

RURAL DIGITAL CONNECTIVITY, DEPLOYMENT OF FIBER OPTIC-INTERNATIONAL EXPERIENCE: THE CASE OF MADAGASCAR

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along Passive Infrastructure in South Asia
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Outline

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2. Digital connectivity, its relevance and SDGs
3. Role and support of IFIs and International Organizations
4. International experience: Africa region strategy and importance of digital connectivity
5. Specific experience: Madagascar and connectivity issues
6. Example of rural road connectivity project
7. Digital connectivity as part of the project



Purpose of presentation

Mainly to share some international experience on rural fiber optic connectivity and how it is achieved

- ❑ Brief reminder of relevance of digital connectivity in sustainable and inclusive development
- ❑ Highlight the importance of digital connectivity at the rural level for governments and IDIs
- ❑ Share/illustrate experience with specific operational example of institution (WB), region (Africa), country (Madagascar) and project of rural connectivity with deployment of fiber optic along secondary and rural roads

Relevance of digital connectivity in sustainable and inclusive development

- ❑ Digitalization and mobile technology are not explicit targets within the SDGs. However
 - mobile connectivity and the services that it enables hold great potential to accelerate all 17 SD goals. Mobile industry was the first sector as a whole to commit to the SDGs
- ❑ SD Goal 9 (SDG 9) is based on three interconnected pillars: infrastructure, industry and innovation. These pillars all share the objective of achieving socially inclusive and environmentally sustainable economic development
- ❑ SDG 9 has approximately 20 targets and indicators related to its three pillars and is closely linked to other SDGs related to job creation, sustainable livelihoods, improved health, technology and skills development, gender equality, food security, green technologies and climate change.

Role and support of IFIs and International Organizations

- ❑ IFIs, IOs, governments and private sector recognize that the efforts, over decades, to improve digital connectivity and access, supporting policy and regulatory reforms and investments for broadband communications infrastructure led to:
 - the evolution of mobile services and broadband Internet from being a luxury service to becoming an important part of many people's lives, and a key driver of economic and social development
 - digital technologies are bringing new solutions to complex global challenges like gender inequality, climate risk, and unemployment
 - new and emerging technologies, such as artificial intelligence (AI), blockchain, and wireless systems are quickly transforming the way services are being delivered, including to poor and marginalized populations

Challenges for IFIs and International Organizations

- ❑ All development partners recognize that none of the achievements is possible without efficient and reliable connectivity. While the UN SDGs aim to achieve affordable and universal Internet access by 2020, there is still a long way to go
- ❑ Approximately 4 billion people live without Internet access, 90 percent of whom live in developing countries
- ❑ The urban-rural divide remains a challenge, and digital inclusion of women is lagging in developing countries
- ❑ The high price of Internet services in many countries continues to undermine broadband adoption, particularly for the poor
- ❑ Following years of rapid expansion, the next stage of broadband development will be more complex. Extending broadband access to rural areas and poorer and marginalized populations will require new business models, creative thinking, and active cooperation between all relevant stakeholders

....Need for new trends and business models to address the challenges...

- ❑ Need for business models to be adopted globally to
 - support high-quality digital infrastructure and serve as reference tool for policy makers
 - tailor the solutions to country's circumstances and needs, and to fulfill their digital potential and build the foundations for inclusive digital economies
- ❑ Today, there are many case studies from across the world, spanning all segments of the broadband value chain—international connectivity, national backbone, middle mile and last mile connectivity, spectrum policy and planning—and which propose frameworks to analyze how they can be replicated/adapted elsewhere

