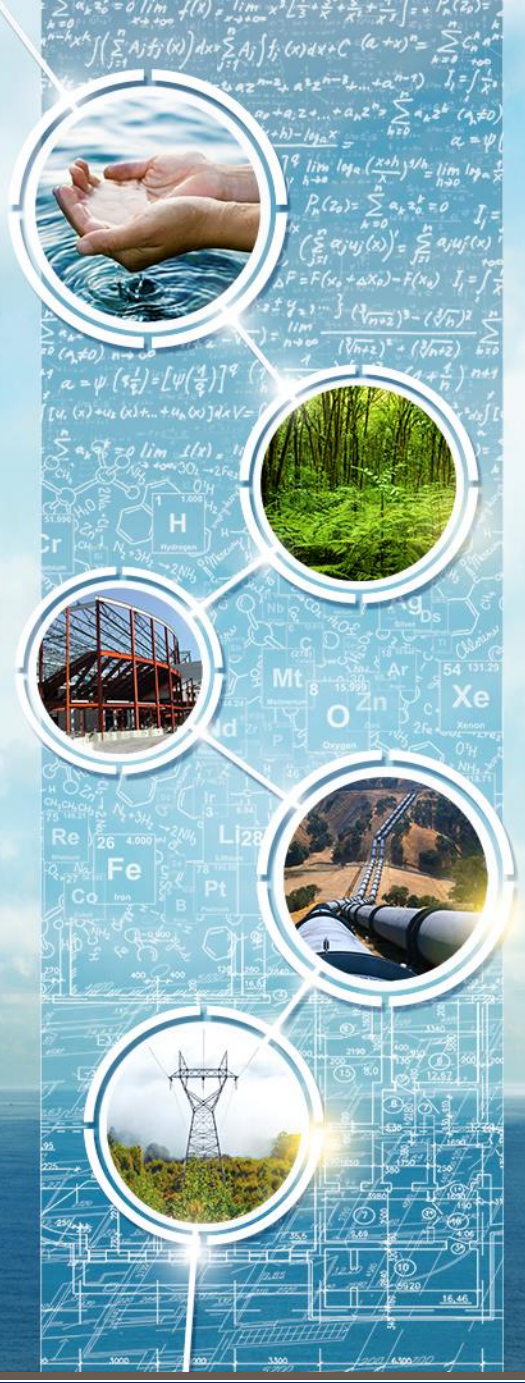

Universal Service

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Agenda

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- Achieving Universal Service
- Origin of Universal Service and Universal Access
- New Definitions
- Universal Access Concepts, Goals, Objectives, and Measurements
- Universal Access Recommendations
- Universal Access Strategies
- Universal Access Fund Management
- Universal Access Fund Mechanisms & Instruments
- Impact of Broadband and ICT on the Economy
- Conclusions

Achieving Universal Access

- Achieving Universal, affordable access has been a key social and economic priority for countries around the world
- It is one of the key targets of the Sustainable Development Goals SDG 9, and while many countries have polices to promote this goal, the end point still remains out of reach
- Connecting the unconnected has been a key policy for over twenty years but still there remains a significant amount of people, mostly in rural areas who remain unconnected.
  - There are about four billion people that are still not connected and about half of them are women. This digital gender gap is growing wider across the world.
  - Closing this digital gender gap is essential to making universal access a reality

Barriers to Internet Access

- According to a recent report by A4AI, there remains specific barriers to internet access and use faced by women
- This is specifically problematic in Africa, which has both the lowest levels of Internet use (22%) and the largest gender gap (25.3%)
- Solving this gender gap will better enable African countries to meet the SDGs.
  - The consequences of failing to act are serious and can lead to both widening global inequality and diminished economic growth for countries
- To this end, many countries have established communal funds, known as Universal Service and Access Funds (USAFs).
- These funds are dedicated to expanding connectivity opportunities to unserved and underserved communities.
  - They are financed through mandatory contributions by mobile network operators and other telecommunications providers

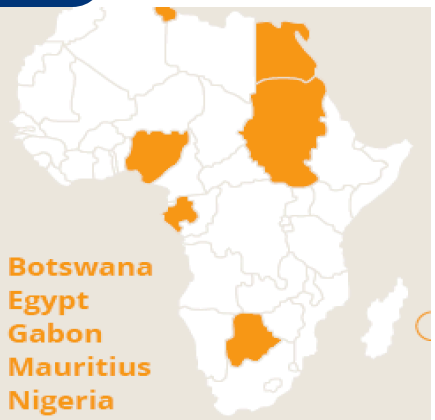
Affordability Drivers Index

Africa 2018 ADI Rankings

The **Affordability Drivers Index (ADI)** scores and ranks all 61 countries based on an in-depth analysis of communications infrastructure and access and affordability indicators.

