Project Information Document/ Integrated Safeguards Data Sheet (PID/ISDS)

Concept Stage | Date Prepared/Updated: 13-Dec-2016 | Report No: PIDISDSC17860

Public Disclosure Authorized

BASIC INFORMATION

A. Basic Project Data

Country	Project ID	Parent Project ID (if any)	Project Name
Kiribati	P159632		P4: Pacific Regional Connectivity Program Phase 4: KI: Connectivity Project (P159632)
Region	**Estimated Appraisal Date**	**Estimated Board Date**	**Practice Area (Lead)**
EAST ASIA AND PACIFIC	Feb 23, 2017	May 30, 2017	Transport & ICT
Lending Instrument	**Borrower(s)**	**Implementing Agency**	
Investment Project Financing	Ministry of Finance and Economic Development	Ministry of Information, Communications, Transport and Tourism Development	

Financing (in USD Million)

Financing Source	Amount
IDA Grant	20.00
Total Project Cost	**20.00**

Environmental Assessment Category	Concept Review Decision
B-Partial Assessment	Track II-The review did authorize the preparation to continue

Other Decision (as needed)

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B. Introduction and Context

Country Context

1. By financing higher capacity and lower cost internet the proposed Project seeks to address two of Kiribati's main development challenges: its remote location and the high cost of connectivity which impacts broader economic and social development. The Project builds on the momentum generated by ongoing reforms in the telecommunications/ICT sector which have significantly improved access to basic telephony and data services over the last year. The proposed Project will finance the deployment of an optical fibre submarine cable to connect Kiribati (Tarawa) to the HANTRU-1 submarine cable system in Guam, US, and thence to global telecommunications networks. This will dramatically reduce the cost of international internet bandwidth and bring affordable broadband internet and its associated applications and services capability to the majority of the country's population. The Government of Kiribati is aware of ICT development trends globally as well as in the Pacific region more recently, and recognizes that improved connectivity and access to information can help to improve development prospects on many fronts through realization of "digital dividends". This Project constitutes the fourth phase in the Pacific Regional Connectivity Program Series of Projects (P113184), approved by the Board in August 2011.

2. Kiribati is one of the most remote and geographically dispersed countries in the world, consisting of 33 coral atolls spread over approximately 3.5 million square kilometers of ocean and up to 3,700 km between the farthest islands. It is located at the equator and the International Date Line. The population of about 109,693 (2015 census, preliminary results) lives on 22 coral atolls and a single volcanic island. Its population is growing at a long term rate of 1.5% p.a. (1.25% over the last five years). Total land area is less than 800 square kilometers, of which one island – Kiritimati (Christmas) Island, at the eastern extremity of the country (and about 800 km west of Hawaii), comprises almost half. The capital of South Tarawa is the most populated island with approximately 56,000 (2015 census preliminary results). The populations of the Outer islands vary from around 20 (Kanton) to 6,400 (North Tarawa and Kiritimati Islands).

3. The economy of Kiribati is fragile but the Government has been and continues to enact reforms that will strengthen the economy. Historically, in one form or another, Kiribati gets a large portion of its income from abroad. Examples include fishing licenses, development assistance, worker remittances, and niche tourism. Given Kiribati's limited domestic production ability, it must import nearly all of its essential foodstuffs and manufactured items (imports were 12 times exports in 2014); it depends on these external sources of income for financing. In common with other small island atoll states, it faces obstacles posed by remoteness, lack of scale and vulnerability to external shocks and environmental stress. Internal and external remoteness and weakness in the business climate has kept the private sector small. Private sector contributors to the Kiribati National Provident Fund, however, indicate a steady increase in private sector operations (Private sector KNPF data indicates private sector employment has risen from about 22% in 2009 to about 30% of total employment in 2015 and probably related to the Government reform program).

4. The economy is based largely on natural resources (fishing licenses) and transfers: remittances from expatriate workers and donor grants, and is dominated by a large public sector. In recent years Kiribati has experienced modest levels of economic growth. GDP growth was 4 percent in 2015, boosted by large, externally-funded, infrastructure projects and is projected at around 2.5 percent for 2016 (IMF, 2016). Fishing license fees and remittances are sensitive to fluctuations, depending on fish migratory patterns and the global economy respectively. Notwithstanding its limited resources, Kiribati has largely had a solid record of financial stability since independence in 1979. Governments have adopted a cautious approach to domestic spending combined with a deliberate policy of capitalising its sovereign wealth fund, the Revenue Equalisation Reserve Fund (RERF). The RERF is used to supplement recurrent revenues and smooth volatility in other income sources.

