
Digital Infrastructure Sector Strategy (Draft)

AIIB's Role in the Growth of the Digital Economy of the 21st Century

Background

1. Digital technology is transforming the global economy. It has helped create new economic opportunities across countries, regions, and industries. It is a powerful driver of growth for economies and a provider of significant benefits for society. Digital applications are successfully lowering barriers posed by geography, solving market imperfections and connecting people both for trade and social purposes.¹
2. It is estimated that the digital economy footprint represents between six percent to 15 percent of global gross domestic product (GDP).² It contributes to about 25 percent of GDP growth in developing countries, 80 percent of which is accounted for in sectors other than Information Communication Technology (ICT).³ Between 2005 and 2016, 40 percent of jobs created globally were in digitally intensive sectors.^{4 5} The scale of this sector is such that the market capitalization of Apple equals a third of the French GDP and that the Research and Development budget of Amazon exceeds the GDP of Cambodia.
3. Linkages between digital technology with traditional infrastructure sectors such as energy, water, transport, and cities, are strong and mutually reinforcing. For instance, technology applications in traditional infrastructure sectors can help optimize the use of scarce water and energy resources, increase efficiency and safety in the transport sector and increase the attractiveness of cities. Digital technologies are becoming an essential factor in the development, construction and maintenance of all infrastructure sectors and now contribute to new developments in health and education. However, there are still significant benefits to be achieved from applications of technology in infrastructure, particularly in Asia.
4. Given its economic impact and the role it will play in our future society, AIIB sees a clear need to support the development of the digital economy and with it, the underlying Digital Infrastructure.
5. This is consistent with AIIB's mandate to "foster sustainable economic development, create wealth and improve infrastructure connectivity in Asia by investing in infrastructure and other

¹ *Unlocking Digital Competition, Report of the Digital Competition Expert Panel, UK Government, March 2019*

² *World Bank 2016* (<http://pubdocs.worldbank.org/en/391452529895999/WDR16-BP-Exploring-the-Relationship-between-Broadband-and-Economic-Growth-Minges.pdf>); *World Bank 2019* (<http://documents.worldbank.org/curated/en/816281518818814423/pdf/2019-WDR-Report.pdf>); *World Economic Forum 2018* (<https://www.weforum.org/whitepapers/financing-a-forward-looking-internet-for-all>); *EIU Data Services, 2019*

³ *See Footnote 2*

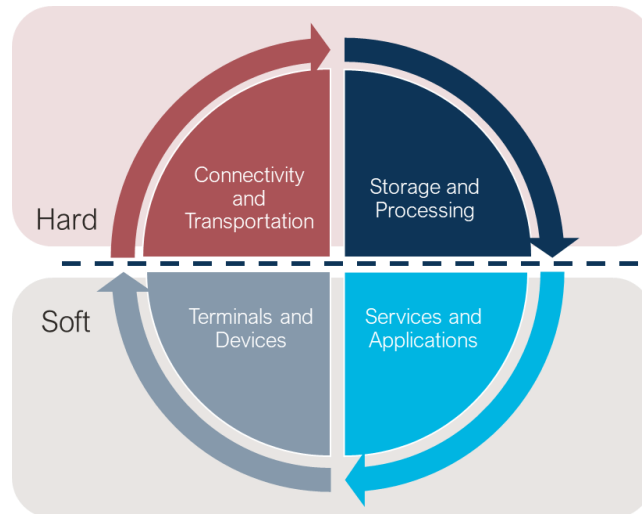
⁴ *OECD 2019* (<https://www.oecd.org/employment/employment-outlook-2019-highlight-en.pdf>)

⁵ *Ovum Digital Infrastructure Sector Analysis (DISA), November 2019*

productive sectors,” and AIB’s core values of “Lean, Clean and Green.” Digital infrastructure is Green and Lean, with a comparatively lower carbon footprint than other traditional infrastructure sectors, and applications that help minimize the use of non-renewable resources. It is also Clean, as its applications help increase transparency in processes.