ADI RANK (AFRICA)		GLOBAL ADI RANK	COUNTRY	ACCESS SCORE	INFRASTRUCTURE SCORE	ADI SCORE (OUT OF 100)
1	●	12	Mauritius	76.7	45.8	64.8
2	▲ 1	14	Morocco	69.8	48.7	62.8
3	▼ 1	18	Nigeria	65.1	44.7	58.2
4	▲ 2	19	South Africa	66.8	43.0	58.2
5	▲ 2	20	Ghana	62.6	47.0	58.1
6	▼ 2	22	Botswana	64.6	43.8	57.4
7	▲ 6	23	Tunisia	60.2	47.1	56.8
8	▼ 3	26	Côte d'Ivoire	64.5	39.8	55.2
9	▲ 9	27	Senegal	55.7	47.6	54.7
10	▼ 2	28	Rwanda	58.6	43.9	54.3
11	▼ 1	29	Benin	54.1	46.9	53.5
12	▼ 1	33	Egypt	55.1	40.9	50.9
13	▲ 1	35	Tanzania	52.7	42.1	50.2
14	▼ 2	36	Uganda	54.8	39.6	50.0
15	▼ 6	37	Kenya	48.9	45.5	50.0
16	●	43	Mozambique	46.5	38.9	45.2
17	▲ 2	44	Namibia	38.7	43.5	43.5
18	▲ 2	45	Mali	39.2	40.4	42.2
19	▼ 2	46	Zambia	44.9	33.9	41.7
20	▼ 5	48	The Gambia	44.6	32.0	40.6
21	▲ 4	49	Burkina Faso	40.1	35.5	40.0
22	●	50	Cameroon	35.0	39.1	39.3
23	●	52	Zimbabwe	44.1	21.9	34.9
24	▼ 3	53	Sudan	41.5	24.2	34.8
25	▼ 1	54	Malawi	36.8	27.7	34.2
26	●	56	Liberia	22.1	17.7	21.1
27	▲ 1	57	Sierra Leone	19.4	11.1	16.2
28	▼ 1	58	Congo, DR	16.2	9.8	13.7
29	●	60	Ethiopia	10.6	3.7	7.6

● = No Change | ▲ 1 = Up from previous year | ▼ 1 = Down from previous year



Botswana
Egypt
Gabon
Mauritius
Nigeria
Sudan
Tunisia

1GB of data costs an average citizen just over

9%

of their monthly income

Barriers to Internet Access (continued)

- USAFs offer a promising path to develop and implement the policies and programs needed to close the digital divide and, specifically, to tackle barriers to internet access and use for women. But, they are often an untapped or otherwise underutilized resource for financing universal access.
- Well-managed USAFs can make major, systemic impacts on efforts to close the digital divide by financing, through infrastructure expansion(e.g., fiber backbone networks), digital skills training, and free or subsidized access to devices and/or internet in community spaces (e.g., schools, libraries, health clinics).
- If some of these funds collected were used to specifically target the growing gender divide they could make a great impact

Origin of Universal Service

- The concept of universal service emanated from the desire to bring telephone service within easy reach of the customer.
  - This was designed to connect every household to the telephone network.
- Universal services should be available and accessible to the customers at various access points and the types of services delivered to the premises should be in response to the customer demands.
- Universal service policy should seek to expand the availability of access points with capacity to deliver services in response to expressed demand of the individual customer or household.
- The more common basic components of universal service are affordability, availability of and access to ICT services.

The Road to Universal Service

- While no single strategy can promise universal access to the Internet, policies must focus on developing and implementing strategies that enable access for those least likely to be connected.
- Governments must increase their Investments in public access initiatives and to complement other broadband initiatives with a push to ensure public access is an imperative in national policies and regulations.
  - Public access refers to a wide range of approaches to provide access to the Internet in spaces that are open to the public. This includes:
    - the provision of internet services on a free, low-cost, or paid commercial basis.
    - Government, civil society groups, businesses, community groups, and others offer public access services in a wide range of places, from public libraries, community centres, post offices, shopping malls, cafes, and bus stops.
- Improve the development and effective use of USAFs to finance and grow these efforts help drive connectivity

Universal Access

- Universal Access may also be understood as a transitional step toward achieving Universal Service.
- Universal Access aims to increase access to ICT services on a community-wide level through a balanced geographic distribution of points of presence for ICT services that are offered.
- Connecting the last four billion will not happen through market forces alone; it will require targeted efforts aimed at connecting those least likely to be connected, including those in poor, rural and hard to- reach communities.