5. The long-term viability of Kiribati hinges on better domestic and, particularly, international economic integration. Like many Pacific island economies, Kiribati lacks economies of scale, faces high transaction costs, and has limited institutional capacity. Improved connectivity with access to the international market and environment based on lower communications costs will contribute both to national economic development and to regional coordination and the integration of Kiribati in the Pacific and internationally. Broadband internet offers improved connectivity, lowers transaction costs for businesses, Government and households, creates new economic opportunities, and increases service delivery options.

Sectoral and Institutional Context

6. **Sector Overview.** Given its geography and dispersed population, provision of affordable and reliable access to ICT services is challenging. The Government is currently implementing a comprehensive program to increase access to ICT infrastructure and services by liberalizing the ICT sector and enabling the introduction of competition. In this the Government has taken a number of steps:

a. Introduced a new telecommunications policy (completed in 2012) and new telecommunications legislation (enacted in 2013). The Ministry of Information, Communications, Transport and Tourism Development (MICTTD) has begun a review of the 2012 policy identifying and detailing new policy initiatives for the ICT sector including e-Government options.
b. Reformed the monopoly incumbent (Telecom Services Kiribati Ltd, TSKL) through a sale of most of its assets, (completed 26 May 2015), and, through a competitive process, licensed two new mobile operators as well as several other Internet and gateway providers. The purchaser of TSKL's assets, Amalgamated Telecom Holdings Kiribati Ltd (ATHKL), owned by the ATH group in Fiji, is now well established and growing the local market. It is expanding its services provision coverage to some outer islands and proposes further extensions. The second mobile services licensee, Ocean Links, is in the process of establishing its network.
c. Established a sector regulator, the Communications Commission of Kiribati (CCK), and completed the first phase of technical assistance. This comprised *Operator licensing, Type Approval, Radio communications licensing, Kiribati Radio Frequency Spectrum Plan, Numbering Rules* (providing for 8 digit based services and number portability)*, and Universal Access. The CCK* and is preparing for the second phase of TA.

d. Reiterated its commitment to Outer Islands Connectivity as a high national priority. Recognizing the dispersed the population and very great difficulty in providing ICT services on a commercial basis, the Government is working to address this through a Public Private Partnership (PPP). Services under the PPP are anticipated in 2017.

7. Kiribati's ICT sector has benefited from these developments to date:

a. The introduction of ATH as a larger operator with access to greater finance, technological and managerial expertise has resulted in a more extensive network able to deliver 3G and 4G services to a greater fraction of the population. Its use of O3B Networks satellite services for Internet and its rationalization of geostationary satellite capacity ensures a more resilient network.
b. Cost and quality of services has improved. Voice and SMS service is now much improved and price of local and international calls has fallen (though call rates now include VAT) and there is some rebalancing of tariffs reflecting ATH's parent market. International SMS is now available to many countries. Prepaid services and offerings are mirrored from Fiji (text top up, text marketing etc.) with mobile money to be established in the near future. Mobile Internet is much improved, with user speeds 4- 5 times higher and no reported congestion issues. However there are user concerns about high costs and bill shock associated with high usage of data now that speeds are higher and more attractive to users.

8. The remaining significant gap in the Government's ICT program and industry need is for much improved international connectivity (lower cost and more resilient to circumstances of Kiribati). The lack of this component will limit sector development and take-up of broadband services in the medium and long term. At present any operator in Kiribati depends on high cost satellite links. As satellite capacity is sold as single direction links while submarine cable and microwave connections are sold as bi-directional links, more satellite capacity is required for equivalence to the submarine cable (or microwave link) capacity. This further adds to the disadvantage of countries dependent on satellite services.

9. Another consideration is that the majority of the population of Kiribati is resident on a small number of islands around the main island of Tarawa. This group of islands includes North and South Tarawa, Marakei, Abaiang and Maiana and hosts 73,000 persons, more than 66% of the total population. The significance of this geographic grouping is that a submarine optical fibre service to Tarawa is, with simple (and in the main, existing) microwave links able to deliver high capacity ICT and broadband services to this large fraction of the total population of Kiribati.

