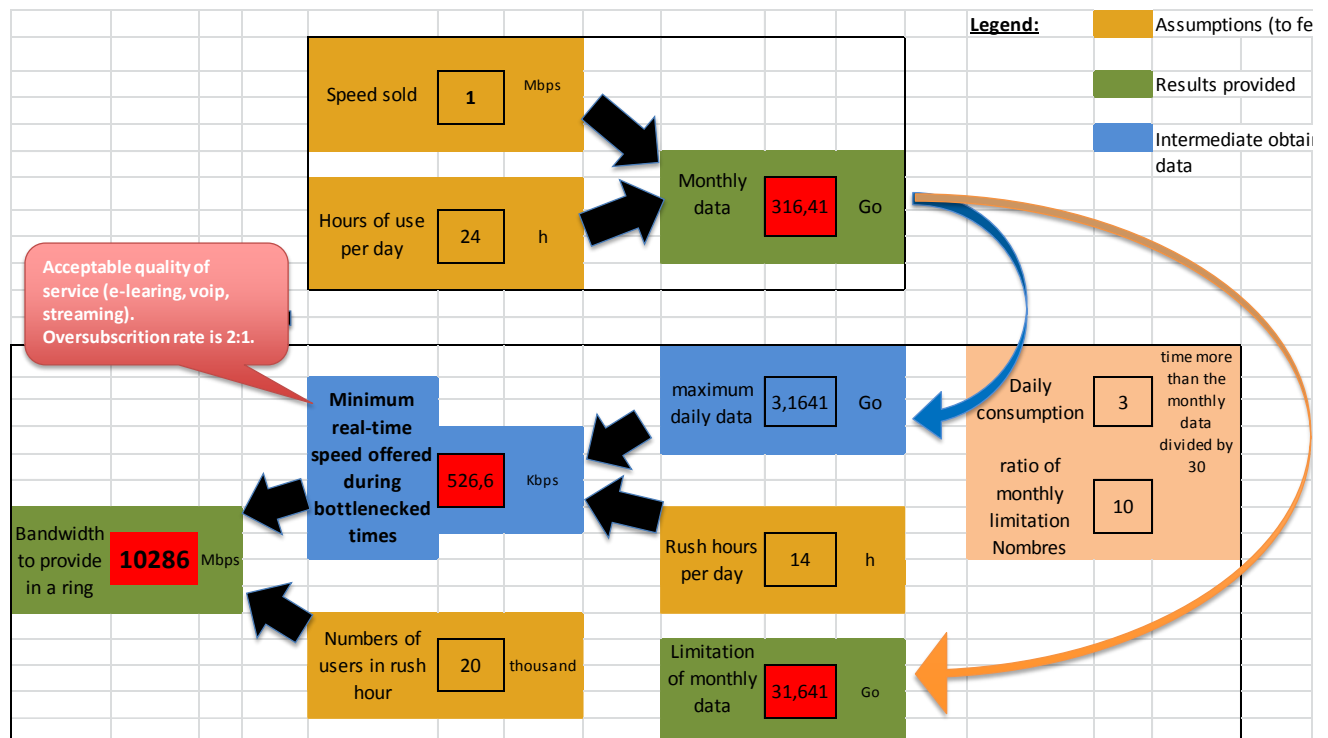
- Djibouti is part of the less advanced countries, and so is still an empty area of investment specifically in national telecommunications.
- Excluding its geostrategic position, **Djibouti is very limited in the world economic integration (no natural resources, no agriculture, and no significant industries).**
- 60% of the population is than 25 years, minimum Internet access and democratization is vital for its social development.

- The difficulty is of course where to find these funds, since the return of investment standard margins are difficult to be applied to a less advanced country.

Actually Djibouti national existing optical ring is not optimized and saturated (1gbps). It cannot meet the demand which is growing and expect price to be lowered.

- ➔ Any kind of assistance (funds, loans, surveys ...) from a donor and multilateral lending organizations will be much appreciated as contribution to the development of the internet access, because it will affect end user's price.
- ➔ It will also help the government or the national operator to promote Internet through various promotions adapted to the poor social classes.
- ➔ The internet democratization can be a socio-economical way out added value (call center, distance learning, East African IT Center like the one Jordan is targeting ...)

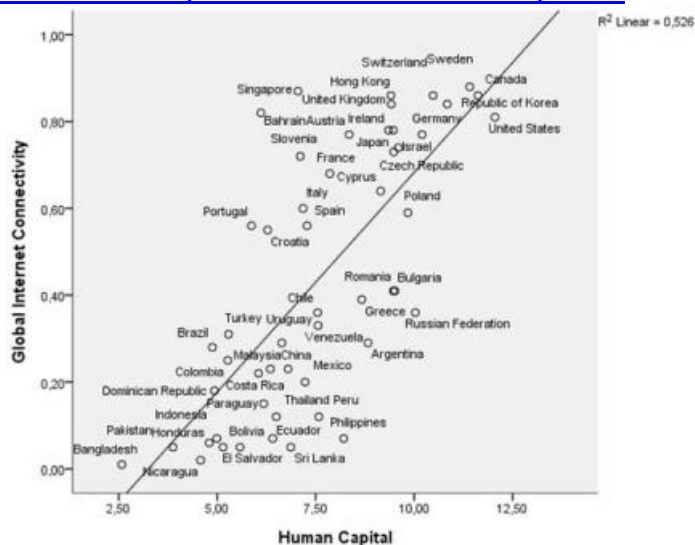
Appendix 1: National backbone overview/estimation