Coverage of Digital Infrastructure in the Strategy

6. Digital Infrastructure is no longer limited to hard physical assets, structures, and facilities. Today, it also extends to the architecture that connects it and to the technological applications to operate it. This is referred to as soft infrastructure.
7. In this Strategy, AIB’s coverage of Digital Infrastructure will include both hard and soft infrastructure.
8. Hard infrastructure is defined as:
 - i. *Transport and Connectivity*. This includes, among others, optical fiber networks, optical ground wires, satellites and towers, cross-border links, and adjunct physical infrastructure. These elements help establish the connectivity of the whole Digital Infrastructure ecosystem.
 - ii. *Processing and Storage*. This includes, among others, datacenters, data repositories, cloud computing providers, content delivery network providers, IXPs (Internet Exchange Points).
9. Soft infrastructure is defined as:
 - i. *Services and Applications*. This includes, among others, applications, and services such as building information system (BIM), computer emergency response team (CERT) and security operated centers (SOC), as well as new categories of technology services including fintech, digital identity, and e-platforms. Services and Applications allow (1) systems and networks to operate, (2) infrastructure-specific applications to increase network efficiencies and drive sustainability and (3) technical support throughout the ecosystem.
 - ii. *Terminals and Devices*. This includes, among others, sensors, and devices used to optimize all infrastructure sectors and enhance their efficiency and sustainability. Examples are smart grids, smart meters, and terminal devices used by the public such as cell phones or computers.



10. Hard and soft infrastructure are strongly interdependent. Hard infrastructure cannot be operated without the use of soft infrastructure; soft infrastructure cannot be deployed without hard infrastructure.
11. The providers of hard and soft infrastructure vary greatly, making it difficult to make a clear-cut categorization of economic entities forming the sector along infrastructure types. Entities will include mobile and fixed broadband providers, cable broadband operators, wholesale operators providing shared infrastructure services, data repository and cloud computing firms, terminal equipment manufacturers, and internet services providers. They are all part of a complex Digital Infrastructure eco-system where assets are often shared between operators. Therefore, financing this sector will require flexibility and agility.

Supporting the Growth of the Digital Infrastructure Sector in Asia

12. Digital infrastructure is generating important economic benefits. It has a direct association with productivity gains, which translate to competitiveness and economic growth. In developing countries, a 10 percent increase in broadband coverage results in 1.4 percent of GDP growth.⁶
13. The growth of the sector has mostly been financed by the private sector. However, the growth has been so fast that current private financing sources are no longer sufficient to cover needs. In low- and middle-income countries, the level of investment required to set-up the basics of a modern Digital Infrastructure by far exceeds available capital resources. In parallel, there has also been a slowing down of multilateral development bank's (MDB) financing directed to the ICT with less than one percent of their resources directed to it.⁷ Such a slow-down can be explained by several factors, including an information asymmetry between expected demand

⁶ ITU Broadband commission Report, September 2019

⁷ World Wide Web Foundation, Alliance for Affordable Internet, Xalam Analytics (<http://a4ai.org/wp-content/uploads/2018/04/MDB-Investments-in-the-ICT-Sector.pdf>)

and supply of finance. The combination of these two factors has resulted in a growing financing gap in Asia⁸, which is expected to amount to USD133 billion by 2025.⁹

14. In addition, as the sector grows, so does the digital divide between urban and rural populations, income levels, and along gender lines. It is estimated that 49 percent of the global population does not have access to broadband.¹⁰ In Asia, only 26 percent of the rural population has access to broadband. Women are 10 percent less likely to own a mobile, with this gap growing to 28 percent in South Asia.¹¹
15. Finally, the adoption and mainstreaming of technological applications to traditional infrastructure lead to better allocation and management of resources, efficiency gains, and productivity increases. Technology, as diffused through digital applications, contributes to a more sustainable infrastructure sector.
16. The positive economic impact of Digital Infrastructure, the necessity to bridge the growing digital divide, reducing the financing gap, and benefits of technology applications in traditional infrastructure, justify the involvement of a multilateral institution like AIIB in the sector.