10. **Market Structure and Regulatory Framework.** The 2012 Telecommunications legislation which opened the market also established an independent regulator, the Communications Commission of Kiribati (CCK). The CCK deals with licensing, technical regulation, spectrum, and consumer matters. It is also responsible for monitoring unfair trade practices and introducing price controls when necessary. Responsibility for sector policy lies with the Ministry of Information, Communications, Transport and Tourism Development (MICTTD). The current market structure, while still developing, comprises five individually licensed operators and twelve class licensed operators (typically small local and niche services providers that rely on infrastructure of the individually licensed operators). Individually licensed operators are:

a. ATHKL (part of the Fiji-based ATH Group): a full services operator;
b. Ocean Links (owned by China based Acclinks), a new mobile network operator expected to commence services later in 2016;
c. Tenicom (100% owned by the local Moel Trading Group) offering Internet services via a WiFi network;
d. Speedcast (an Australia based satellite equipment and services firm) offering satellite services into Kiribati; and
e. WISInc (a US-based network design and build firm) licensed to operate a satellite gateway predominately for broadcast services.

11. **Current International Connectivity**. ATHKL International satellite bandwidth comprises 80Mbps (60/20) via O3B Pty Ltd for Internet on Tarawa and nearby islands (providing a medium reliability, medium cost technology) and 19.5 Mbps (15/4.5) C band via Speedcast Pty Ltd (a high reliability high cost technology) for telephony, private lines and service to outer Islands. Tenicom connectivity is via the Asia Broadcast satellite (ABS) with a total of 8Mbps (6/2) in service. Ocean Link is working to establish its international connectivity for its new network. Speedcast-provided international connectivity is presently to directly connected subscribers. No data on the number and capacity of connections is available.

12. **Market and Services**. Basic mobile phone penetration as of end-May 2016 was more than 34% percent of the population spread over eight (of the 22 inhabited) islands. Mobile broadband (3G/4G) coverage is available on six islands representing 77% of the population with 2G service installed on two more, taking mobile services coverage to about 80% of the population. Demand for mobile and particularly mobile Internet services continues to increase. In May ATHKL advised that all of its satellite capacity is in service and expansion of that capacity is planned. Mobile customers total some 36,000 with about 2/3 being 3G and 4G users. Fixed broadband is less than 2% and ATH proposes to terminate copper cable based ADSL and obsolete WiMax services and transfer all high speed broadband services to its 4G

network. The pending entry of the second mobile operator and the Tenicom WiFi service as an alternative to both is expected to see further improvements in affordability and quality.

13. **Future Needs.** A submarine optical fibre cable to Kiribati is necessary to meet long term traffic demand and additionally to increase resilience and lessen the risk that communications will be interrupted by tropical storms or other severe weather events. Being at the equator, Kiribati rarely encounters cyclones but experiences several tropical storms and storm surges each year. Development of this proposal for submarine cable connectivity for Kiribati is based on a set of studies by the World Bank considering available satellite technology such as O3B and different routes and connection points for a submarine cable solution. O3B satellite solutions are workable for the near and part of the mid-term but cannot support capacity needs into the long term. Additionally the tropical location of Kiribati with associated weather events dictates that a more robust solution is required for network resilience and services continuity – especially when disaster management is considered.

14. **Submarine cable routes and options.** The only available option requires a connection to the Hannon-Armstrong (HANTRU)-1 cable that connects Guam (the optical communications hub of the North Pacific) to the Federated States of Micronesia (FSM) in Pohnpei, and Majuro and Kwajalein in the Marshall Islands.[i] This cable became ready for service in 2010. Three main options for connecting to HANTRU-1 have been considered, including potential cost-sharing arrangements with the neighboring states of FSM (Kosrae state) and Nauru that also have a keen interest to improve their international bandwidth options. The main characteristics of these options are summarized in Table 1, and a preliminary economic and financial analysis, is described below. Options 2 and 3 entail cost sharing.