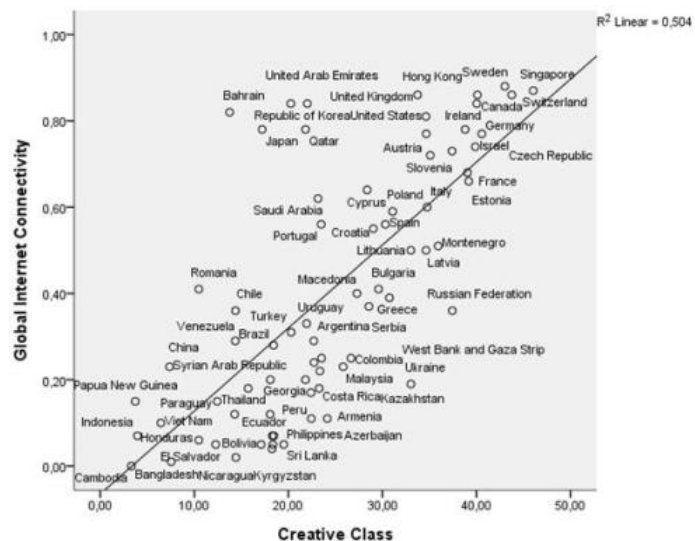
The benefits of Carrier Metro Ethernet:

- **Scalability**
 - Creation of massive networks available in many locations and accessible by many types of user
- **Cost Reduction**
 - Simplified technology brings lower cost and products that consume less power
 - Certified services dramatically reduces installation cost and complexity
 - Bringing the cost model LAN based Ethernet to the wide area network
 - Speeds implementation of new applications
- **Internet Access**
 - The best suited to support future very high bandwidth applications
- **Simplicity**
 - It's Ethernet
- **Disaster recovery, business continuity**
 - Typically bursts of high bandwidth that benefit from flexible SLAs
 - **Low cost bandwidth**
- **Software as a Service (SaaS) , Service Orientated Architecture (SOA)**
 - **Low cost bandwidth, low latency**
- **Converged Networking**
 - Trend away from IP Multicast
 - Sophisticated Video IM
- **Site-to-Site Access**
 - Bandwidth, low latency
- **Server Consolidation**
 - 10Gbps now, 100Gbps prototypes soon
- **Reliability**
 - Simple networks mean less to go wrong
 - Engineered for rapid recovery without user impact, when problems do occur
- **Performance**
 - Low latency inherent with Ethernet layer two networks
 - Low frame delay variation, critical for video transmission

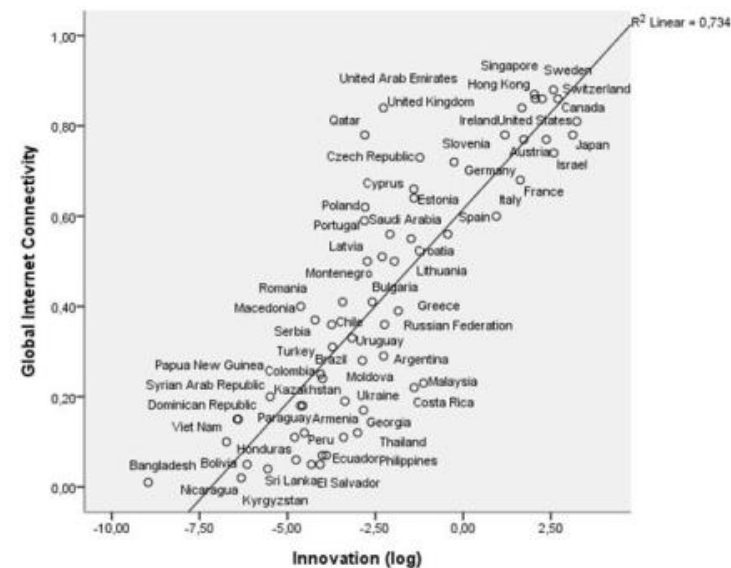
Appendix2: Social development relation with Internet expansion



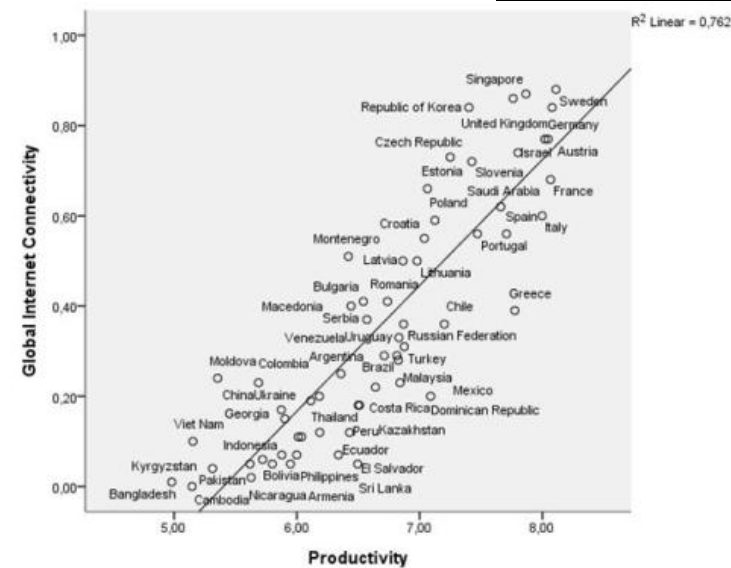
Source: Based on average level of education by Barro and Lee, 2001.



Source: International Labour Organization 2000-2006 (an average).



Source: USPTO, 2000-2006.



Source: World Development Indicators for 2006, calculations by Charlotta Mellander.