



TMT Sector Strategy

2025 - 2029



European Bank
for Reconstruction and Development

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TMT 2025 – 2029 Sector Strategy | Abbreviations

3G/4G/5G	3rd, 4th, and 5th generation wireless technologies
ABI	Annual Bank Investment
AI	Artificial Intelligence
BaaS	Banking as a Service
BPTO	Business Process and Technology Outsourcing
CAGR	Compound Annual Growth Rate
CoO	Country of Operation
CSD	Climate Strategy and Delivery
DC	Data Centre
DMA	Digital Markets Act
DSA	Digital Services Act
DORA	Digital Operational Resilience Act
E-Gov	Electronic Government
EFSD	European Fund for Sustainable Development
EIB	European Investment Bank
EU	European Union
FWA	Fixed Wireless Access
FTTH/B	Fibre to the Home / Fibre to the Building
GDPR	General Data Protection Regulation
GET	Green Economy Transition
GHG	Greenhouse Gases
GSMA	GSM Association
HRV	High-Risk Vendor

ICT	Information & Communication Technologies
IFI	International Financial Institution
IFC	International Finance Corporation
IoT	Internet of Things
IPO	Initial Public Offering
IPA	Instrument for Pre-accession Assistance
ITU	International Telecommunication Union
M&A	Mergers & Acquisitions
MBPS	Megabits per second
MDB	Multilateral Development Bank
NGEU	NextGeneration EU
NIS	Network and Information Security
O-RAN	Open Radio Access Network
PPP	Public-Private Partnership
R&D	Research & Development
RSF	Risk-Sharing Facility
SAAS	Software as a Service
SOE	State-Owned Enterprise
TA	Technical Assistance
TC	Technical Cooperation
TMT	Telecommunications, Media, and Technology
VCIP	Venture Capital Investment Programme
WBIF	Western Balkans Investment Framework



TMT 2025 – 2029 Sector Strategy | Executive Summary

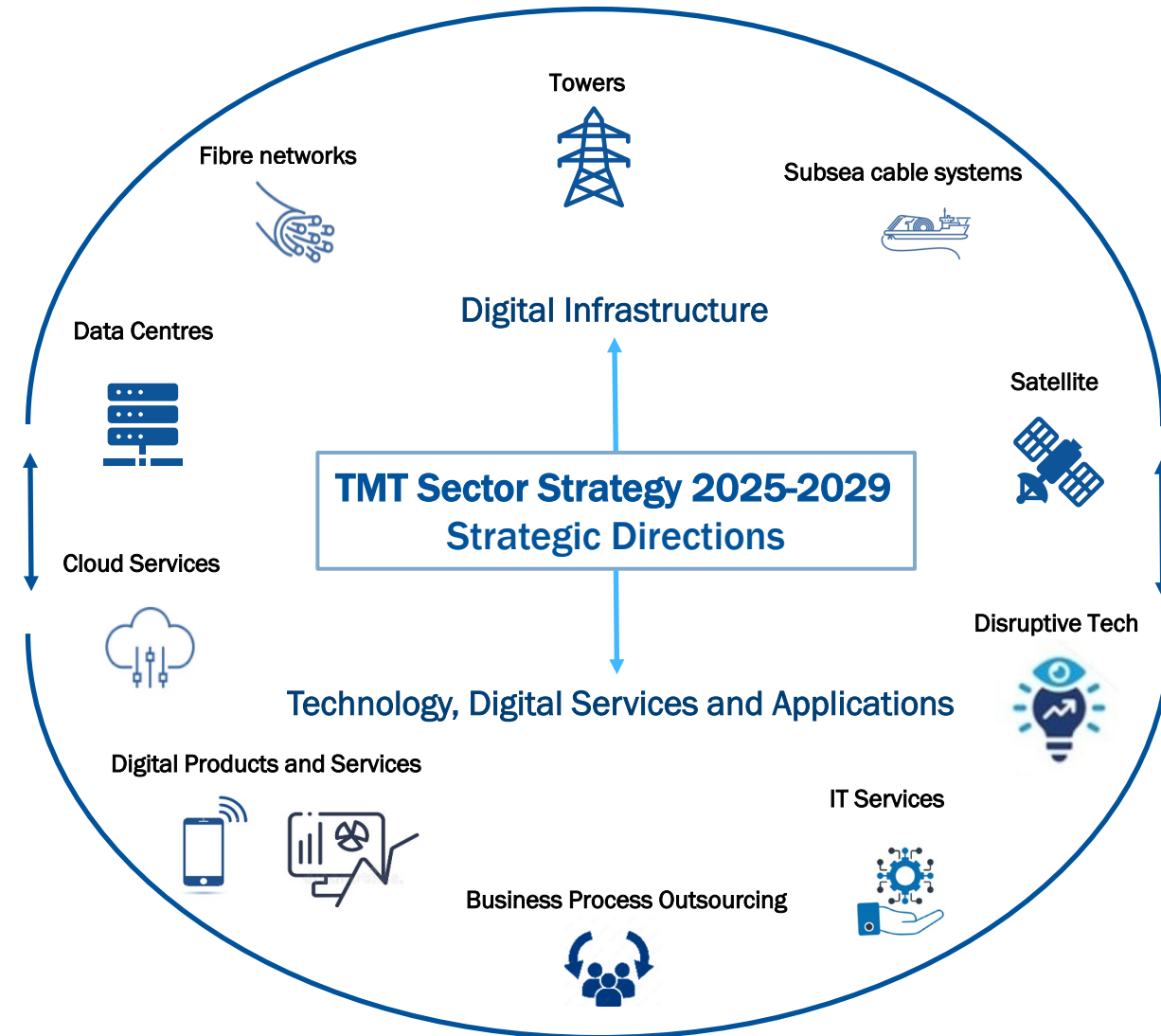
Telecommunications, Media, and Technology (TMT) is at the heart of the digital transformation impacting all EBRD Countries of Operations.

The TMT sector provides the necessary digital infrastructure for connectivity and data storage, as well as the technologies changing how we participate in our economies, interact with each other, access services and engage with government entities. The COVID-19 pandemic accelerated the growth of data use worldwide and provided a stark reminder of the remaining inequalities in access to high-speed internet.

The Digital Economy is an important driver of economic growth, with over 70% of new economic value created over the next decade expected to be based on digitally enabled business models. As the penetration of technology in everyday life grows, reducing the digital divide and using those technologies will remain a key EBRD priority, in alignment with the Bank's Equality of Opportunity Strategy and the Strategy for the Promotion of Gender Equality. At the same time, thorough cybersecurity measures will be required to ensure digital infrastructure resilience.

Digital infrastructure and technology are also critical enablers in the transition to a low-carbon economy, including through improved network operations and green tech advancements. To ensure that environmental impacts associated with rising data use are addressed, investments will continue to be aligned with the Bank's evolving GET Approach and remain Paris-aligned, support the use of renewable energy in the sector and contribute to the application and development of green technologies.

The TMT 2025-2029 Sector Strategy strengthens the Bank's focus on investing in digital infrastructure and tech-enabled products and services, which are mutually reinforcing parts of an integrated digital landscape. Resilient and competitive networks are necessary for sustainable and inclusive economic development, while also fostering innovation and catalysing digital entrepreneurship. The strategy is also a reflection of the sector's key role as a delivery mechanism for EBRD's Strategic and Capital Framework and the key role played by 'digital' in the Bank's broader transition mandate.

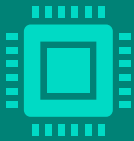




1. Implementation of 2020-2024 Strategy

2020 – 2024 Strategy | Focus Areas

During the previous strategy period, the Bank focused on **promoting innovation and bridging digital divides** through four focus areas:



Network Infrastructure

Invested in the roll-out and enhancement of digital infrastructure including broadband and mobile networks to provide increasing coverage, access, reliability and speed.



New Technologies

Invested in early stage, high growth, technology focused companies, which introduce new and innovative applications that bring the benefits of technology to consumers and businesses.



Innovative and advanced IT Services

Supported growth of IT services and business process outsourcing companies which are often asset-light, helping to facilitate access to finance and skill development as well as supporting digitalisation.