Universal Service

- First Generation Definition of Universal Access (Service)
  - Universal Service refers to all households in a country having a telephone, so that all individuals can make a telephone call from home.
  - Universal Access as all individuals having reasonable access to a telephone that they can use within a reasonable distance and at a reasonable cost. This could either be in their own home, at a business, or some public facility. It is seen as an interim step.
- Universal Service and Universal Access measure different things, and require different policy measures.
  - Absolute Universal Access is achieved when 100% of the population has access to a given service.
  - Absolute Universal service is achieved when a given telecom service is affordable to 100% of individuals or households

New Definition of Universal Service

- Need to modify the definition of what is UA and what is US
  - Is it voice, dial-up Internet access, or Broadband
  - Do we need to have different definitions for Urban as opposed to Rural?
  - What about Voice and Internet?
  - Is there a need to create a new term, such as UAS that covers all three of these issues?
- Need to move away from defining Universal Access by technology and move to defining it by its usability.
- New definition: Universal Access is the ability for someone to use technology to its full potential.
  - Universal Access then empowers people in rural and underserved areas by providing them with the ability to harness the power of the Internet.
  - This definition moves us away from a numerical counting of technology to ensuring that those having these technologies know how to use it effectively to make a difference in their day-to-day lives.

Universal Access Concepts

Issues	Basic Meaning	Differentiation
Availability	Coverage of inhabited geographic territory	Region/Area Locality/Size
Accessibility	All people can use	Gender, Race, tribe, religion Ability /disability
Affordability	Ability to Pay	Access device (Handset, PC, subscription costs) • Cost of calls & services • Minimum "basket" below a certain national limit (e.g., 3% of family income)
Awareness	Awareness of services and benefits	What services exist and what benefits will they bring to communities
Ability	Ability to use computers, navigate the Internet & use ICT services	

UA Concepts (continued)

- Objective is to provide service to those that are not connected to the Internet and also to Broadband in areas where operators are reluctant to operate, due to the uncertainty of recovering their investment.
- These services have to meet the following parameters:
  - **a) Affordability:** prices must be at a level that a large part of the population can afford them.
  - **b) Accessibility:** this refers to the geographic distribution of service points of presence which should be as close as possible to users, including people with disabilities and specific needs.
  - **c) Availability**: users should have access to services at any time
  - **d) Sustainability**: the points of presence should be managed and maintained so that their sustainability is ensured. This requires the adoption of a process of periodic reviews and adjustment mechanisms.
  - **e) Quality of service**: services provided should have the same quality as those provided in more serviced zones.

Additional UA Objectives

- Reduce the digital divide between urban and rural areas and ensuring a more balanced distribution of Internet/Broadband services to all the population
- Promote the development of local ICT-based businesses and contribution to the expansion of ICT networks coverage.
- Stimulate the development of local private business communities by providing suitable communication tools to facilitate interaction and exchange of goods and services with remote business communities.
  - The local business communities that exchanges goods and services with remote areas may be interested to investing in local ICT point of presence so that their businesses can be optimized and improved by lowering the costs of service delivery made possible by communications.

Additional UA Objectives

- Promote the use of ICT applications in social, cultural and economic oriented programs to improve the standard of life of local communities particularly in rural areas:
  - E-Health
  - E-Education
  - E-Government Service
  - E-Commerce

E-Applications and Services

- **E-Health**: improve health care delivery, i.e. by facilitating remote consultation, diagnosis and treatment.
  - ICT applications can also make possible the assistance/training of high-qualified physicians from major cities to rural health workers.
  - In disease prevention or epidemic situation, ICT tools have proven their efficiency, the more common example being the dissemination of health messages by broadcasting media.
- E-**Education and e-Learning**: improve the accessibility and quality of education, general/ICT literacy and life-long-learning by providing for remote access to up-to-date training methods and programs.
- **E-Government Services:** fostering empowerment and participation in Government and making government services more efficient, effective, and transparent by encouraging communication and information-sharing among people, organizations, and within the government.
- **E-Commerce** : facilitate trade in goods and services including Banking, procurement and marketing.