AIIB's Vision, Objectives and Comparative Advantages

17. AIIB's vision is to play a leading role in financing the growth of Digital Infrastructure in Asia, with the objectives of supporting AIIB members' efforts in bridging the digital divide, increasing competitiveness of their economies and the efficiency of infrastructure. To do so, AIIB will leverage and mobilize financing, develop its partnerships, manage risks, and play a catalytic role in building knowledge for the financing of Digital Infrastructure. AIIB expects to go beyond its traditional financing role to help build a strong ecosystem and foster the adoption of technology in infrastructure through the demonstration of its benefits.
18. This vision interfaces with other bank strategies. It reinforces AIIB's role as a facilitator of technology adoption across all infrastructure sectors, thus contributing to the objectives of the transport, energy, water, and sustainable cities strategies.
19. AIIB's role in Digital Infrastructure is supported by several additionalities and comparative advantages:
 - i. Private sector resources have fallen short of the Digital Infrastructure sector needs, in terms of financing amounts, structure, standards, and breadth. AIIB can leverage its balance sheet to provide significant financial resources with longer maturities and appropriate financing instruments.
 - ii. AIIB's status as a multilateral bank in Asia gives it an advantage in mobilizing finance from the private sector and other multilateral partners, and providing better financing terms along with adequate risk-sharing arrangements.

⁸ Financing gap is defined by the difference between investment needs (as defined by country strategy statements and firm-level capital expenditure projections), and availability of finance (as defined by the sum of corporate finance, project finance, public sector budget projections and MDB financing)

⁹ Global Infrastructure Outlook, G20, 2019

¹⁰ See footnote 5

¹¹ See footnote 5

- iii. AIIB's involvement helps mitigate political risks thanks to its status as a MDB. This is especially relevant in the context of a fast-changing regulatory environment for Digital Infrastructure, given AIIB's unique ability to reach out to government institutions and keep abreast of the latest policy changes, to ensure adequate compliance of its investments.
- iv. AIIB's high-quality standards will support the healthy growth of the Digital Infrastructure sector. Its open procurement requirements will help promote fair competition and enforce regulations that are critical to the sector. Its environmental and social standards will help ensure development outcome of Digital Infrastructure investment.
- v. AIIB's experience in financing traditional infrastructure is directly applicable to hard Digital Infrastructure such as cables, towers, and datacenters. Beyond hard Digital Infrastructure, this experience also extends to managing regulation issues, economies of scale and network effects, access issues, and environmental and social considerations.
- vi. Soft Digital Infrastructure allows, among others, to an increase in the efficiency of existing infrastructure sectors. Through its existing portfolio of investments, AIIB is uniquely positioned to understand how to bundle hard and soft infrastructure investments, and formulate optimal financing solutions.
- vii. AIIB's physical proximity to a vibrant Digital Infrastructure market in Asia endows it with a natural ability to develop strong technical expertise in this sector.

Investments Areas

20. AIIB will invest in the following areas:

- i. **Hard Digital Infrastructure.** Invest and foster the development and enhancement of hard Digital Infrastructure to bridge the digital divide.
- ii. **Soft Digital Infrastructure.** Invest and foster the adoption of technology in traditional infrastructure sectors, including transport, energy, water and cities, and other productive sectors, to increase efficiency and sustainability.

21. To ensure the additionality of AIIB's financing, AIIB will not invest in areas that are well-financed by the private sector, such as handheld devices sold as consumer goods.