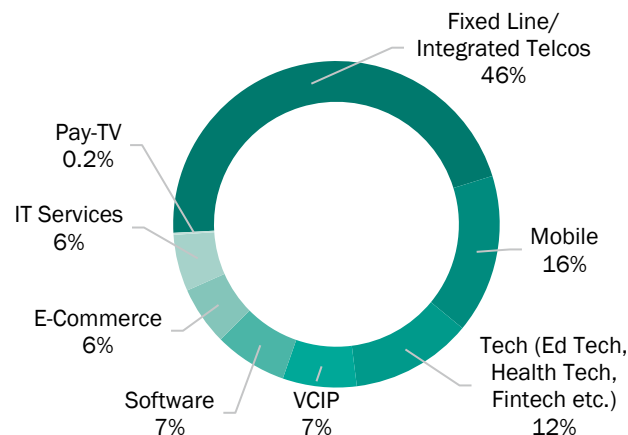
Privatisation and Commercialisation

Supported SOE commercialisation, designing programmes for state-intervention to address corporate governance and market failures and the adoption of legal and regulatory environments promoting liberalisation and competition.

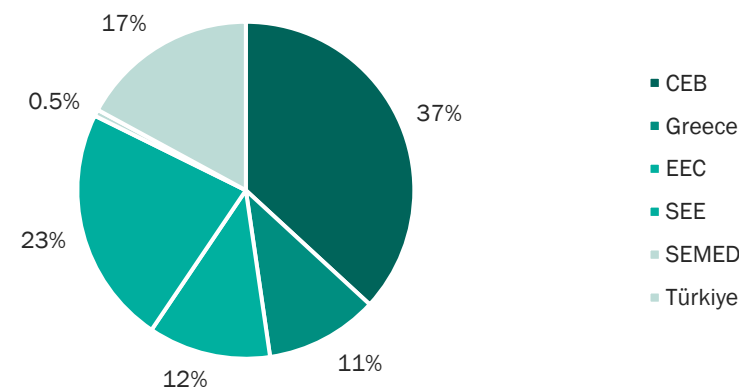


2020 – 2024 Strategy | Snapshot of Activities from the Previous Strategy Period

Portfolio Composition by Sector



Portfolio Composition by Region



Debt

(EUR 1.3 billion) mainly in (i) large mobile and fixed infrastructure build-outs, e.g. Fiberhost, Rune, United Group Serbia Rural Broadband; (ii) New technology companies e.g. DKV Mobility (software payment solutions), Peoplecert, (EdTech), HTEC (BPTO), and e-MAG (e-commerce).

Equity

52% of operations (EUR 332 million) were in equity. These were mainly in; (i) tech companies (Param, Arobs, Esper, Preply); (ii) ecommerce and software companies such as R-Gol and Sirma; (iii) VCIP – financing of early-stage companies.

Policy engagement and technical assistance

Policy advice, technical assistance, and capacity building focused on fostering competition, better governance and addressing areas of market-failure within the sector, e.g., telecom sector reform in Azerbaijan & Tunisia, and supporting the state in broadband roll-out in Serbia.

Highlights

2020 – 2024 YTD in Figures

67.5

Average ETI

EUR 1.6bn

Cumulative ABI

88

Signed Projects

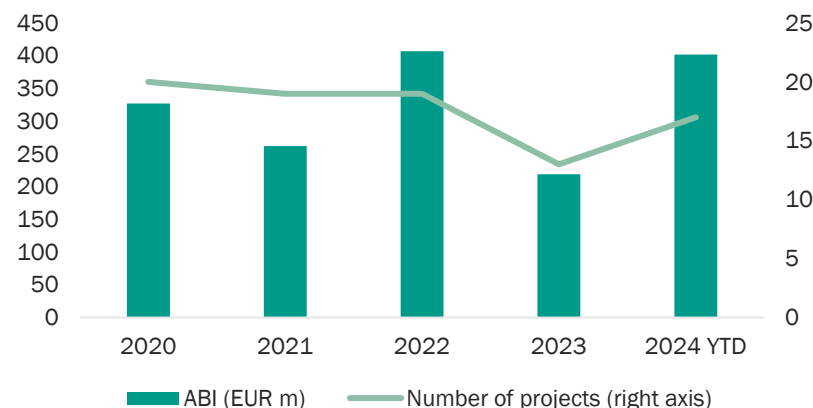
46

Equity Operations

94%

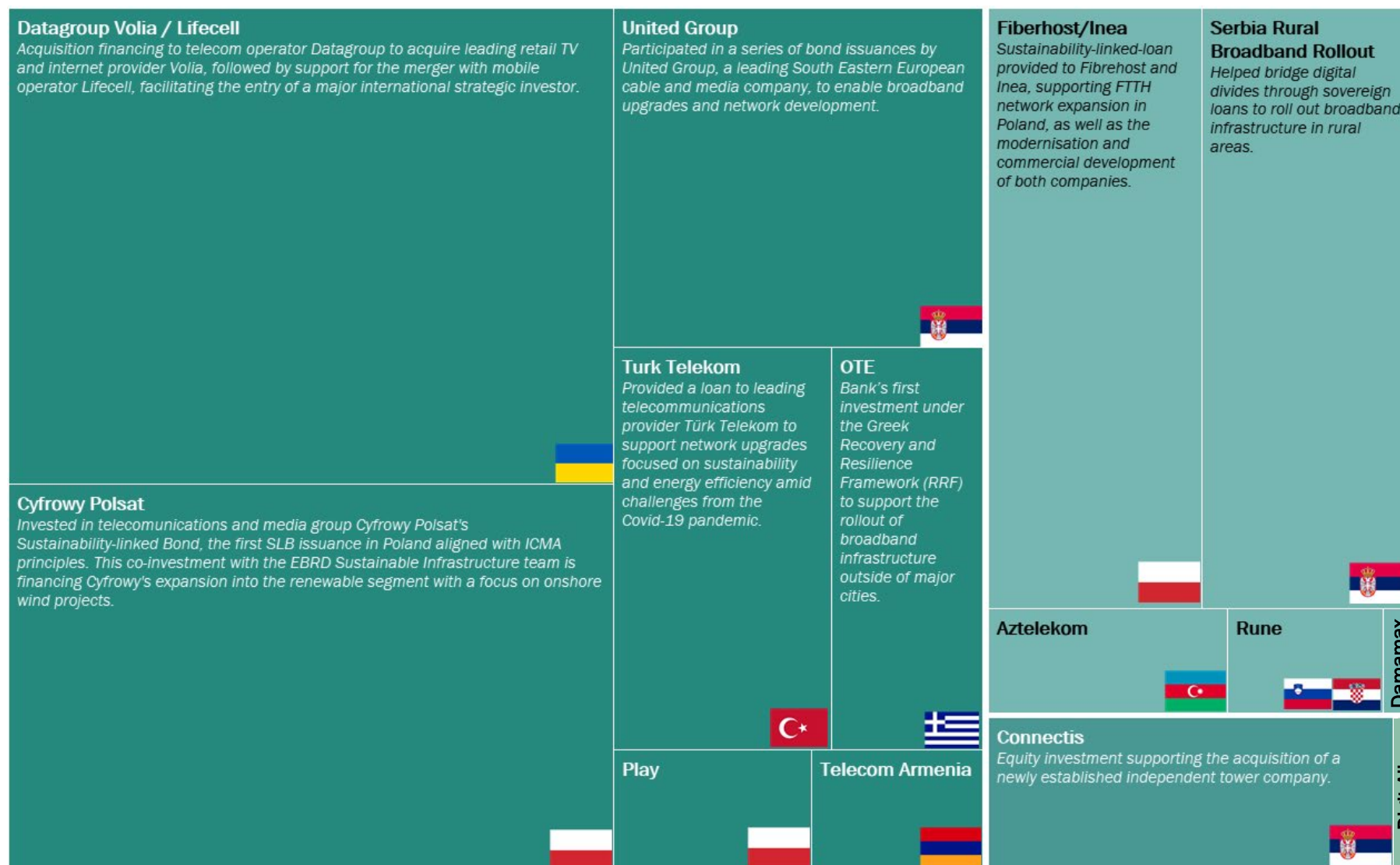
Private Sector
Investments

ABI and Number of Projects





2020 – 2024 Strategy | Operational Highlights – Digital Infrastructure



In the past strategy period, EBRD invested in digital infrastructure across the fixed, mobile and tower segments. This included the financing of:

- Play - rollout of 5G technology in Poland with loan to leading network operator
- Telecom Armenia - upgrade of fixed and mobile networks in Armenia
- Rune Group - roll-out of ultra-fast and energy-efficient fibre broadband to over 300k households in Slovenia and Croatia
- Damamax - fibre network expansion in underserved areas of Amman
- Aztelemek - enhancing internet speeds and capacity for households in Azerbaijan and associated policy engagement targeting sector reforms