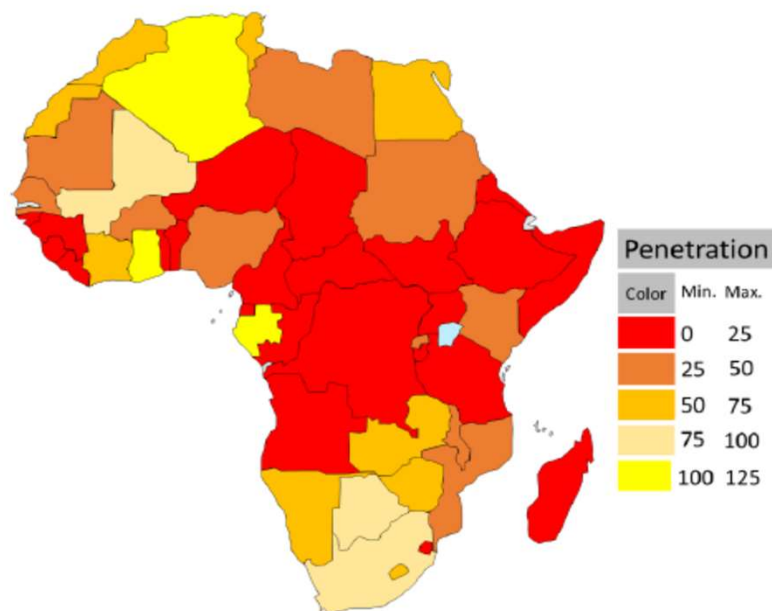
Recently several IFIs and IOs, such as the WB, the IFC and other regional agencies are shaping up their strategies and joining efforts with digital development partnership donors to support different business models and achieve the digital inclusion

International experience: the case of Africa region

- ❑ Africa continent: 1.2 billion people
- ❑ The world's youngest population

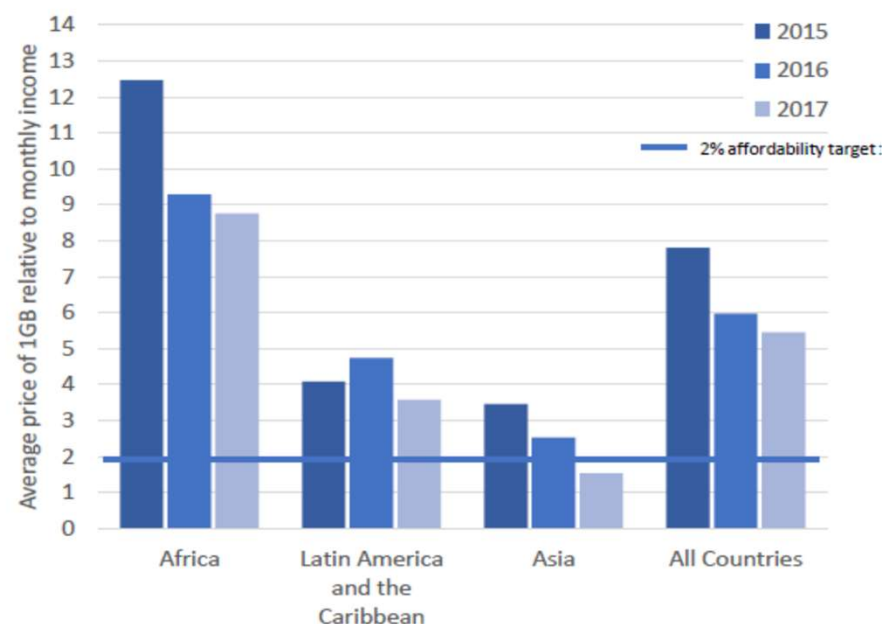
Growing digital divide: Limited and expensive broadband connectivity is slowing economic transformation in Africa

Mobile Broadband Connectivity Status (2017)



Source: GDDDR analysis, based on ITU and TeleGeography data
ITU data is not adjusted for multi-sim card effect for mobile broadband, which can result in higher than 100% penetration rates.

Average Price of 1GB relative to monthly income



Source: Alliance for affordable Internet: 2018 Affordability Report.

...Some regional operational strategies and initiatives of IFIs for Africa...

❑ The African Development Bank (AfDB) states and adopts:

- that: *“ICT, and digital literacy, is not a luxury. It is an integral part of how we view development,”* and that the foundations of the digital economy - connectivity, data and voice, would depend on a fully integrated digital infrastructure
- With the ratification of the Africa Continental Free Trade Area, the possibility of new markets offers tantalizing new avenues for tech start-ups and e-businesses
- Interconnection and interoperability create bigger markets which in turn attract investors.

...Some regional operational strategies and initiatives of IFIs...