Universal Access Measurement

- Need to find better ways of measuring success of UA programs moving away from coverage to usage and quality of service
- The question then becomes are people able to use the access they have? They need reasonable access to broadband. This should not entail climbing a tree to be closer to the access point as the only way they can get service?
- Is Broadband defined differently in urban areas as opposed to rural areas?
  - What are the allowed contention ratios?
- UAS goals will continue to rise with technology & service development – towards e-Inclusion
- Focus shifts away from simple access to:
  - Bandwidth/speed, ICT capacity/ability, Applications/services

Universal Access Success Measures

- Successful UA programs and funds are characterized by:
  - Clearly defined objectives, strategies/plans derived from public consultation with all stakeholders, taking into account the national ICT agenda;
  - Clear and unambiguous legal and regulatory framework
  - Well defined role of the regulator and administrator of universal access fund programs;
  - Clearly defined and transparent process and procedures for requesting and obtaining subsidies;
  - Strong and continued political and administrative support
  - An environment that facilitates & actively promotes the deployment of new services & technologies;

Criticisms of USAFs

- USAFs are commonly criticized for collecting funds, but not spending them on connectivity projects, or not spending the funds in a timely manner.
  - In Kenya, the Government decided to spend a significant amount of money from the USAF on cybercrime training and expenses instead of connectivity projects.
- According to A4AI, African USAF only disbursed, on average, some 54% of all funds collected.
- As a result, and estimated $408 Million USD is sitting unspent across all 37 African Countries that have a USAF.
  - This is a significant amount of money that is not used effectively.
  - If instead some of this money is spent on a program that provided a subsidy for mobile internet access many more people could be brought online or spent on training for women and girls this would help eliminate this large difference in access and go a long way to solving the digital gender divide

Criticisms of USAFs (continued)

- Few countries are focused on improving women's Internet access and use — despite the worsening digital gender gap.
- Most USAF managers do not yet appreciate the importance of investing in solutions to reduce the gender digital divide.
- Many assume that investment in any Internet access solution will equally benefit both men and women, which is unfortunately not the case.

UA Policy Objectives/Goals

- Universal Access Policy should:
  - Ensure the protection of small and medium ICT enterprises against predatory practices.
  - Take into account local conditions, risks and limitations in defining strategies.
  - Define mechanisms adapted to local circumstances and avoiding replicating solutions that were designed for another country.
  - Define funding mechanisms including local participation, ICT operators, other economic sectors, governments and international sponsors, etc.
  - Encourage the promotion of specific solutions for access by people with disabilities and specific needs to ICT services.
  - Promote capacity building programs designed to create incentives for enterprises based on ICT applications.
  - Prioritize the need to coordinate and align efforts undertaken by all actors involved, at local, national, regional and international levels.

- In this era of convergence of technologies the challenge is how to make universal access a reality by providing access by everyone and from everywhere.
  - Access without ability to use would not have added value.
  - Appropriate programs on the use of ICT services (e.g. digital literacy) must accompany all other initiatives aiming to achieve universal access objectives
- ICT adoption is not only marred by undeveloped broadband networks, but also by a lack of incentives. Primary reasons for the low level of broadband uptake are:
  - Limited access to investment capital;
  - Comparatively high technology costs;
  - Lack of training;
  - Cultural/educational factors
  - Difficulty in access to and retention of skilled ICT workers

Universal Access Strategies

- While no single strategy can promise universal access to the Internet, policies must focus on developing and implementing strategies that aim specifically to enable access for those least likely to be connected.
- Take an active role in charting the course toward a strong policy and regulatory environment, setting broadband strategy, investing in universal and public access, facilitating infrastructure sharing, and managing spectrum.
- Focus strategy and place emphasis on transparent, accountable, timely, and efficient allocation of spectrum for existing internet service providers (ISPs) who serve various market segments, as well as to non-traditional ISPs, such as community networks.
- Investments in public access initiatives and the development and effective use of USAFs to finance and grow these efforts can help to drive connectivity to the widest margins of society, and curb the potential for technology to exacerbate pre-existing inequalities in society

Universal Access Strategies

- The Strategies should:
  - Promote the adoption of measures such as suppression of duties and tax on ICT equipment in the promotion of universal service/access
  - Encourage the market entry for small and medium ICT enterprises;
  - Encourage local loop unbundling to facilitate the distribution of new ICT based services/applications
  - Promote competition in such a way as to foster universal access/service.
  - Ensure monitoring of the achievement of universal access/service objectives through an ongoing review process;
  - Work to finance infrastructure development in underserved areas and among marginalized population groups
  - Widen opportunities for individual access through end-user data and device subsidies.
  - Facilitate arrangements with financial institutions dealing with rural development programs low interest loans/micro credits for small ICT businesses in unserved or underserved areas.
- Creation of Information in Local Content