Sub-sector

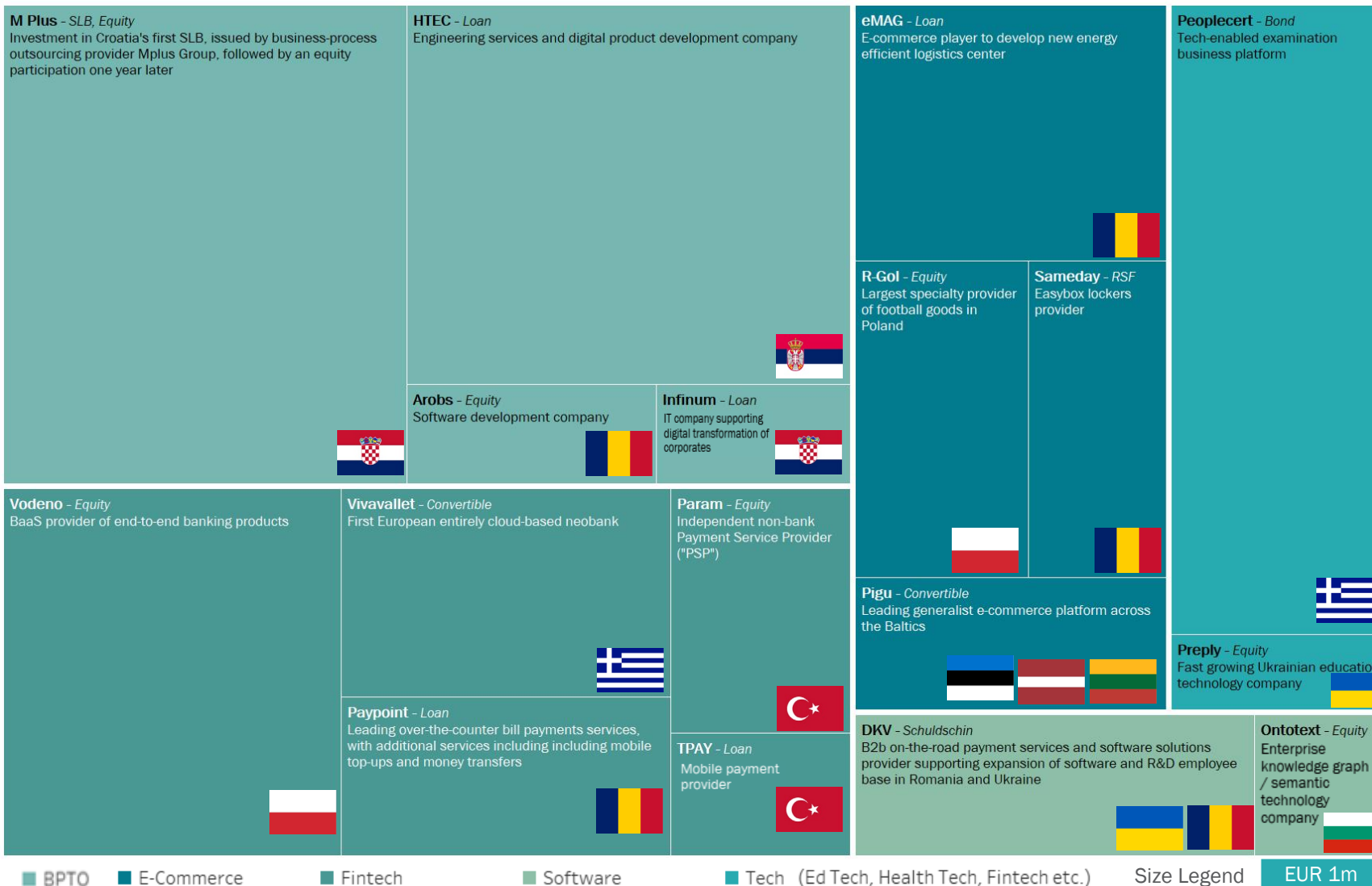
- Fixed
- Integrated Telco
- Media
- Tower

Size Legend

EUR 5m



2020 – 2024 Strategy | Operational Highlights – Digital Economy & Tech



Additional investments in the Digital Economy and Tech sectors included:

- Softserve – Loan for largest software developer in Eastern Europe, based in Ukraine
- Vega IT – Loan for Serbian software development services company
- Esper – Equity investment in leading Ukrainian producer of bionic upper limb prosthetics

Highlights of the EUR 101.4m investments under the VCIP programme, covering Series A, B, bridge rounds and Venture Debt financing, included the following:

- Paymob – the largest payment processing company in Egypt
- Invent Analytics – Turkish company providing cloud-based software for demand forecasting, allocation and pricing
- Shapr3D – 3D computer-aided-design (CAD) modelling software provider based in Hungary
- Alcatraz – Bulgarian company providing multi-sensor biometric solutions for facial authentication based on machine learning and AI-enabled edge processing
- Craft.io – next generation Czech company providing online document editing
- Photoneo – provider of robotic vision and intelligence solutions based in the Slovak Republic



2020 – 2024 Strategy | Key Lessons from Implementation

	2020-2024 Project Experience	Lessons Learned	Implications for the 2025 Strategy
Digital Transformation and COVID-19	The COVID-19 pandemic highlighted the lack of robust networks in many countries, while accelerating the ongoing digital transformation process at governmental, enterprise, and consumer level.	Resilient, competitive and accessible digital infrastructure are a necessity for inclusive economic development, allowing participation in the expanding digital economy, facilitate remote work and increase online services provision.	Closing the digital gap both within and between countries, expanding access to quality infrastructure, and elevating digital skills through investments and technical assistance in digital infrastructure services, products and applications.
Digital Infrastructure	Pressures on telecom operator are growing, partially due to regulation aiming to ensure affordability, high degrees of competition, as well as consumer reluctance to pay for premium data packages.	New business models have emerged as well-known ways of operating and financing networks are changing, including network spin-offs and joint ventures, along with other structuring and financing options.	Continue alignment with the evolving digital infrastructure business model and financing landscape. Leverage the Bank's multifaceted instruments, including co-financing, risk-sharing and and technical support tools.
Tech	Investments in tech companies across the capital structure, incl. venture capital, equity, loans, RSF to finance M&A, capex, and more. Funding requirements remain high in a quickly changing external environment, as firms in EBRD countries remain underfunded.	The lack of an established tech ecosystem (and limited international exposure) is a challenge for tech companies in the region. Bootstrapping and a focus on profitability above growth are more common in tech across EBRD CoOs, requiring a different approach which EBRD is uniquely positioned to provide.	Support tech firms through the full product suite of the Bank, particularly as VCIP clients 'graduate' to receive TMT investment. Contribute toward the establishment of a funding environment which supports tech companies' growth and facilitates access to sustainable financing in the region.
Green and Digital Transition	The TMT sector is a major energy consumer, however, improvements in energy efficiency have decoupled data traffic growth from energy consumption. The telecom sector is one of the largest purchasers of renewable energy and the most advanced in sustainability-related reporting.	Digitalisation is a key enabler in decarbonisation, and new technologies are being deployed to significantly improve energy efficiency without compromising data traffic. Diligent review of new projects, particularly as the research on digital infrastructure sustainability evolves and data centre investments become more prevalent for EBRD, remains critical.	Support the 'twin transition' by continuing to finance network upgrades which result in energy savings, while ensuring that new digital infrastructure adheres to best-in-class green standards. Provide cross-sectoral financing to encourage the use of renewable energy in the sector and invest in technology solutions helping to decarbonise.
Cybersecurity	Telecom infrastructures are prone to cyberattacks, with more integrated systems increasing the risk of exposure. In addition, many countries are restricting the presence of suppliers deemed to be high-risk vendors in 5G and other telecommunication infrastructure.	Gap in cybersecurity resilience between and within EBRD CoOs is at risk of increasing, as cybersecurity defence requires significant investments. High-risk supplier presence in networks requires careful management of sanctions and supply risk, as well as compliance with legal frameworks.	Enhance due diligence to assess cybersecurity risks of investee companies and vendors. Explore financing of cybersecurity SaaS providers, a prevalent tech sector in many EBRD countries of operations and engage with regulators to improve market cyber resilience.
Policy engagement on Competition and SOE Transformation	Remaining legacy control by SOEs in some EBRD CoOs is resulting in monopolistic structures, insufficient investment in next-generation fibre technology and stifled market dynamism. Structural changes are necessary to attract significant investment to meet digital connectivity goals.	EBRD can be influential where the transaction is in the private sector, if the underlying project aims to help achieve a government policy target, or in SOE commercialisations to improve economic governance. The state retains a critical role in delivering broadband connectivity, particularly in underserved areas. Minimum set of standards on open access and competitive tendering must be non-negotiable to ensure competitive safeguards.	Focus policy dialogue and technical assistance in areas with identifiable projects that EBRD can finance or are likely to generate systemic impact. Aim at sector level reform, together with capacity building to strengthen the capability and governance of regulatory authorities and seek opportunities to support the State to deliver on national broadband programmes.