❑ The World Bank strategy for Africa region:

- The new Africa strategy aims to accelerate poverty reduction and shared prosperity and is aligned with the Forward Look

❑ The new WB strategy will be reflected in all Country Partnership Frameworks

- Create sustainable and inclusive growth through macro-stability, fighting corruption, **digital transformation**, and maximizing private finance
- Strengthen human capital by empowering HER, reducing child mortality and stunting, and improving education, health, and social protection coverage and quality
- Build resilience to fragility and climate change

International experience: Initiative addressing Africa digital transformation

- ❑ 2018/2019 African Union (AU) new Initiative with WB support: [All Africa digital economy moonshot](#)

“Digital innovation is creating unprecedented opportunities for Africa to grow its economy, create jobs, and transform people’s lives. With the aim to digitally connect every individual, business and government in Africa by 2030, the African Union, with the support of the World Bank Group, has embarked on an ambitious journey—a “moonshot” that will help countries accelerate progress, bring high-speed connectivity to all, and lay the foundations for a vibrant digital economy”.

...All Africa digital economy moonshot initiative...

- ❑ AU aware that digital innovation is creating unprecedented opportunities for Africa to
 - grow its economy, create jobs, and transform people's lives
 - With the aim to digitally connect every individual, business and government in Africa by 2030
- ❖ *the AU, with the support of the WB, initiated the “moonshot”: that will help countries accelerate progress, bring high-speed connectivity to all, and lay the foundations for digital economy*

Sustainable and inclusive growth: with Digital Moonshot every African individual, business, and government is digitally enabled. By 2023:



Digital Moonshot

- Increase the percentage of the population with broadband connectivity from 23% to 58%
- Increase the percentage of adults making or receiving digital payments from 35% to 55%

Objectives of the All Africa digital economy moonshot initiative

- ✓ Supports digital skills development and acquired digital knowledge: digitalization training, supporting young entrepreneurs and entrepreneurial initiatives

- ✓ For digital transformation of Africa
 - Objective: by 2021 broadband connectivity doubled
 - By 2030: everyone in Africa connected
 - Collective commitment: governments, development institutions, private sector: increase broadband and make it affordable
 - Invest in fiber optic and maximize use of installed one (if unused because of policies)
 - Connect people to products, services and information

...Specific objectives of the All Africa digital economy moonshot initiative...

- ✓ Further integration of African continent
- ✓ Complete 3G and 4G coverage
- ✓ Complete last mile connectivity, universal access and affordability
- ✓ Reliable connectivity, with agile regulations and regulatory environment
- ✓ Bridging the gap urban-rural, reducing the digital connectivity disparity

Critical steps for economic transformation and job creation:



Legal and
Regulatory
Environment for
digital Economy



Digital
Infrastructure



Digital Skills



Digital Platforms



Digital
Entrepreneurship

...The case of Madagascar...

Madagascar is a large island located in Southeastern Africa in the Indian Ocean. It is the fourth largest island in the world, densely populated with a population estimated at 27 million in 2019.



ECONOMY: It is one of the world's poorest countries. The country's economy is based largely on agriculture, mining, fishing, and clothes production. About 60% of the population is rural.

Agriculture provides nearly 80% of Madagascar exports (mainly vanilla, cloves, coffee, pepper, litchis). Agriculture accounts for 30% of GDP and employs about 75% of the work force.

