Digital Infrastructure
The new bridges and rails for 21st economy
August 26, 2019
ABOUT AIIB
Asian Infrastructure Investment Bank

Who we are
Multilateral Development Bank (MDB) founded to bring countries together to address Asia’s daunting infrastructure funding gap estimated at USD26 trillion through 2030¹.

Our mission
To improve economic and social development in Asia and beyond through a focus on sustainable infrastructure, cross-border connectivity and private capital mobilization.

Credit strength
Strong support from diversified global shareholder base. USD100 billion capital stock with 20% assigned to paid-in capital. Prudent risk management and financial policies. AAA/Aaa/AAA rating with stable outlook.

Its core values are:
- **Lean**, with a small efficient management team and highly skilled staff.
- **Clean**, an ethical organization with zero tolerance for corruption.
- **Green**, an institution built on respect for the environment.

¹Source: “Meeting Asia’s Infrastructure Needs”, ADB 2017
3 successive waves and the 4th wave on Digital Infrastructure and Technologies

1990s
- 1st wave
  - Privatization
  - Regulation to open up competition
  - 100% Public financing of infrastructure

2000s
- 2nd wave
  - Update regulatory reforms (competition policy)
  - Backbone infrastructure for broadbanding
  - PPPs

2010s
- 3rd wave
  - Government processes
  - Role of the private sector: financiers and jobs provider (skills development)
  - Expand the broadbanding

2020s
- 4th wave
  - Supporting the Digital Economy
  - Increasing and diversifying financing sources
  - Scale and Speed
  - Managing new risks
  - Rethinking if private sector financing is the only way
Emerging market countries’ users are spending more than half of daytime using internet
Digital Infrastructure

Why?

What?

Who?
Preliminary observations on the Digital Infrastructure market

1. Digital Economy on the rise, driving more demand for digital infrastructure

2. Not all countries the same - Digital Divide between DM/EM and urban/rural

3. Emerging Regulatory, Environmental and Social considerations
Digital Infrastructure is the building block of a modern economy

Just like roads and rails, digital infrastructure is the foundation of all digital economic activities and technological applications.

While digital economy is growing in size and relative economic significance...

- Global digital economy in 2016 was worth $11.5 trillion, or 15.5% of the world’s GDP and expected to reach 25% in less than a decade.
- Emerging market countries see the highest growth of digital economy, also due to the young population which has longest time using the internet.
Digital Infrastructure is the building block of a modern economy

Just like roads and rails, digital infrastructure is the foundation of all digital economic activities and technological applications.

...Digital Infrastructure financing gap is projected to increase.

- Despite the rising importance of digital economy, Digital Infrastructure gap in Asia is growing significantly, estimated to reach $512 billion by 2040.
- Financing gaps continue to be mostly found in middle and low-income countries.
- More than 50% of digital infrastructure investment gap will be seen in Asia by 2040, which might slow down growth.
How should the Digital Infrastructure requirements be looked at

Economic growth depends not simply on providing connectivity, but “forward-looking access”, with sufficient capacity, quality and speed to support more advanced usage.

Different digital maturity requires different digital infrastructure development priorities, with the abilities to leapfrog:

The maturity of the Digital Infrastructure requires “4As”

a) Availability (access and speed)
b) Affordability (value and cost, <2% of GNI is affordable)
c) Appetite (awareness, desire and fear to technology)
d) Ability (digital literacy, individual restrictions and business environment)
Who are the main funders for Digital Infrastructure development

*Industry remains the major funding source for Digital Infrastructure, but it may require diversifications*