2. TMT Sector Context: Trends



Key TMT Sector Trends | An Overview

Global Data Growth and Transformation Trends

Evolution of TMT Infrastructure

Fibre-isation of fixed connectivity

Mobile connectivity – 5G and beyond

Rising demand for data centres and cloud services

Disruptive Technologies

B2C Products, Services and Applications

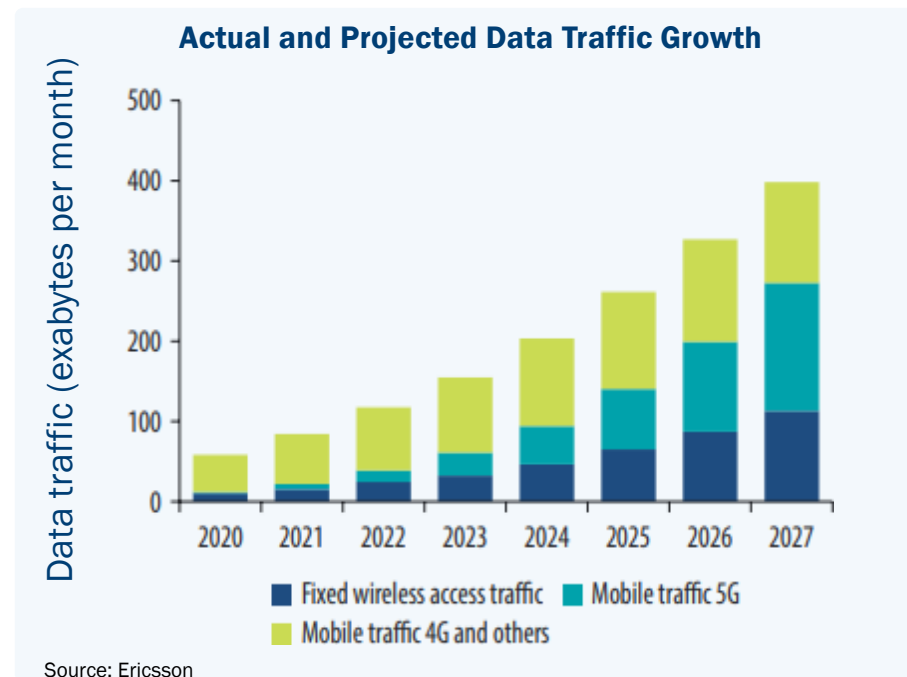
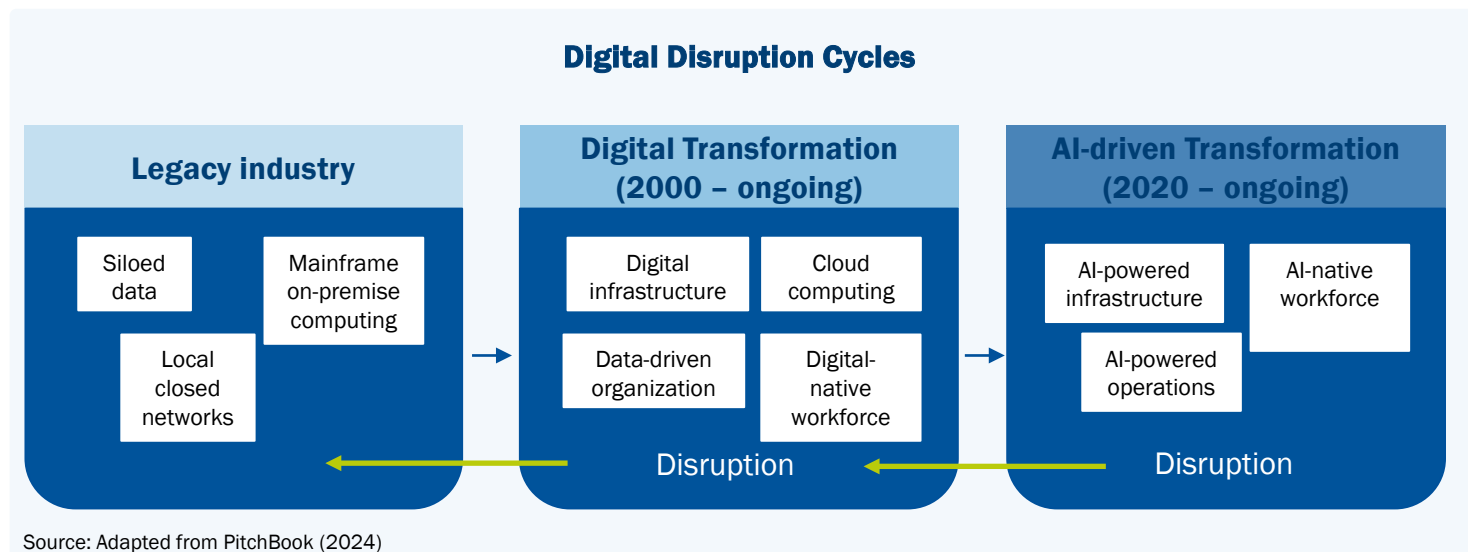
B2B IT Services and Business Process Outsourcing (BPO)

Key TMT Sector Trends | Global Data Growth and Transformation Trends

Growth of internet use has been accelerating significantly over the past years, reaching 5,3 billion users in 2022. Consequently, the volume of data created, stored, and transferred globally grew exponentially from 2 zettabytes* in 2010 to 120 zettabytes in 2023, and is forecast to exceed 180 zettabytes by 2025.

Digital technology advancements, including in computing power, the rise of cloud computing and the Internet of Things (IoT), as well as increased network capacity with each new generation of mobile technology have increased the range and capacity of data types created. The increased capacity, coupled with growing device capability and the rise of social media and streaming have further exacerbated the amount of data generated, stored, and processed.

The expectation is of a **three-fold increase in mobile data traffic by 2030**. However, this demand surge has been occurring primarily in more advanced countries with **widening gaps in access and use compared to less developed economies**. The role of AI in data consumption is still emerging, but its widespread adoption may further accelerate data growth trends and alter how networks handle traffic going forward.

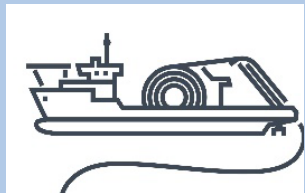


* 1 zettabyte = 1 trillion gigabytes

Key TMT Sector Trends | Evolution of TMT Infrastructure

The unprecedented growth in data requires the upgrade and expansion of data infrastructures and networks. These include sub-sea cables, terrestrial fibre networks, mobile networks, and data centres which can provide the necessary capacity to address growing demand and, in turn, enable broader digitalisation. The rise of AI and IoT applications is also driving the need for localised processing capacity. Backbone infrastructure providing international, national and metropolitan connectivity consists of submarine cables and terrestrial networks. Terrestrial connections then transfer data to mobile towers, data centres, as well as premises including homes, businesses, government buildings or private .

Digital Infrastructure Connectivity



Sub-sea Cables



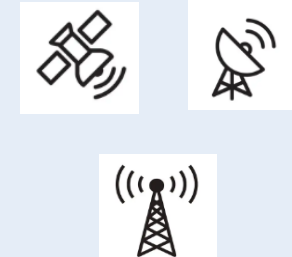
Fibre-Optic Networks



Data Centres,
Premises and Towers



Fixed and mobile connectivity, data centres coupled with cloud services, as well as alternative satellite connectivity are powering personal and commercial connectivity, digital transformation, as well industrial use including IoT, 5G Private Networks



Alternative source of
mobile connectivity
from Satellites

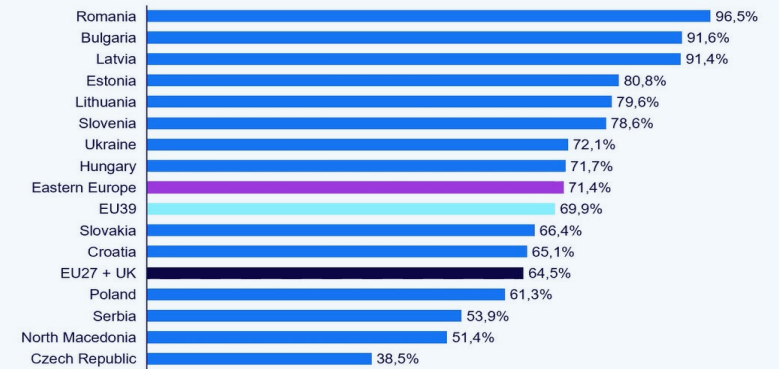


Key TMT Sector Trends | Fibre-isation of fixed connectivity

Fibre-optic network rollouts, offering the high bandwidth capabilities which can meet the demands from rising data use, remain a key strategic priority to attain the benefits of improved connectivity. The EU for example, as part of its 'digital decade' targets, aims for full fibre connectivity for all households by 2030.