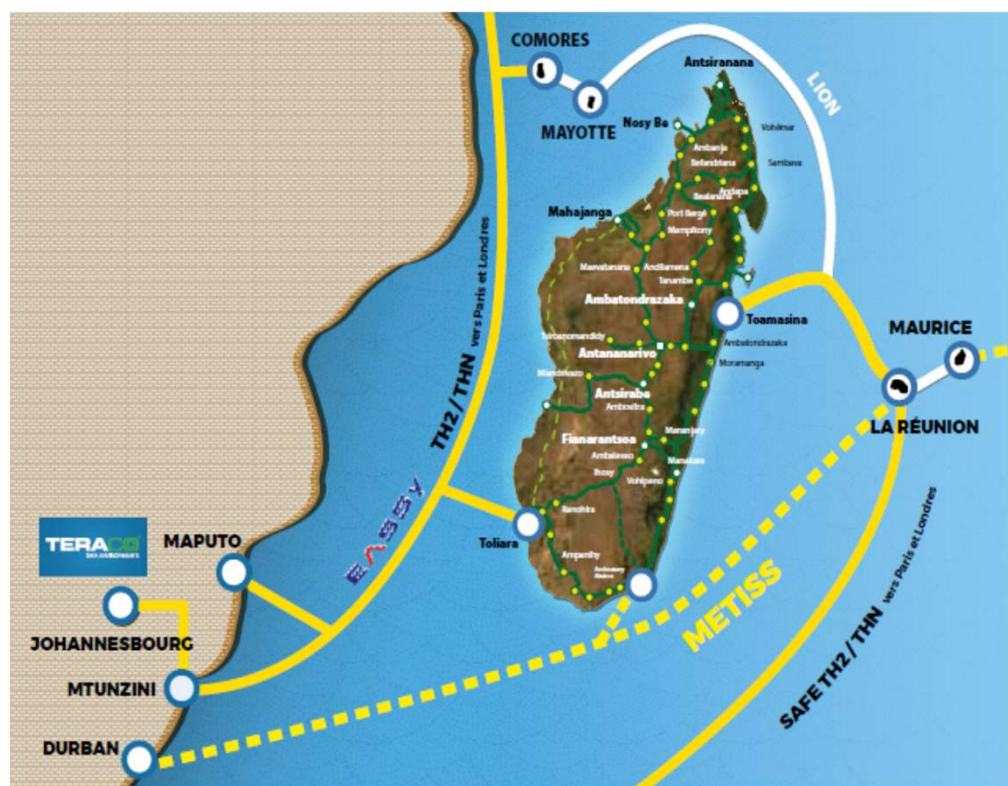
HDI: In 2018, Madagascar's Human Development Index (HDI), as measured by UNDP, placed the country in 161 in the world ranking out of 188 countries and territories.

...Madagascar coverage, digital connectivity ...