UA Strategies (Continued)

- Include arrangements for micro credits for start-up funds for small farming activities or agricultural co-ops.
  - Similar arrangements should be made for ICT operations in unserved and underserved areas.
- Infrastructure is a pre-requisite for access to ICT services and applications. The regulator should:
  - Encourage any initiative to extend, upgrade and expand capacity to non served zones under universal access/service projects, including initiatives by local private businessmen or communities.
  - Contribute to identifying affordable access devices adapted to the local environment
  - However, policies to expand and further develop infrastructure have stagnated
- Specific Regulatory Interventions
  - Assess the implementation of Universal Service/Access programs and take necessary actions and adjustments without delays;
  - Ensure consumer participation in defining their needs and direct or indirect contributions (provide local material for plinth of tower or to build shelter, for security of infrastructure)
  - Introduce financial incentives where applicable

UA Strategies(continued)

- Digital Literacy and Digital Inclusion Programs
  - Assist in coordination of government programs of increasing awareness of the use of ICT services and applications.
  - Providing training on digital literacy and also how ICT services can help improve the day-to-day life of rural communities and stimulate the development of the local demand and the local development of ICT services and applications.
  - Promote local entrepreneurial and managerial capabilities by providing digital literacy skills to managers or potential managers of local ICT enterprises to ensure sustainability of service provision.
- Include Schools and Libraries in any Digital Literacy and Inclusion programs. These locations can be effective partners in helping these programs to succeed.
- Economic subsidies;
- Deployment of public access centers;
- Development of eGovernment applications to promote adoption of broadband

USF Strategies (continued)

- Adopt or update accountable and realistic National Broadband Plans.
  - The most effective broadband policies provide the public and private sectors with clear guidance and a roadmap to sector development and support regulatory certainty.
- Establish and implement effective Universal Service & Access Funds (USAFs).
  - These can be used to finance the expansion of infrastructure to underserved areas
- Commit to effective spectrum allocation processes.

USF Strategies (continued)

- The government can play an important role by creating incentives for companies to serve areas that they would not be willing to serve and thereby address the access gap
  - It can make a private sector business case sustainable by putting in place several mechanisms to reach critical mass making entering the market a worthwhile venture for providers.
  - Adding its own demand to the market, or indirectly subsidizing subscribers to make prices more affordable
  - It can provide grants to fund capital investments or reducing the costs of obtaining rights of way and/or spectrum access
- On the other side, it is private companies who have a better understanding and react effectively to changing conditions in the market

Funding Strategies

- Currently, the most common practice in developing countries is to impose a levy on ICT services suppliers.
  - When imposed on ICT services suppliers, this levy is passed on to users in addition to applicable tariffs, which is the opposite of the principle of affordability which would require maintaining tariffs at a lower level.
  - Strategies made of various combinations of funding solutions providing enough flexibility are preferable.
- Funding obligations need to be clearly defined with some flexibility for changing circumstances;
- There also needs to be strong and effective leadership at both the policy and implementation levels and a high degree of autonomy for the fund administrator;
- Transparent and participative process of identifying projects and awarding of subsidies

Fund Management

- Key requirement is to create certainty and confidence in the framework so that all stakeholders can believe in, support, and trust the process.
  - Information on how the fund is used should be made available to the public.
  - Where applicable, Civil society might be helpful in the selection process of programs targeting specific development goals and priorities.
- Setting up of an independent unit to manage the universal access/service fund.
  - this role should be played by the regulatory authority bodies that have the responsibility of guiding ICT market reforms and development.
  - The USF can also be managed by a regulatory agency which is the best practice in developed countries.

Fund Management (continued)

- Well-managed USAFs can make major, systemic impacts on efforts to close the digital gender divide by targeting barriers to connectivity faced by women
- These include public access spaces designed for women's safety
- Subsidized devices for women or a second device for homes
- Digital skill training in schools for women and girls, including separate training for women only.
  - This could enable women to work from home and gain an income

Fund Management (continued)

- Choosing Projects to fund:
  - Neutrality – all operators, incumbent or new entrants should be considered on the same basis regardless of the technologies used.
  - Clear targets –clearly define the zones to be covered under a determined period of time (e.g. unnerved rural areas, educational sectors, health centers, etc).
  - Selection process - Competitive bidding process should be used to select an operator to be given the mandate to implement universal service/access project under universal access/service fund.
  - Transparency – all activities related to the collection and the use of the universal access/service fund should be carried out transparently.