Table 1. Submarine Cable Options

	Option 1	Option 2	Option 3
Cable Route	Tarawa-Majuro	Nauru-Tarawa-Majuro	Pohnpei-Kosrae-Nauru-Tarawa
Cable length (km)	699	1,399	2,144
Capex (US$m)	16.5	29.1	41.0
Annual Opex-for the whole system	0.5	0.9	1.2

15. Representatives of Kiribati, FSM and Nauru ICT Ministries have had preliminary discussions on these options and their implications. Given the potential benefits of a sub-regional system, including lower interconnection costs in Pohnpei (FSM), and opportunities for securing low cost IP transit and sharing of operating costs, the countries have indicated an initial preference to consider Option 3 as the baseline scenario for the purposes of this Project. A Kiribati Cable Company (KCC) will be established as the implementing entity for Component 1. The KCC would enter into a commercial partnership with counterparts in Nauru and FSM for the construction and maintenance of the cable system (pursuant to a contractual arrangement known as a Construction and Maintenance Agreement (C&MA)).

Relationship to CPF

16. Improving connectivity is an important goal of the World Bank's engagement in the Pacific Region, and it has also been identified as a priority area in the recent Systematic Country Diagnostic (SCD) for the smaller economies, including Kiribati. The Project is consistent with Focus Area 4, Enablers of Growth Opportunities under the new Regional Pacific Framework (RPF-9), scheduled for approval in 2016. Specifically, the Project will support Objective 4.2: Provision of Connectivity Infrastructure. The Project also builds on the earlier Telecommunications and ICT Development Project (P126324) which supported the Government's sector liberalization program, resulting in significantly increased access to basic telecommunication services.

C. Proposed Development Objective(s)

The Project development objective is to reduce the cost and increase the availability of Internet services in Kiribati.

Key Results (From PCN)

17. Progress will be measured against the following PDO-level results indicators (for Tarawa and surrounding islands):

(a)Access to Internet services including mobile (number of subscribers per 100 people);

(b)Wholesale Internet bandwidth price ($/Mbps per month);

(c)Retail price of Internet services ($/GB);

(d)Available international and domestic bandwidth (Mbps);

(e)Direct Project beneficiaries and percent of beneficiaries that are female;

(f)Beneficiaries that feel Project investments reflected their needs;

(i)Subindicator: Percentage of beneficiaries that feel Project investments reflected their needs – female;

(ii)Subindicator: Percentage of beneficiaries that feel Project investments reflected their needs– male;

(iii)Subindicator: Total beneficiaries – female (number); and

(iv)Subindicator: Total beneficiaries – male (number).

18. The direct beneficiaries of the Project will be the people of Kiribati particularly in Tarawa and surrounding islands (including individuals, businesses, government agencies, and remote communities) who will receive improved access to and quality of Internet, facilitating uptake of value-added services or applications. The Project will contribute to the World Bank Group's twin goals of ending extreme poverty and increasing shared prosperity. By facilitating more reliable and affordable connectivity for the majority of the country's population, the Project is expected to contribute to improved social welfare, access to information and services as well as potential income-earning opportunities. This will be tracked by the CCK. By making Internet access more affordable and widely available, the Project will contribute to citizen engagement in Kiribati, including via new media.

(a) *Disaster preparedness/management:* More robust and resilient communications infrastructure can strengthen future disaster preparedness. More broadly, ICT tools can support governments as they plan and monitor climate change and natural disaster risks to which the region is particularly vulnerable.

(b) *Participation of women:* The Project is expected to have a positive impact on women's access to affordable Internet services in Kiribati. This is important because access to affordable, high-speed Internet is associated with economic and social empowerment, by increasing users' access to services such as employment and education opportunities and health information (details are found in Economic Analysis) available online.

(c) *Development of small- and medium-enterprises*: Lower communications costs reduce overall business transaction costs. Communications infrastructure facilitates domestic and cross-border transactions, opens new marketing and distribution channels, and improves access to information about markets, prices, and consumers; it is particularly significant for tourism development.

(d) *Primary producers*: Communications infrastructure facilitates access to information on market prices, weather, agricultural extension services, and e-commerce platforms.

(e) *Service industries*: ICT facilitates entrepreneurship—including specific opportunities for women. Telecommunications infrastructure also facilitates the extension of mobile phone and/or Internet-enabled financial services.

(f) *Health and education sectors*: In the health sector, reliable, affordable broadband can facilitate, *inter alia,* remote diagnostics and laboratory testing, remote consultations with specialists, and access to international medical networks and resources. In the education sector, access to high-speed Internet provides teaching and learning materials, and skills enhancement opportunities, among other benefits.

(g) *Government agencies*: Faster, cheaper, and more reliable connectivity improves communications and information management between government agencies. Governments can be better-positioned to deploy online services, permitting increased transparency and accountability of government and improvements in service delivery.