Regulatory and competitive technological drivers have led many telecom operators to carve out their networks, a trend which has been supported by the rise of the wholesale network model, which opens infrastructure to interested operators. This has resulted in the rise of a new asset class in the form of fibre companies, attracting new investors such as infrastructure and pension funds, utility companies, as well as private capital, as they join fibre companies either as co-investors with telecom operators in a joint venture, or finance standalone fibre companies.

FTTH/B coverage rates



Source: FTTH Council. Note: Eastern Europe households passed; Eastern Europe average based on the countries shown

FWA

As demand for reliable and fast internet grows, **fixed wireless access (FWA)** has emerged as a way of bridging connectivity gaps, particularly in underserved and rural areas. This technology allows for fixed connectivity to households being delivered over a mobile network. Under certain conditions, 5G FWA can be a cost-effective alternative to fibre last-mile networks, making it an effective tool to address the digital divide in access to high-speed internet connectivity, though this can be accompanied with increases in energy consumption.

Submarine Cables

Submarine cable systems carry over 99% of intercontinental communication traffic, enabling global connectivity. While growing data traffic requires wide and resilient networks, many of the existing systems are reaching the end of their economic and design lives. MDBs have been playing a larger role by offering financing to submarine cable companies, which rely predominantly on project finance structures.

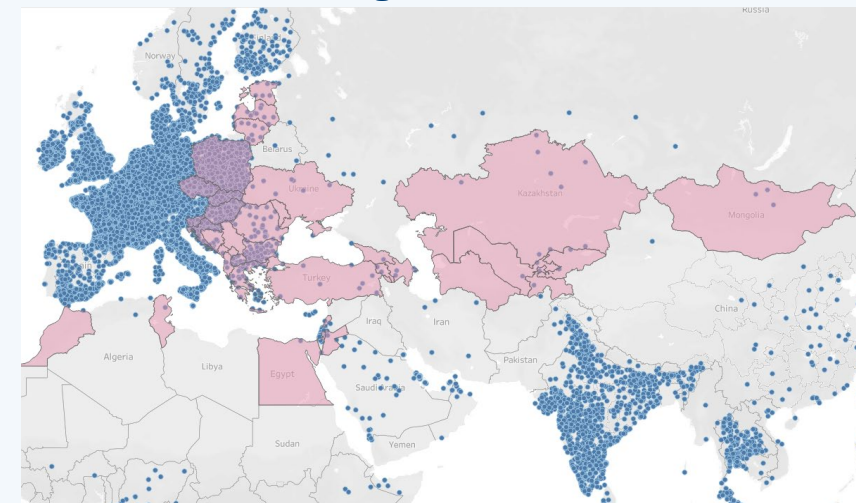
Key TMT Sector Trends | Mobile connectivity – 5G and beyond

The ITU reports that 40% of the global population as of 2024 is covered by 5G networks, while the GSMA predicts that, by 2030, 5G will make up over half of all mobile connections and become the dominant mobile technology. In the absence of a ‘killer application’ however, telecom operators have so far seen limited revenue gains from the expansion of 5G coverage. Another bottleneck has been the uneven process of spectrum allocations, which has impacted the pace of network rollouts. While consumer uptake of 5G is progressing more slowly, the increased speed and reliability of the technology is allowing for progress on advanced connectivity for enterprise use, including Internet of Things (IoT), Edge Computing, and private networks.

TowerCos

The dense networks required for 5G are provided through increased numbers of mobile towers, which facilitate the high-speed connectivity and low latency of 5G. This has led to a surge in demand for new and upgraded towers, accompanied by the rise of tower infrastructure sharing. Many mobile network operators (MNOs) are spinning off their networks to move to more asset-light models. This has led to the rise of TowerCos which have become an asset class increasingly attractive to insurance and pension funds, REITs, and sovereign wealth funds.

5G network coverage in and around EBRD C00s



Source: Ookla.

Space

Mobile connectivity is not limited to terrestrial networks, as there is growing interest in combining satellite and mobile functions in the development of non-terrestrial 5G networks. Decreased launching costs, particularly for low-earth-orbit (LEO) satellites, and increased private sector participation are raising the prospect of moving satellite connectivity from a niche technology to an alternative for areas which are out of reach of cellular base stations, as well as a back-up technology to support critical communications infrastructure.

Private 5G and Edge Computing

Edge computing allows for data to be processed closer to its source, through data centres and computing power sitting on premises rather than in a centralized data centre. This allows for faster processing times and reduced latency, which can be critical for applications that require real-time data processing, particularly in conjunction with private networks. Enterprises are also setting up 5G private networks to benefit from the speed, low-latency, and secure wireless communication they have to offer, with increasing deployment in industrial environments. The networks can either use spectrum already assigned to mobile operators or rely on dedicated spectrum licences issued by governments.



Key TMT Sector Trends | Rising demand for data centres and cloud services

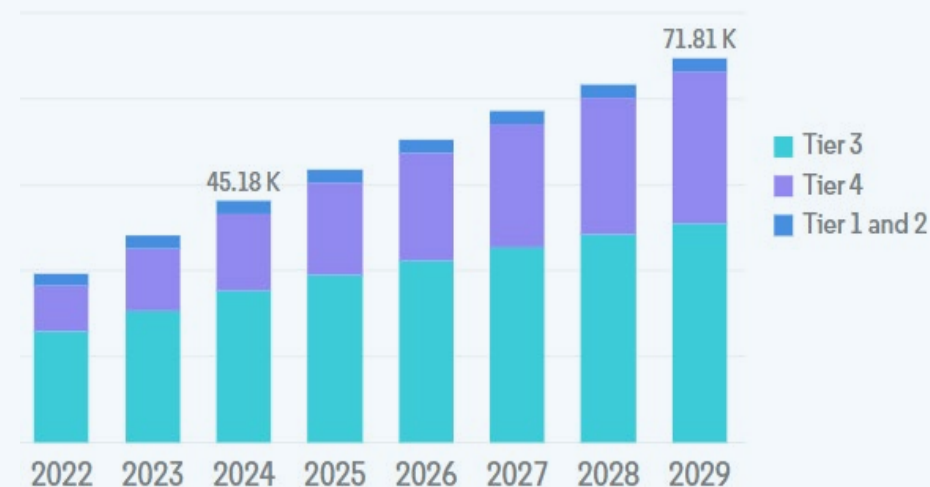
Data Centres act as a repository to store and process data, providing efficient environments for data hosting. The global Data Centre Market size was estimated at EUR 197 billion in 2022 and is projected to reach EUR 373 billion by 2030, growing at a CAGR of 9.6%.

As data centre business models are becoming more complex and flexible, they can cater to different enterprise needs. Cloud technologies are an important enabler allowing the mainstreaming of advanced data storage resources. The growth is primarily driven by the rise of AI, continued growth in cloud computing, advancements in big data analytics as well as 5G roll out. It is also fuelled by regulations around data protection and governance, such as EU GDPR, data sovereignty concerns, and the rise of sovereign cloud solutions, which require localized and compliant data infrastructure.

Cloud computing has transformed data infrastructure by shifting from physical setups to scalable, on-demand services. As enterprises move data to colocation centres and cloud models, it is projected that 35% of data centre infrastructures will be cloud-managed by 2027, up from less than 10% in 2022, which supports big data analytics and AI by scaling computing resources.

Data centres require tremendous amounts of energy to operate as well as large amounts of water, both directly for liquid cooling and indirectly to produce electricity. The rapid deployment of new generation of processors that combine higher computational capacity with lower energy consumption is expected to help achieve greater energy efficiency in data centres.