Mechanisms to Promote UA

- Several recent World Bank, Internet Society, Alliance of Affordable Internet studies highlighted innovative mechanisms and incentives for Regulators to use to promote broadband and close the access gap. Some of these are:
  - Increase Flexibility of Spectrum rights, licensing, and authorizations
    - Create a special Rural Specific license where interconnection rate, charges and other access and costing issues are priced differently.
    - Create Social Purpose and Experimental Licenses
    - Implement a simple competitive licensing regime
    - Remove burdensome restrictions or prohibitions on IP based networks and applications.
    - Promote and facilitate sharing of infrastructure and facilities.

Mechanisms (Continued)

- Government can act as an anchor user to guarantee revenues during the ramp-up phase of broadband installation.
- Local governments can proactively coordinate demand for broadband access from public administration, public safety, local schools, and health care facilities to create an "anchor tenant".
- The government then negotiates a wholesale rate and long-term contract with a broadband service provider to ease the initial economic pressure and reduces investment risk.
- The government can also stimulate demand from the private sector by working at the grass-roots level

Alternative Mechanisms

- In certain cases subscriber subsides can reduce backhaul costs, infrastructure sharing (backbone & towers) and should be allowed and encouraged.
  - Infrastructure sharing alleviates cost pressures on competing providers.
- Regulators may reduce right of way or access costs (e.g. spectrum costs or pole attachment fees).
  - They may also attempt to regulate backhaul costs by providing grants for capital investment
- Regulators can allow for Social Purpose or Experimental licenses to allow for community networks or other ways of bringing access to the unconnected.
- In a last resort, governments can act as a risk taker & can auction the right to operate the broadband infrastructure to highest qualified operator

Social Purpose Licensing

- One example of innovative licensing is a “social purpose” license. This is a license granted in rural unserved or underserved areas to non-traditional network operators, such as community network operators.
- By setting aside spectrum for non-traditional operators, regulators can remove the competitive barriers to spectrum access and prioritize spectrum for social-use purposes.
- Social purpose licensing has proven to be tremendously successful in launching community networks.
- Mexico is at the forefront of innovative, social purpose licensing.
  - In 2015, the Mexican communications regulator, Instituto Federal de Telecomunicaciones (IFT), amended its frequency plan to set aside 2 x 5 megahertz of spectrum in the 800 MHz band for “social” use.
  - To qualify for a social-use license, applicants must demonstrate that the spectrum would be used to service communities of 2,500 people or less, or communities located in a designated indigenous region or priority zone.

Experimental Licenses

- Experimental licenses are another way to provide communities direct access to spectrum.
- Experimental licenses authorize the licensee to test and develop new technologies and services, while protecting incumbent services against harmful interference.
- India has also issued experimental licenses for community network projects. In 2016, for example, the Indian government issued eight experimental licenses in the 470-582 MHz band to carry out experiments of Television White Space-type rules and regulations
- Experimental licenses are generally temporary. Many community networks find that experimental licenses help them establish their operations, but they also run the risk of the experimental license taking considerable time to be transformed into a more permanent license

Mechanisms and Instruments

- In rural areas, spectrum has become a costly entry barrier for small operators oriented towards low-income segments.
- Many countries have spectrum allocation policies that grant nationwide licenses, not bearing in mind that license holders are usually going to concentrate their operations in urban areas.
- Opportunity cost of spectrum in rural and low-income areas is different
- Need to have several different approaches between rural and urban areas when dealing with frequency allocation.
- One way is to allow for the secondary use of GSM spectrum for the provision of fixed wireless services or for TV White Space.

Mechanisms & Instruments (continued)

- Social Purpose and Experimental Licenses talked about earlier are another example of how to use spectrum more efficiently
- Fixed licenses in Rural Areas create an opportunity for small local companies to provide fixed wireless services over mobile networks in secondary locations.
- Lower costs in spectrum, network, and handsets would allow these companies to provide services to low-income segments, and local on-net calls would help sustain their operations
  - Brazil and the Dominican Republic have used this mechanism successfully
  - By having a more flexible approach towards spectrum management in rural areas, the Brazilian Government eliminated a costly barrier for the emergence of companies oriented towards low-income segments in secondary urban and rural areas.