D. Concept Description

19. Using IDA national and regional financing of US$20 million the Project will finance the following components.

Component 1. Submarine Cable System (US$17.0 million)

Subcomponent 1 (a): Submarine cable system. The Project will finance Kiribati's share in a proposed submarine cable system that will connect Tarawa to the HANTRU-1 cable system in Guam (cable Option 3 above). It is assumed that FSM (Kosrae state) and Nauru will participate in this cable system, and that Kiribati's cost share would not exceed the cost of a direct cable to Majuro (Option 1). Should arrangements for the proposed sub-regional system not eventuate, the Project would finance a direct connection from Tarawa to Majuro.

Subcomponent 1 (b): Landing stations and ancillary equipment. This entails construction of a landing station and ancillary facilities on Tarawa, including acquisition and installation of onshore equipment.

Component 2. Technical assistance (US$2.0 million).

Subcomponent 2(a): Legal and transactional assistance in connection with the establishment of the proposed Kiribati Cable Company, including possible participation by private sector operators in Kiribati, plus negotiation and agreement with third parties (Nauru and FSM) on the construction and maintenance of the cable system, including legal and financial arrangements.

Subcomponent 2(b): Technical assistance to the Communications Commission of Kiribati (CCK) in relation to interconnection and access agreements including the negotiation and implementation of regulatory instruments to ensure cost based and nondiscriminatory access.

Component 3. Project Management and Administration ($1.0 million): a program of activities designed to strengthen the capacity of the Recipient to process Project transactions, implementation, and management. Such a program will include: (i) overall Project coordination; technical coordination; financial and contract management; procurement, communications, outreach; reporting, audit, and monitoring and evaluation; (ii) environmental and social safeguards management.

Table 2. Proposed Project Financing (US$ million)

Component	IDA	Recipient	Cofinancing (TBC)	Total
1. Submarine Cable system	17.0	0.0		17.00
2. Technical Assistance	1.00	0.00		2.00
3. Project Management and Administration	1.00	0.00		1.00
Total	**20.0**	0.00		**20.00**

20. **Cofinancing**. The total investment required in the submarine cable system is US$41 million (Option 3). FSM's participation in the system would be financed under the ongoing IDA-financed Palau-FSM Connectivity Project (P130592) plus counterpart funding for any financing gap. Nauru's participation would be financed through a combination of public and private funds. The Asian Development Bank (ADB), a key partner in the Pacific Regional Connectivity Program, has indicated its interest in cofinancing the proposed Project. However, overall design of the finance structure is the responsibility of the recipient(s).

SAFEGUARDS

A. Project location and salient physical characteristics relevant to the safeguard analysis (if known)

The Project will finance Kiribati's share in the proposed submarine cable system connecting Tarawa to Kosrae, via Nauru. A Limited ESIA will be prepared for the entire system, however the salient physical characteristics relevant to the Project are situated in Kiribati. The land-based infrastructure will comprise a beach manhole, underground cable installation and a cable landing station which will involve minor civil works. The cable route will traverse the near shore environment where the cable is expected to be trenched and buried. In this environment avoidance of seagrass, coral and other marine habitat elements will be important. The deep water component of the cable will be surface layed from a ship. Environmentally sensitive sites such as sea mounts and hydrothermal vents will be avoided in design by re-routing the cable.

B. Borrower's Institutional Capacity for Safeguard Policies

The Ministry of Information, Communications, Transport and Tourism Development (MICTTD) has some institutional experience with implementing World Bank safeguard policies as the counterpart for the Kiribati Aviation Investment Project (KAIP). That said, MICTTD's experience with submarine cable placement is expected to be limited. For this reason it is proposed that a safeguards specialist be engaged during implementation to assist with updating safeguards documents (including ESMP), applying for local consents and overseeing implementation of ESMP prescriptions by the cable and terrestrial infrastructure contractors.