<table>
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<tr>
<th>Actors</th>
<th>Examples</th>
<th>Notes</th>
<th>Objectives</th>
<th>Risk appetite</th>
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<tr>
<td><strong>Private sector</strong></td>
<td></td>
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<tr>
<td>Industry</td>
<td>MNOs/ISPs/Tower companies</td>
<td>• Vast majority of funding &amp; “front line” of profitable investment</td>
<td>• Provide connectivity for profit</td>
<td>Low</td>
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<tr>
<td>Financial sector</td>
<td>Investment &amp; commercial banks</td>
<td>• Willingness to invest is often complicated by concerns over competing infrastructure networks, uncertainty around technological developments, and the belief that investment is the responsibility of MNOs and ISPs</td>
<td>• Provide financing and capital for profit</td>
<td>Low</td>
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<tr>
<td></td>
<td>Private investment firms (pensions, VC, PE, etc.)</td>
<td></td>
<td>• Grow capital for profitability</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Other private sector</td>
<td>Technology firms Other sectorial firms</td>
<td>• Diversify portfolio</td>
<td>Low</td>
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<tr>
<td>Non-profit</td>
<td>Foundation/NGOs</td>
<td>• Longer-term investment horizons, enabling investment in lower-IRR projects that do not meet objectives of other investors</td>
<td>• Expand customer base</td>
<td>Low-Medium</td>
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<tr>
<td>Public sector</td>
<td>Multilateral development bank/Fund</td>
<td>• Investment usually motivated by national interest, with social and development outcomes prioritized alongside (or above) economic profitability</td>
<td>• Provide financing to foster long-term economic development</td>
<td>High</td>
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<td>Sovereign wealth fund</td>
<td></td>
<td>• Create long-term value for investors by driving sustained economic development</td>
<td>Medium</td>
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<td>Public sector</td>
<td>USFs</td>
<td>• Funds can be combined with private-sector money to mitigate some kinds of investment risk and improve investment climate</td>
<td>• Expand connectivity in underserved areas through subsidies and fees</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>National development bank/Fund</td>
<td></td>
<td>• Provide financing to foster national long-term economic development</td>
<td>High</td>
</tr>
</tbody>
</table>

1. qualitative and indicative only

Sources: WEF (https://www.weforum.org/whitepapers/financing-a-forward-looking-internet-for-all)
MDB has low commitments in Digital Infrastructure, despite recognizing its impacts.
SO WHAT? (How?)

What?

Digital Infrastructure

Why?

Who?
Preliminary observations on the Digital Infrastructure market

1. Digital Infrastructure Financing gap is rising

2. Private capital alone is not solving the problem of digital divide

3. New financing sources required for opportunities

How?
Who funds it?

Infrastructure project investment by funding mode, 2011 onwards, %

- Energy: 48% (42% Digital (ICT)), 29% (9% Energy), 23% (8% Transport)
- Transport: 8% (8% Energy), 64% (64% Transport), 28% (28% Water)
- Water: 22% (22% Energy), 55% (55% Water), 24% (24% Social)
- Digital (ICT): 72% (72% Energy), 9% (9% Transport), 18% (18% Water)
- Social: 44% (44% Energy), 42% (42% Transport), 14% (14% Water)

How?
What are the transactions out there to be financed?

Transaction analysis by subsectors

Co-deployment with other infrastructure projects (mainly sovereign financing)

How?
Financing is key

- Equity
  - VC / Growth Equity / Convertibles
- Debt
  - Project / Corporate
  - Senior / Mezzanine
- Blended Finance
- PPP
- Capital Market
Thank you...
Not yet…
Is infrastructure all about the ‘hard’ infrastructure only?
What?  
Digital Infrastructure  
What Else?  
How?  
Who?  
Why?
Disruptive changes

- Energy and Power
  - Distributed generation
  - Smart grids
  - Renewables
  - Energy storage

- Transport and Telecom
  - Electric vehicles
  - Remotely operated vehicles
  - 5G networks

- Urban Development
  - Re-urbanization
  - Net-zero energy standard
  - Connected assets

- Water Supply & Sanitation
  - Smart infrastructure
  - Stormwater runoff
  - Decentralized water treatment

- Environmental Protection
  - Climate-resilient infrastructure
  - Carbon footprint
  - Automated monitoring

- Rural Infrastructure
  - Broadband access
  - Clean water
  - Electricity production
  - Transportation solutions
Progressive changes: Digital infrastructure and Digitization of Infrastructure
Technology + Infrastructure = ??

**Maybe:**
- Infrastructure as a service
- Internet of everything

**Maybe not:**
- Some Newtonian laws still hold
- Shopping malls have more food than ever..
Thank you!
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