Instruments & Mechanisms (continued)

- Many universal service funds around the world use reverse auctions under OBA guidelines, where basically a set of desired services (outcomes) are previously designed and requested in an open tender, and subsidies are awarded to the operator that demands the lowest subsidy
- An alternative sets a fast track approach by providing capped subsidies per location to be given to companies that are willing to serve rural towns that fit certain criteria
- This avoids the cumbersome tender process and channels resources in a more expeditious way
- This mechanism allows local entrepreneurs to propose complementary projects at a community level and creates opportunities for projects that leverage specific characteristics from individual communities

UA Instruments

Aimed at promoting efficient markets (close the market gap)

Mechanism	Specific obstacle addressed	Description
Asymmetric interconnection	Operation costs in rural areas are higher than in urban areas	Higher termination rates for rural networks are set depending on cost estimations
Facilities sharing	High investment costs in challenging environments	From passive infrastructure to open access, operators are obliged to share their assets with entrants at a "fair" rate
Flexible use of spectrum in rural areas	Operators focus their operations in urban areas and allocated frequencies are not being used in rural areas	Allows rural operators to use available spectrum in commercial frequencies for better and profitable coverage
Introducing licenses for rural local operators	Operators focus their operations in urban small-scale operations and do not develop tailor-made solutions for rural areas. On-net revenues	Local entrepreneurs are allowed to create small-scale operations. On-net revenues improve the business case
Elimination of sector specific taxes and duties	Sector-specific levies introduced that represent an unnecessary burden to operators: Tax Policy/spectrum charges/ annual license fee	Evidence suggests that reducing sector specific taxes and duties increase on GDP growth

Source: Kunigami & Navas-Sabater, World Bank Working Paper #178

Aimed at reducing the access gap		
Reverse auctions (award) + Output-Based Aid (disbursement)	Though sustainable in the medium term, some projects are not initially attractive to investors.	*Reverse auctions*: Award projects to operator that will deliver required services for the lowest subsidy. *Output-Based Aid*: Disbursement schedule tied to delivery of "outputs" rather than infrastructure
Introduce bottom-up projects for universal access	National operators usually don't design projects/products addressed for low income rural areas	Allow for community-based initiatives to be financed
Institutional demand stimulation	Low demand in rural areas reduce attractiveness of supply	Create "captive" demand for service in rural and low-income areas by committing government agencies to pay for these services. Could imply cost-reduction for the government, but requires high level of coordination between sector ministries
License obligations	Lack of interest of entrants established in main cities to rollout nationwide	Include mandatory areas for coverage as part of the licenses of new players
End-user subsidies	Low-income and rural households are unable to afford telecommunications services	Target population is given a subsidy that allows them to pay for services
Designated universal service operator	Reaching high costs areas is a disadvantage for incumbents when facing aggressive competition in densely populated/low cost areas	An operator, usually the incumbent in countries with preexisting national coverage of fixed networks, is given the task of fulfilling the universal service strategy of the country. In return, they receive a per-connection transfer from the government
ADC (Access Deficit C		Incumbent operators are allowed to receive a compensation for every

Mechanisms to Promote Universal Access

- Provide Policy and Regulatory Support to facilitate the ability of small enterprises to make use of unlicensed Spectrum.
- Creating Institutional Demand
  - Have broadband infrastructure connect Government offices, Health centers, Schools, etc..
  - Have Government guarantee a certain amount of revenue from applications or services
- Open Access to Infrastructure Sharing
  - Open Access is about creating competition in all layers of the network allowing a wide variety of physical networks & applications to interact in an open architecture.
  - Allows anyone to connect to anyone in a technology-neutral framework to encourage innovative and low-cost delivery, including alternative infrastructure carriers run by national utility companies
  - Have clear rules for third-party access
  - Encourage market entry from smaller, local companies
  - Promote passive and active sharing of infrastructure

Spectrum Mechanisms

- Priority areas for spectrum
  - TV White Space Regulations
  - Spectrum sharing
  - Spectrum trading
  - Spectrum Re-farming
  - Special licenses

Spectrum Mechanisms (continued)

- Policymakers could do more to ensure that policy and regulation keep pace with technological change.
  - To encourage creative use of spectrum such as WiFi and Television White Spaces as this will make it easier for smaller and new operators to enter the market.
  - Start-ups deploying new technologies can inexpensively use WiFi Spectrum to provide broadband coverage by which it will greatly expand access, particularly in rural areas where large operators do not provide coverage because of its non-viability in terms of profitability for them to do so.
- Support the establishment of a network of unlicensed Spectrum Service providers

Mechanisms (continued)

- Governments also can offer a guaranteed revenue stream for the project to reduce the investment risk and help sustain operations
- Basically, this mechanism leverages governments' purchasing power as an anchor tenant.
- Institutional demand also helps create private demand for services.
- Points of presence will be housed in municipalities and access to the public will be allowed
- This mechanism can reduce both public transfers to universal access programs and overall government expense on communications, but it is critical in these schemes to involve local authorities from the start.