Volume of Global Data Centre Tier Type (MW)¹



Source: Mordor Intelligence

Government Cloud

Many governments have adopted cloud-first policies, mandating that cloud-based solutions are prioritised when modernizing legacy systems. There is an array of models, such as dedicated clouds (exclusively used for specific government functions) as well as shared clouds (shared with other public entities and/or private companies).

Data Sovereignty

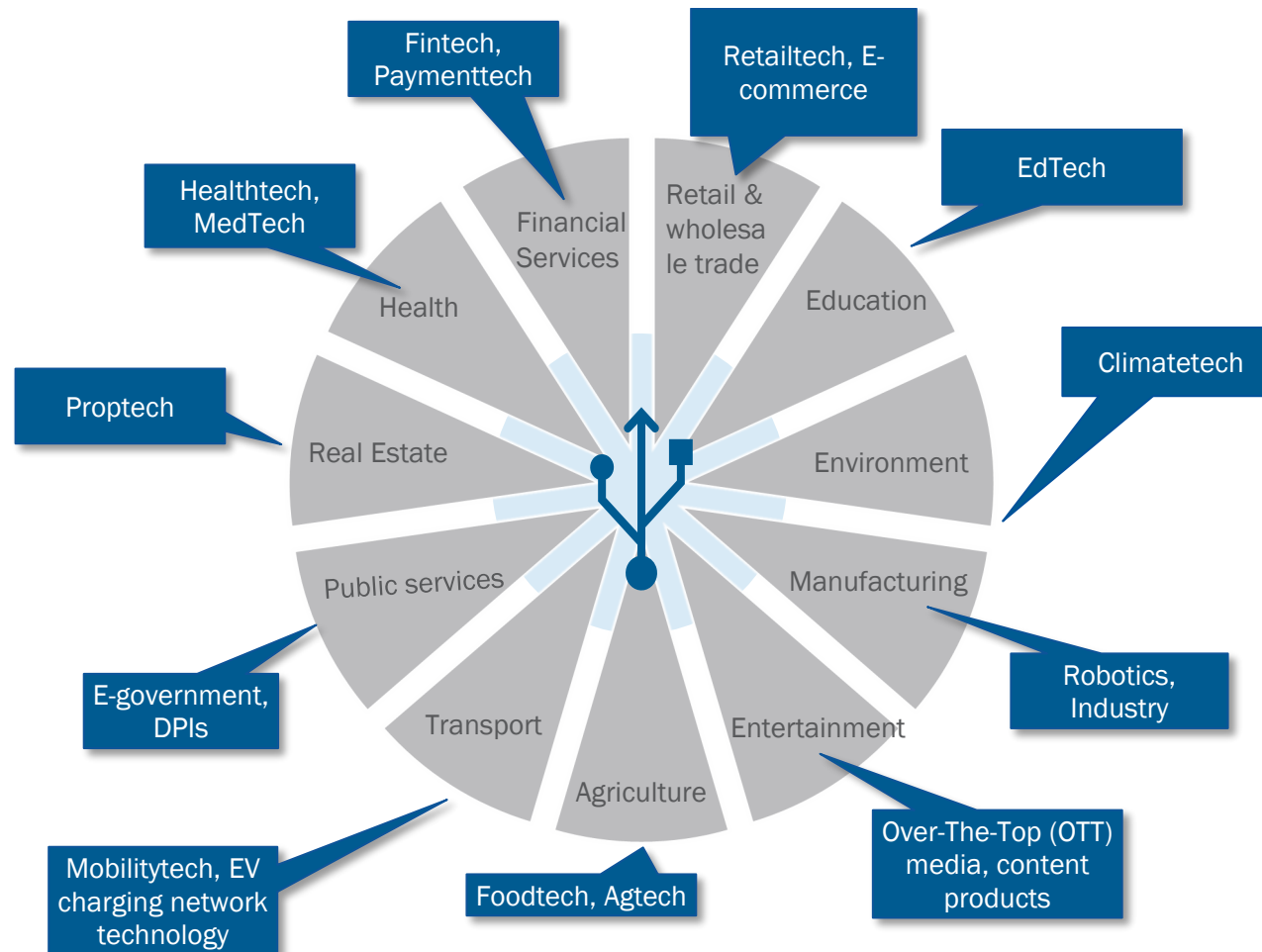
The term “data sovereignty” refers to the idea that data collected or stored in one location should be subject to local laws. The broad concept of data sovereignty is often intertwined with questions of data privacy, government access to data, security, international business competition, and human rights. Some data sovereignty models aim to keep data within its originating jurisdiction. Others seek to make sure that the legal protections guaranteed to data generated in a jurisdiction will follow the data even if it is processed or stored in another jurisdiction. The EU's GDPR is one of many examples: it enforces unified data protection rules, and requires any organisation, regardless of location, to follow these regulations to trade with EU customers.

1. Data Centre Tiers: 1 - Single path for power and cooling, few, if any, redundant and backup components. 2 - Single path for power and cooling, some redundant and backup components. 3 - Multiple paths for power and cooling and systems in place to update and maintain it without taking it offline. 4 - built to be completely fault tolerant, redundancy for every component



Key TMT Sector Trends | Disruptive technologies

Disruptive Tech Segments



Tech and tech-enabled products, services and applications remain at the forefront of innovation, disrupting traditional economic sectors.

Rising financing costs over the past strategy period resulted in a difficult funding environment for tech companies. While the availability of international risk capital for early-stage companies is growing in EBRD CoOs, there is still a significant gap compared to Western Europe. Some countries which were traditionally considered affordable technology outsourcing locations, are successfully growing new Software-as-a-Service (SaaS) businesses. E-Commerce, FinTech, and Enterprise Software are particularly strong tech segments in some of the Bank's regions. Cybersecurity, with increased R&D efforts and new service offerings, had an estimated 2024 market size of ~ EUR 5-8 billion in EBRD regions. Significant growth areas include cloud security, threat intelligence, and security solutions integrated with artificial intelligence and machine learning.

Artificial Intelligence

There is increasing AI adoption and investment activities by many business sectors beyond early adopters in TMT, where its use has improved customer services and network operations, resulting in energy efficiency gains. Financial services companies meanwhile are using AI to improve risk management practices and price optimisation. Other applications, which are expected to be improved as AI is trained further, include improved prediction and optimisation methods in agriculture and industry, better energy systems management, enhanced health technology, as well as improved human capital development through the use of AI in education technologies. While AI governance varies widely across countries, the EU has taken a leading role in AI regulation with the adoption of the **Artificial Intelligence Act** in May 2024, which categorises AI systems based on their risk level: those deemed to pose only limited risk are subject to minimal transparency obligations, while high-risk systems are allowed but must meet strict requirements to enter the EU market.



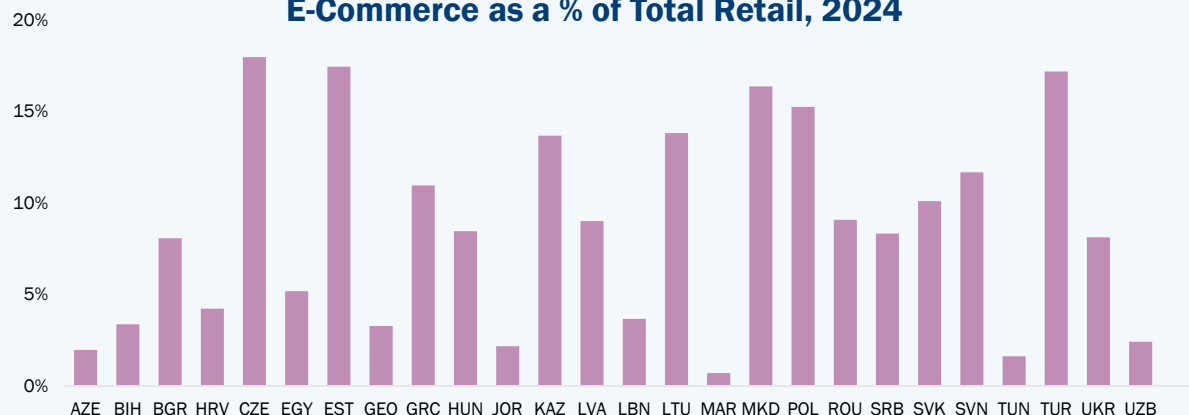
Key TMT Sector Trends | B2C Products, Services and Applications

In the online B2C market, the strength and scale of the digital ecosystem is an important driver determining success. Key sub-segments in the consumer segment which are successfully growing in EBRD Countries of Operations include E-Commerce, EdTech, as well as FinTech and Payments.