Risks

22. Investment in Digital Infrastructure is often associated with new emerging risks that may be different from those faced in more traditional infrastructure sectors. At this stage, AIIB has identified four main risk categories:

- i. **Regulatory risks.**
 - a. *Information Privacy.* Data sharing and processing have led to risks associated with inappropriate use of personal information by third parties, public or private. Regulatory safeguards have been gradually developed and adopted at country level to ensure

- that communications over public networks maintain respect for fundamental rights, in particular a high level of data protection and of privacy. These regulations also apply to the use of certain technologies and to the way data is gathered, shared and used.
- b. *Competition, Price, and Fiscal Policy.* The dominance of a handful of firms in some market segments could lead to situations that would affect universal access and further increase the digital divide. Competition and price and fiscal policies are well-tested in other infrastructure sectors and are a viable response to these risks. In addition, the development of shared infrastructure between several operators (as with the emerging 5G technology), helps lower the risk to see a private firm engage in activities that would have negative consequences for users.
 - c. *Cybersecurity.* Associated with the growth of the internet, cyber-attacks on systems and networks may threaten firms, utilities, and services provided to people. Cybersecurity is enforced through law. It requires a regulatory framework consistent across regional borders.
 - ii. *Technology Obsolescence.* Technology can become obsolete over the financing period or over project implementation. AIIB will manage this risk by adapting the maturity of its debt to the expected life expectancy of the asset, and by investing in technology-neutral assets, where universal access to the infrastructure is not restricted by defensive technological standards.
 - iii. *Reputational Risk.* Some firms or specific technology may be associated with a higher reputational risk that may affect the feasibility of the investment, its return, or possibly the reputation of the financier. It is important for a MDB to evaluate these risks and manage them actively.
 - iv. *Environmental and Social Impact Risks.* Digital Infrastructure tends to be associated with a lighter footprint than traditional infrastructure sectors. Nevertheless, there can be specific waste management issues associated with the disposal of towers, cables or devices. High electricity consumption has been multiplied by the increased use of data. Social inclusion risks include access inequalities according to gender, geographic location (urban versus rural), income levels and physical ability.
23. AIIB will manage regulatory risks by ensuring compliance of its investments with country-level regulations and laws. AIIB does not have a role in policy changes but understands that this sector is associated with emerging new regulatory requirements that can differ quite significantly from country to country. Given the sector's complexity and fast pace, AIIB will build an in-house capacity to specifically manage regulatory risks. AIIB also intends to develop partnerships with other financiers who have more experience in the Digital Infrastructure sector to better identify, evaluate and manage these risks.
24. Nevertheless, AIIB recognizes that some of the risks posed by this sector might be too high or evolving too rapidly to be mitigated adequately. In such cases, AIIB will not finance the underlying projects.
25. As in other infrastructure sectors, such as transport, energy or water, the environmental and social risks will be managed under the guidance of AIIB's Environmental and Social Policy.

Growing AIIB's Internal Capacity to Invest

26. Investing in the Digital Infrastructure sector requires a selective, prioritized and progressive approach.

Investment Principles

27. Given the nature of the sector, prudence will be top principle that AIIB will adopt in pursuing its investment in digital infrastructure. AIIB will only consider those projects supported by good governance, regulatory standards and sound banking principles. To achieve its vision and objectives, the following three main principles will guide AIIB's prioritization of investments:

- i. *Inclusiveness*: The investment has a positive impact on inclusion, e.g., between urban and rural populations, along gender lines, or along income levels.
- ii. *Competitiveness*: The investment is economically sound and contributes to the competitiveness of the economy.
- iii. *Efficiency*: The investment enables efficiency improvements in traditional infrastructure with respect to cost reduction, value creation, resilience, longevity, etc.

Investment Progression

28. Given AIIB's current knowledge and expertise, it is expected that the Bank will be in a position to invest in hard infrastructure from the start of implementation of this Strategy. In effect, risk analysis and banking practice applicable to hard infrastructure, are generally similar to that of traditional infrastructure sectors, including on regulatory, environment and social matters.

29. Investing in soft infrastructure will require a more gradual approach, given the complexity and associated risks. AIIB will initially focus its financing efforts on applications, services, and devices that help mainstream technology innovations in traditional infrastructure sectors such as transport, energy, water, and cities. As its expertise develops, AIIB will help mobilize financing for other productive sectors that help grow the Digital Infrastructure sector, for instance in health and education technology.