26 million inhabitants

Network coverage: 90% of the population

International connectivity by submarine cables

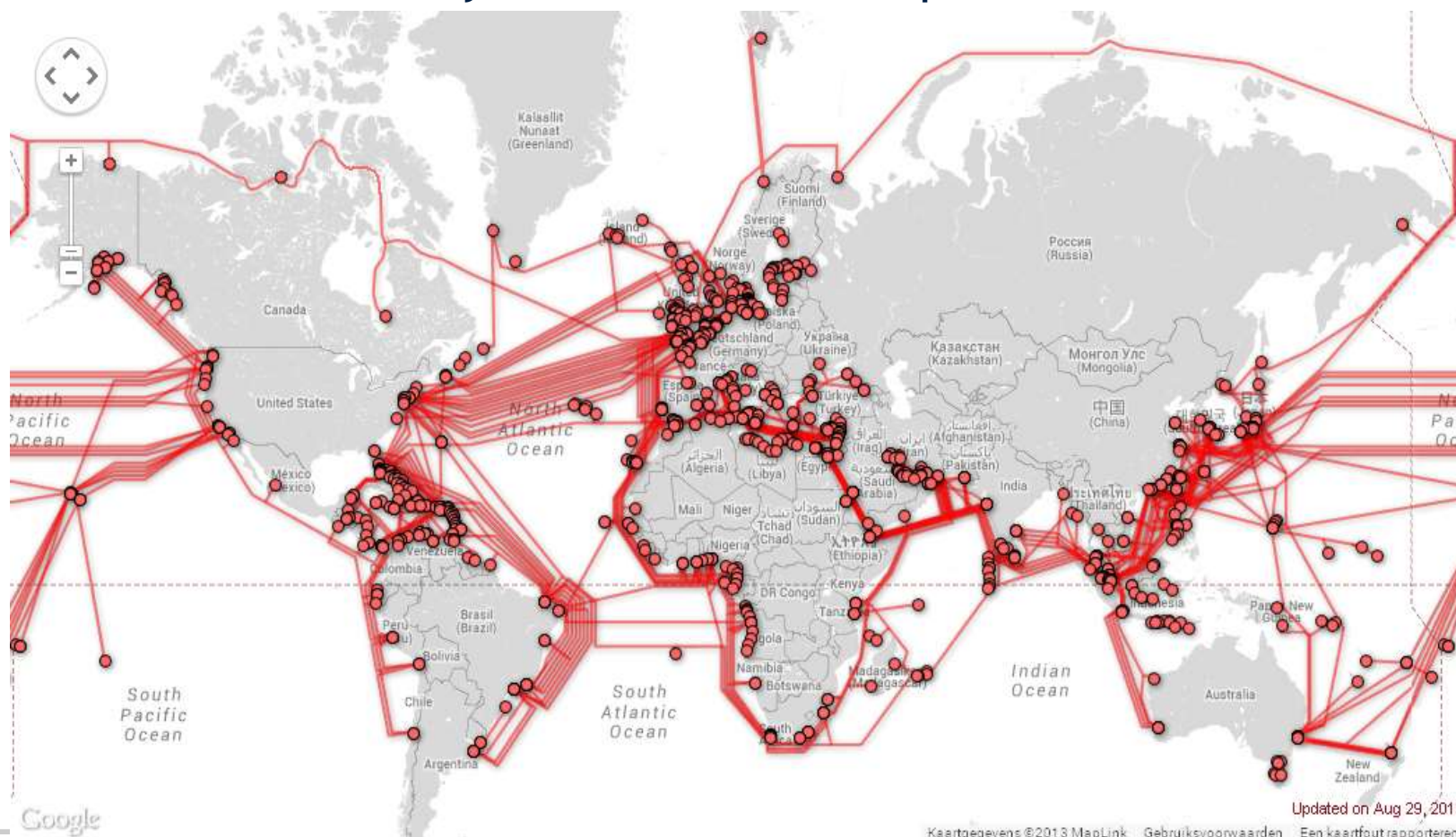


Three cables: EASSy, Lion & METISS

- EASSy (*East Africa Submarine System*) submarine fiber optic cable inaugurated in 2010, links South Africa to Port Sudan. Of more than 10,000 kilometers long, it offers landings points in 9 countries, interconnecting them to the worldwide network of marine cables.
- Since 2017, the Lion cable in operation ensuring total redundancy
- METISS CABLE to be completed by 2020, brings a third international exit point. 3,500 Km long; USD 75 million investment (private); operating by mid-2020

...Madagascar international connectivity...

International network: according to a study by Cable.com, Madagascar became in 2018 Africa number 1 country in terms of broadband speed



...Madagascar national fiber optic connectivity...

Optical Fiber National Backbone



Government plan: In order to ease access to very high-speed broadband, investments are carried out in last mile optic fiber infrastructures. The national fiber cabling plan extends until 2020 and aims to switch all existing subscribers to Fiber Optics.

Some previous efforts made for digital connectivity in rural areas: with WB support a Communications Infrastructure Project implemented between 2007 and 2015 in three areas, mostly rural areas. Some 68 telecommunication towers were installed. The project resulted in significant penetration of ICT services. Internet service penetration has improved from negligible in 2007 to 13.4% at the end of the project in 2015. The volume of international traffic reached 32 Gbit/s at end of project. Growth included remote populations in more than 660 rural communities.

HOWEVER: RURAL AREAS ARE STILL LARGELY NOT CONNECTED

Madagascar rural connectivity project

PROJECT: MADAGASCAR CONNECTIVITY FOR RURAL LIVELIHOOD IMPROVEMENT

- ❑ A WB, AfDB and EU supported secondary and rural road project, under preparation, in two lagging regions of Madagascar

The Project Development Objective is to enhance Road connectivity in selected rural areas in support of economic growth and livelihood of communities and to provide immediate response to an eligible crisis or emergency as needed.

...A component of the rural road project for digital connectivity...