While online retail growth in the US and Western Europe has slowed down after the COVID-19 induced peak, it is still expected to grow in emerging economies, including many EBRD CoOs, resulting in increased convergence with advanced e-commerce markets.

Key reasons behind increased e-commerce penetration include the rise of digital payment platforms (such as mobile wallets), consumer finance options such as Buy Now, Pay Later (BNPL) as well as improvements in user experience (UX), product pricing, assortment, and delivery. Mobile apps also act as a consumer loyalty tool, helping to increase purchase frequency and average order value (AOV). E-commerce business models include 1P (First Party), 3P (Third Party), and classifieds (e.g., jobs and property portals).

E-Commerce as a % of Total Retail, 2024



Source: Euromonitor. Note: Some EBRD COOs missing because of lack of data.

FinTech and Payments

Annual revenues in the fintech sector are estimated to reach EUR 1.3 trillion by 2030, growing six times compared to 2023 estimates. 73% of global interactions with banks are already taking place through digital channels. While challenger banks dominate the fintech space in the US and Europe, the fragmentation of financial services, facilitated by open banking regulation, creates opportunities for fintech and payment companies in EBRD CoOs. As many EBRD economies are cash-based with significant unbanked populations, fintech offers the possibility to leapfrog directly to mobile money solutions. Open banking meanwhile allows customers to take more control of their data while decreasing friction in the payment experience. This has also led to the rise of Banking as a Service (BaaS), which is the provision of banking infrastructure, products and services to non-banking businesses, allowing for online retailers to increase payment options for their customers. This increased collaboration between financial and non-financial institutions is a contributing factor to the development of the fintech ecosystem.

Education and Training Technologies

With more than one billion jobs estimated to undergo changes due to technological advancements until 2030 (OECD), education and training will continue to see innovative approaches to address issues such as re- and upskilling, remote learning, on-the-job training and more. EdTech can provide more accessible and flexible learning solutions, with the use of AI in education potentially having a large impact, as it can, for example, provide support to learners online. Advancements can also address mental health support or improved assessments of the outcome of educational efforts.

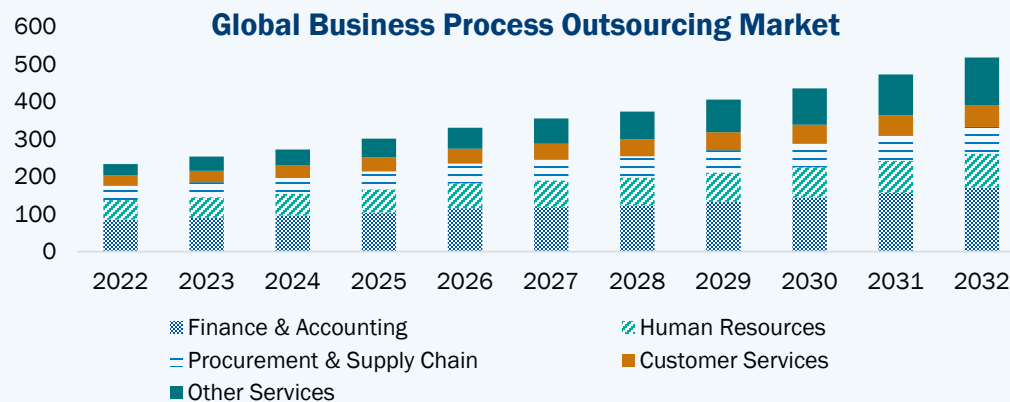


Key TMT Sector Trends | B2B IT Services and Business Process Outsourcing (BPO)

BPO is a growing sector in EBRD CoOs, which provides opportunities for local firms to expand internationally while accelerating digital transformation across all sectors. In BPO, business processes such as accounting, human resources, marketing, design and other segments are outsourced to a third-party. Traditionally considered a cost-saving exercise, BPO services can facilitate access to digitised processes, allowing clients to benefit from technological advancements in their operations, including AI and Data Analytics.

The global software and BPO services market reached EUR 1.8 trillion in 2023, making it the largest segment within the IT services market. Key drivers of growth include rising corporate profits, which boosted outsourcing of non-core activities, and growing affordable talent in emerging markets such as India and China. The retail and e-commerce sectors also contributed by increasing demand for back-office services.

The global software and BPO services market reached EUR 1.8 trillion in 2023, making it the largest segment within the IT services market. Key drivers of growth include rising corporate profits, which boosted outsourcing of non-core activities, and growing affordable talent in emerging markets such as India and China. The retail and e-commerce sectors also contributed by increasing demand for back-office services.



Source: Market.us. Note: Size, by service type, 2022-2032 (EUR billion)

Some of the key trends in the IT services market include the growing adoption of cloud-based solutions, with Software-as-a-Service (SaaS) leading the way in reducing IT costs, while improving flexibility and scalability.

IT services involve the use of business and technical expertise to help organizations create, manage, and optimize their information and business processes. They include various segments such as hardware support, software, BPO, and cloud services. AI is being integrated into IT support through virtual agents, VR-based customer service, and automated solutions, which are transforming customer support and improving efficiency. Additionally, companies are increasingly offering software through subscription models, helping small to medium-sized businesses lower their IT expenses.

Digital Public Infrastructure

Investments in Digital Public Infrastructure (DPI) have emerged as a crucial way to realise the gains of digital transformation. DPI refers to interoperable digital systems that support a wide range of societal services, such as e-commerce, social protection, remote education, and telehealth. It includes platforms for digital identification, payments, and data sharing. The "public" aspect highlights its role in serving the common good, often through government ownership. The private sector has a key role to play in the development of DPI including by designing and implementing use cases and services, driving innovation, operating DPI systems, and participating in public-private partnerships to achieve scale.



3. TMT Sector Context: Challenges

Key TMT Sector Challenges | **An Overview**

Environmental Aspects

Digital Divides

Cybersecurity and High-Risk Vendors

State-Owned Enterprises and Regulatory Challenges

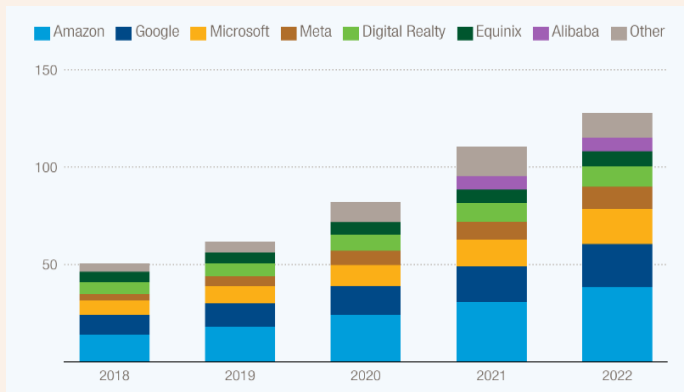
Key TMT Sector Challenges | Environmental footprint of the TMT sector

Growing data traffic is driving significant increases in energy use and GHG emissions, with the TMT sector responsible for 1.5-4% of global carbon emissions according to the ITU. In 2022, data centres consumed 460 TWh of electricity, which could double by 2026. Despite efficiency improvements, growing demands from AI and blockchain are pushing up overall energy use, especially in mobile networks, which saw a 25% increase.

The sources of energy and GHG emissions vary greatly when considering the entire life cycle of the sector. While for data transmission networks and data centres the bulk of GHG emissions stems from the use phase, for user devices the majority of GHG emissions are generated during their manufacturing phase due to raw material extraction and processing, manufacturing and distribution.