C. Environmental and Social Safeguards Specialists on the Team

Penelope Ruth Ferguson, Ross James Butler, Nicholas John Valentine

D. Policies that might apply

Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/BP 4.01	Yes	The works will involve cable laying across the sea bed and reef platform, minor earthworks for the beach manhole infrastructure, and the construction of a building for the cable landing station. The Environmental and Social Impact Assessment (ESIA) concluded that the Kiribati project will require very limited land-based infrastructure, will have minimal (mainly marine-based) impacts which are limited in scale and extent and can be fully mitigated, will require no private land acquisition for the beach manhole, landing station or terrestrial cable routes. The ESIA has not identified any sensitive receptors that will be affected by the project and provides

		standard mitigation measures, including a detailed survey prior to cable laying, to avoid significant impacts and manage the residual, minor impacts. The final design (including routing) and associated Contractors ESMP will be submitted for Bank approval prior to commencement of works.
Natural Habitats OP/BP 4.04	Yes	Natural habitats may be disturbed temporarily during cable laying in the intertidal zone. No protected areas are located within the project area of influence. The ESIA has been informed by ecological surveys of the reef and foreshore. The reef platform is in a degraded state and does not contain any significant coral assemblages. Significant seabed habitats, such as hydro-thermal vents and seamounts, will be surveyed during the detailed design phase and avoided. There are no natural habitats in the footprint of the terrestrial infrastructure.
Forests OP/BP 4.36	No	Works will be required on the foreshore but there are no mangroves in the vicinity and therefore there will be no disturbance to forest habitats.
Pest Management OP 4.09	No	There is no requirement to manage pests under this project.
Physical Cultural Resources OP/BP 4.11	Yes	No PCR were identified in the ESIA. Due to the small infrastructure footprint, there is low likelihood of PCR being discovered during construction. A chance find procedure has been included in the ESIA and the policy is triggered as a precautionary measure in case a PCR is discovered.
Indigenous Peoples OP/BP 4.10	No	An assessment completed by the World Bank into the application of OP4.10 in the Pacific Islands Countries concluded that projects situated in Kiribati would not be expected to trigger this policy.
Involuntary Resettlement OP/BP 4.12	Yes	All four potential beach manhole sites are situated on Government-leased land, with the Land Planning Act providing for land use planning in the 'public interest.' However, even on Government leaseholds on South Tarawa, the landowner retains the right of veto over applications for subleasing this land.
Safety of Dams OP/BP 4.37	No	This policy is not triggered.
Projects on International Waterways OP/BP 7.50	No	Submarine cable systems will be deployed in the ocean, not in shared waterways (rivers, lakes).
Projects in Disputed Areas OP/BP 7.60	No	This policy is not triggered.

E. Safeguard Preparation Plan

Tentative target date for preparing the Appraisal Stage PID/ISDS

Nov 15, 2016

Time frame for launching and completing the safeguard-related studies that may be needed. The specific studies and their timing should be specified in the Appraisal Stage PID/ISDS

Safeguard related studies to commence in August 2016 with completion by end November 2016.

CONTACT POINT

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APPROVAL

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[i] This cable comprises two fibre pairs, one dedicated to the needs of Kwajalein, and a second pair for services to Majuro (Marshall Islands) and Pohnpei (FSM). This second fibre has an ultimate overall capacity of 160,000 Mbps (16 wavelengths of 10Gbps each). The HANTRU-1 cable is equipped with Optical Add / Drop Multiplexers (OADM) in two branching units (BU) which provide for up to eight wavelengths to be delivered to each of Pohnpei and Majuro. At present one wavelength is activated for each of these sites, providing 10,000 Mbps bidirectional capacity between Guam and each of Majuro and Pohnpei. Current capacity needs of each of Majuro and Pohnpei are less than 100 Mbps. This means that more than 9,000 Mbps is immediately available at each location for other use. Should local or other future needs require additional capacity, the existing cable can support an additional 70,000 Mbps at each location making a total of 80,000 Mbps at each location). Capacity needs for Kiribati (and the other connection economies of the proposal) as estimated by two methodologies (top down and bottom up) are shown in the table below. These estimates assume that beyond 10 years, penetration rates would reach their ultimate extent and hence remain stable but usage would increase twofold (x2) every 5 years. This aligns with trends in mobile and broadband connection speed as reported/ forecast by Ookla or Cisco. Cisco recently forecast that ""Mobile network connection speeds will increase more than twofold by 2019" in comparison with the speed in 2014 (http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white_paper_c11-520862.html). An increase by a factor of 2-3 every 5 years could also be observed by studying data from Ookla which consolidates data on speed tests of Internet users, globally or for separate countries such as France, Thailand (http://explorer.netindex.com/maps?country=France).