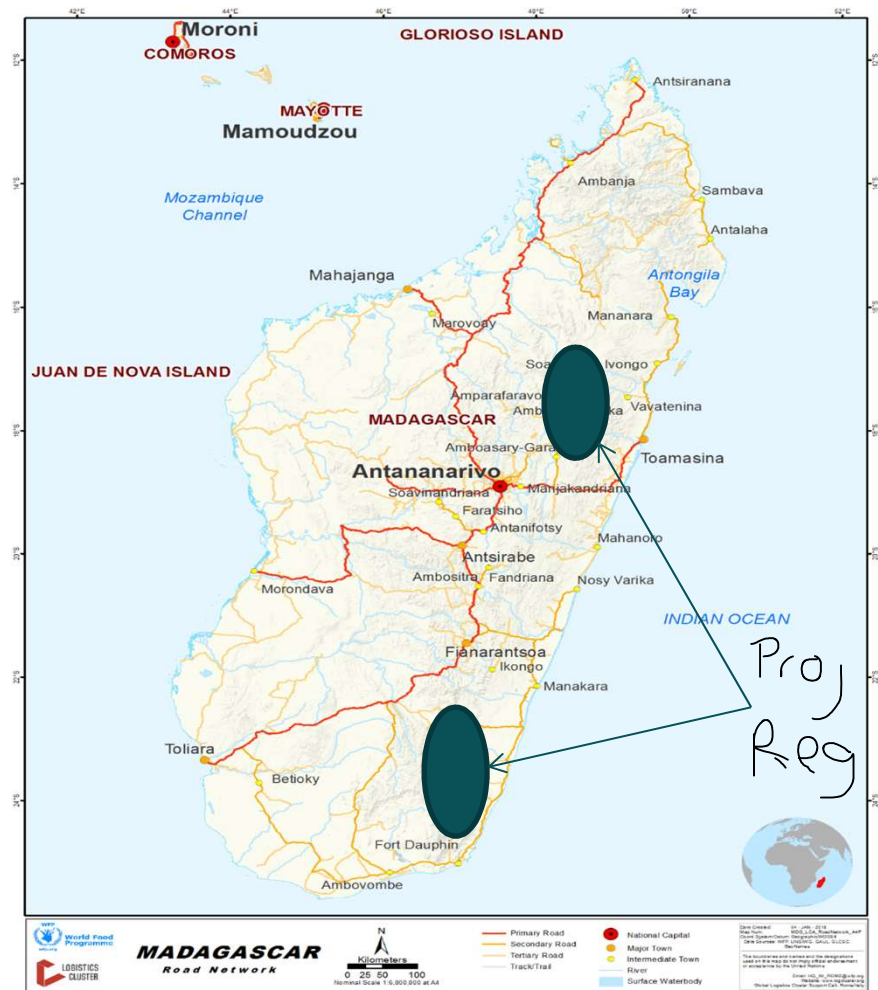
The project main components are: Further integration of African continent

- Component 1: Rehabilitation of secondary roads
- Component 2: Improvement of rural tertiary, provincial and communal roads
- **Component 3: Promotion of digital solutions in rural communities**
- Component 4: Capacity Building and Project Management

Component 3: Promotion of Digital Solutions in targeted rural communities

The two corridors of interest in project (among most lagging regions of the country) are lined by high-capacity fiber optic cables installed by a leading telecommunications service provider in the country. Although overall Mobile Internet Connectivity in the country is 33% (per GSMA report 2018), most people in the rural areas along the project corridors do have access to Broadband Internet via 3G and 4G services.

The project proposes to leverage existing broadband connectivity infrastructure and services, and complete last mile fiber optic deployment to support implementation of innovative digital solutions in the targeted rural areas.



...What will component 3 achieve....

This component will support the emergence of a digital innovation ecosystem aimed at providing local content, applications, and services for rural development.

Include among other activities:

- (a) provision of close to real-time relevant agroclimatic data and forecasts via mobile/smartphones and access to market pricing and commodity futures trading information through third-party platforms to small-scale farmers for increased productivity;
- (b) promotion of rural transport services through the use of information and communication technology-based solutions to connect key services, marketplace, and end users in a reliable and cost-effective manner; and
- (c) necessary equipment and materials, including computers, software and communication materials, smartphones, training, etc. to fully harness the power of advanced computing and Internet

Thank you