Open Access Instruments

- This type of mechanism requires transparency & needs to be based on clear and comparative information on market prices and services.
- An Open Access business model requires trust in parties.
  - The service provider needs to feel that the infrastructure provider is going to tackle his/her needs with same degree of attention as if the organization was doing it itself.
  - That pricing needs to be transparent and nondiscriminatory.
  - If the incumbent operator is the only infrastructure provider, need to separate out the transport services from the access services to create trust.
- The last mechanism is to allow pipeline for financing projects from the bottom up instead of the top down, i.e., have operators suggest pilots to be funded rather than having them suggested by Government.

USAF Recommendations

- **Invest at least 50% of funds in projects targeting women's Internet access and use over a five year period.**
  - Establish clear targets to ensure timely disbursement of USAF funds, and measure fund performance using gender-specific targets for disbursements
- Problems occur in that many USAFs use gap models to identify where the market can potentially provide access and service and places where it is not financially feasible for mobile network operators and other ISPs to do so without a subsidy or other support.
  - However, these same access gap models do not typically include an analysis of the digital gender map in calculating their access gap models.
- Where universal access policies do lay out gender-based targets (e.g., increase internet use among women by 25% in the next five years), clear and concrete USAF disbursement targets are needed to help realize these access goals.
  - These disbursement targets can specify investments in programs aimed at connecting women and closing the gender, and wider, digital divide.

USAF Recommendations (continued)

- Make project design and implementation more gender-responsive.
- Project design needs to take into account the needs of everyone—regardless of gender, disability, religious, political, or ethnic affiliations.
- Ensure women's perspectives and perspectives from outside the ICT industry are included in open & consultative design and implementation processes.
- Partner with groups outside of the ICT Industry, e.g., trade associations, innovation forums, women entrepreneurial groups, education, agriculture

USAF Recommendations (continued)

- **Increase transparency of fund financing, disbursements, and operations.**
  - USAF data should be made available to the public in an open data format, and should be disaggregated by gender and other factors (e.g., age, income), where possible.
  - Details should also include complete financial and not just summary data
  - Data should list why projects were selected, who participated in the design of the projects, and the intended beneficiaries.
- **Improve diversity in USAF governance and increase awareness of gender issues within the USAF.**
  - Ensure gender parity and promote gender equality within the USAF & consider deploying an internal gender audit.
    - Benefits are often not distributed equally accessible by all
    - Women face additional barriers to accessing public resources and this needs to be taken into account

Overall Recommendations

- What action must be taken to make Universal, Affordable Internet Access a Reality?
  - Update and revamp outdated national ICT and broadband plans
  - Focus on public access initiatives
  - Expand efforts to tackle demand-side access issues
  - Focus on reducing prices of broadband service so the cost of mobile broadband is more affordable.
    - Currently in many cities it is closer to 9% of income, while most consider anything more than 2% as not affordable
  - Reduce taxes on end-user devices
  - Eliminate the OTT tax
  - Implement guidelines to encourage and incentivize infrastructure sharing

Conclusions

- Adopt or update accountable and realistic National Broadband Plans.
  - The most effective broadband policies provide the public and private sectors with clear guidance and a roadmap to sector development and support regulatory certainty.
  - Effective public policies also set clear, transparent plans and targets to support network development and expand internet access over a wider geography and to a larger number of people, addressing market gaps that otherwise would likely be neglected.
- Commit to effective, transparent, accountable, timely, and efficient spectrum allocation processes.
- Take an active role in charting the course toward a strong policy and regulatory environment, setting broadband strategy, investing in universal and public access, facilitating infrastructure sharing, and managing spectrum.

Conclusions

- Establish and implement effective Universal Service & Access Funds (USAFs).
  - USAFs can be used to finance the expansion of infrastructure to underserved areas and population groups, and to increase individual access by, for example, subsidizing end-user devices.
  - USAFs should instead be used to reduce the digital gender gap within countries

Thanks
Questions, Comments, Suggestions

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