Building Partnerships

30. Partnerships with private and public institutions will be crucial to implement this Strategy to crowd-in additional financing resources and facilitate access to knowledge. Specifically, these partnerships will:

- i. **Grow AIIB's Knowledge Base.** Partnerships with financiers that have a longer standing involvement in the sector, renowned firms in the digital economy, regulatory agencies, and other stakeholders, will give the Bank access to a strong knowledge base. This will be critical to help build upstream knowledge, which could then be used to better structure financing solutions and manage risks.

- ii. Mobilize Capital. AIIB will work with other private financial institutions, institutional investors, MDBs, bilateral aid agencies and organizations providing finance to identify and structure financing solutions.
- iii. Share Risks. Through co-financing or other guarantee and syndication arrangements, AIIB will be able to share some of the commercial and political risks.
- iv. Build Information-sharing Platforms. One of the biggest challenges of the sector resides in the uneven level of, and access to, information on available technologies, regulatory standards, and financing practices. Within the boundaries of its mandate, the Bank sees a role in promoting the adoption of internationally recognized regulatory standards at the country level. It also intends to promote an open-source information platform allowing infrastructure project sponsors access to comparative information on the benefits of applicable technologies.

Building Internal Capacity

- 31. Acquiring new expertise and building new internal capacity is at the heart of the implementation of the Digital Infrastructure strategy. AIIB will build a team with specific expertise in the Digital Infrastructure sector, from sector specialists to regulatory experts, to allow it to grow its Digital Infrastructure portfolio prudently.
- 32. Partnerships with industry sponsors, co-financiers and other stakeholders will help accelerate the capacity building process, with the objective of transforming AIIB into a leading financier of Digital Infrastructure.

Results Monitoring Framework

- 33. Given the diversity of possible outcomes and evolving nature of the sector, the development of portfolio level results framework proves to be challenging. Nonetheless, the drafted sector results framework tries to capture progress in achieving objectives of investments at portfolio level, noting that a variety of outcomes can be captured at the project level. For example, the applications of technology in traditional infrastructure sectors will lead to efficiency gains. However, it may not always be possible to measure and capture these outcomes solely through the Digital Infrastructure investment, but needs to be considered together with the outcomes of the traditional infrastructure project. This reflects the cross-sectoral nature of the Digital Infrastructure sector with other key sector strategies. With fast development of the sector, it is expected that proposed portfolio indicators will be reassessed and refined as AIIB gains more operational experience.

Digital Infrastructure Sector Results Framework

Objectives	Portfolio Results Indicator	Investment amount \$
Bridging the digital divide	<ul style="list-style-type: none"> • Number of people with access to internet and digital services¹² 	<ul style="list-style-type: none"> • Amount invested in fixed and mobile access
Increased competitiveness	<ul style="list-style-type: none"> • Number of projects that lower the cost of access and digital services¹³ • Number of projects that improve quality of access¹⁴ • Number of projects that increase capacity of data processing 	<ul style="list-style-type: none"> • Amount invested in fixed and mobile access • Amount invested in data processing and storage
Increased efficiency ¹⁵ and technology application across infrastructure sectors	<ul style="list-style-type: none"> • Number of projects applying technology • Number of projects supplying technology to infrastructure sectors 	<ul style="list-style-type: none"> • Amount invested in technology components of infrastructure projects • Amount invested in technology providers
Increased private capital mobilization	<ul style="list-style-type: none"> • Cross reference to relevant indicators in the Strategy to Mobilizing Private Capital 	<ul style="list-style-type: none"> • Amount of private financing mobilized on Digital Infrastructure projects

¹² This can be disaggregated by gender, rural/urban, income levels, disability

¹³ Cost of access can be measured as, for example, average dollar spent per megabyte

¹⁴ Quality can be measured, for example, as speed, reliability of network

¹⁵ Efficiency is defined as cost reductions, value creation, resilience and longevity