Electricity use by 13 of the world's largest data centre operators more than doubled between 2018 and 2022

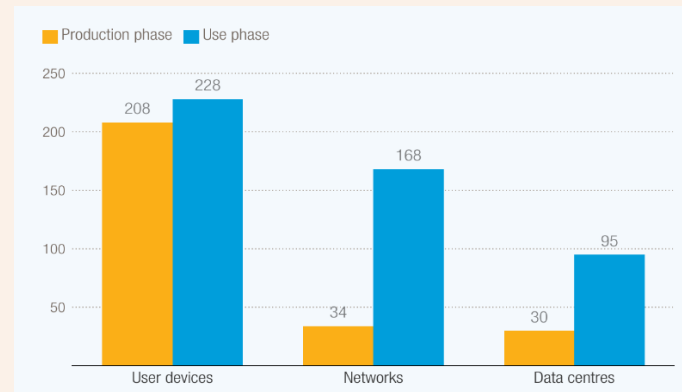
Annual electricity consumption by selected data centre operators, terawatt hours, 2018-2022



Source: UN Trade and Development (UNCTAD), based on company reports

Higher CO2 emissions from use phase across TMT infrastructure

Life-cycle greenhouse gas emissions, by inform and communications technology infrastructure type, megatons of CO2 equivalent emissions, 2020



Source: UN Trade and Development (UNCTAD), based on Malmodin et al. (2024)

Other Environmental Challenges in the TMT Sector

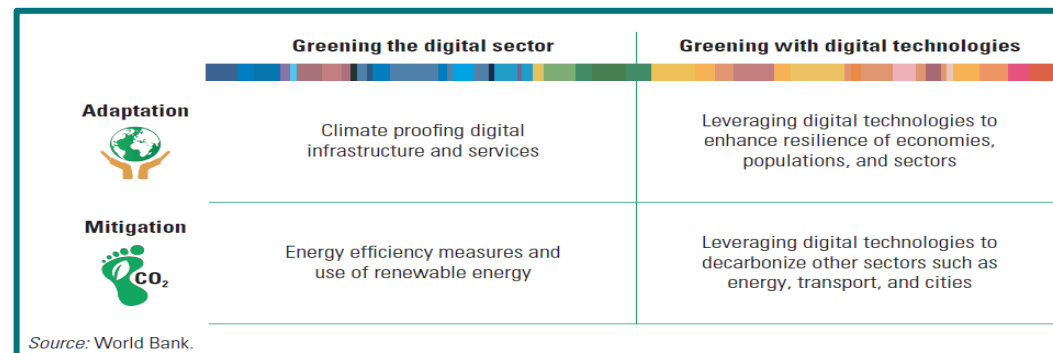
- **Water Use:** Data centres use large amounts of water for cooling, a major issue particularly in regions facing water stress, exacerbated by the growing demand for digital technologies. Contamination from electronic components during disposal can further harm water resources.
- **E-Waste Growth:** The volume of waste from screens, monitors and small IT and telecommunications equipment increased by 30% between 2010 and 2022, driven by short device lifespans, obsolescence, and limited recycling options. According to UNCTAD, e-waste amounts are projected to further increase from 62 million tons in 2022 to 82 million tons in 2030.
- **Biodiversity & Mining:** Mining for digital technologies generates toxic chemicals which can cause soil and water pollution. Mining activities can also lead to deforestation, with computers and electronic products driving 5% of all deforestation worldwide related to mine expansion. At the same time, the deployment of digital infrastructures such as subsea cables could have an adverse impact on biodiversity by affecting seabed marine life.

Key TMT Sector Challenges | Accelerating the TMT sector's decarbonisation

While causing higher emissions and energy use, the TMT sector is also part of the solution to tackle climate change by acting as a key enabler of de-carbonisation in other industries and by accelerating its own decarbonisation. The European Commission is committed to ensuring that the green and digital transitions are interdependent and mutually reinforcing ("twin transition"). In the European Green Deal and the EU Digital Compass, digital technology plays a key role in forming virtuous synergies across sectors.

Several disruptive technologies applied to the TMT sector have important potential for reducing the sector's environmental footprint. Thanks to new technological developments, transmission networks are becoming increasingly 'smarter' and more energy efficient: fixed-line networks are halving energy use every two years and mobile networks are improving efficiency by 10-30% annually. Switching from copper to fibre-optic cables improves energy efficiency by as much as 85% according to certain studies. Deploying Open RAN (O-RAN) can also enable energy savings by 9-12% while deploying AI tools can further reduce RAN power consumption by 5-7%.

The Green x Digital nexus

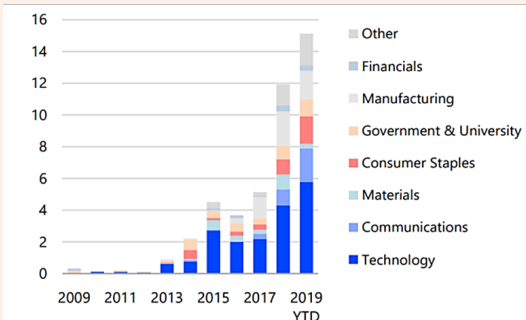


The TMT sector has emerged as the biggest purchaser of renewable energy in the world, accounting for 60% of renewable power purchases in 2021. 6 of the top 10 corporate purchasers of renewable energy in 2022 were tech companies and many are exploring small-modular reactors as a reliable source of power. Meanwhile, Energy Service Companies (ESCOs) are increasingly used in the TMT Sector, particularly in sub-Saharan Africa.

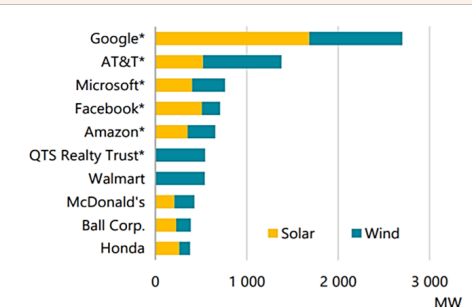
Top Data Centre operators are increasingly using renewable energy

The rapid deployment of new generation of processors that combine higher computational capacity with lower energy consumption will help manage energy efficiency in data centres more efficiently. Google, for example, has reported 30% energy savings using AI in its data centres. Research by the GSMA also found that 35% of telecoms network professionals expect AI optimisation to be the most effective way of improving energy efficiency in their data centre.

Global PPA volumes, by sector (GW)



Top corporate off-takers, 2019 (MW)



Notes: * denotes ICT company, 2019 data as of November 2019.
Source: BloombergNEF (2019), Corporate PPA Deal Tracker November 2019.



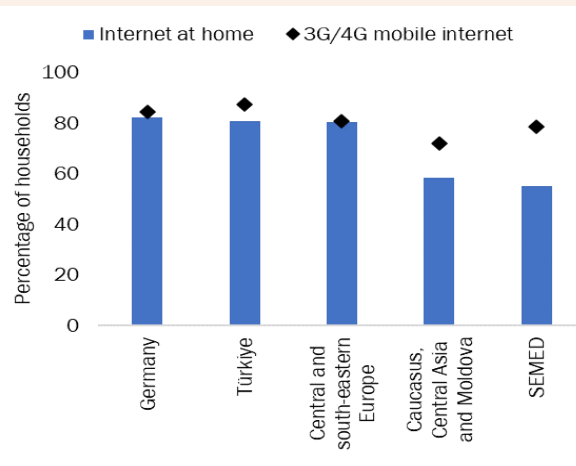
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Key TMT Sector Challenges | Digital Divides – Access Gaps

Gaps in fibre-optic broadband network coverage occur both nationally, resulting in an urban-rural divide, as well as internationally, with a divide between countries. While expanding infrastructure to underserved areas remains a key strategic goal for many governments, supported by subsidised incentive mechanisms, a changing digital infrastructure financing landscape requires adjustments to ensure digital divides are not further exacerbated.

As the provision of broadband internet is often expensive in sparsely populated and isolated areas, private providers may not enter these markets or charge high fees for access, resulting in underserved areas and groups without access to affordable high-speed internet. Divides in access to fixed networks are particularly stark when comparing capital cities with the rest of the country, with large gaps seen in Central Asia given the large geographic areas and low population density. With technology companies at the forefront of data growth, there is a risk of poorer countries and regions being further left behind if they are not considered a ‘target market’ to justify expanding and upgrading connectivity networks. While the economic and social benefits of increased digital infrastructure networks are recognised, it requires well-designed interventions to address market failures and the resulting financing gaps.

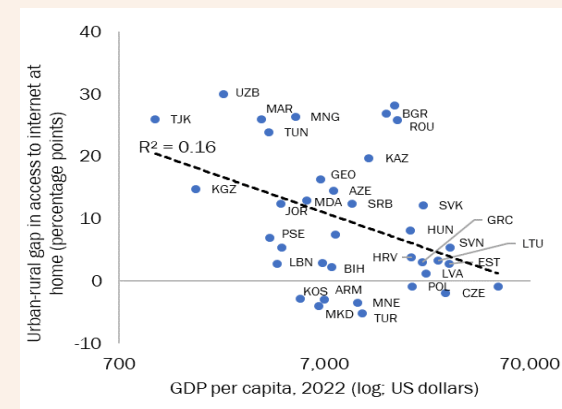
As with access to fixed broadband, access to mobile connectivity is significantly higher in urban areas than in rural areas, which have higher rates of mobile connectivity over fixed. Ensuring that online services provided by businesses and governments can be accessed effectively using mobile phones (rather than computers) with the help of apps and appropriate designs can help to make those services accessible to a wider audience. It also remains important that online products and services are optimised for mobile phones to reach more underserved groups.



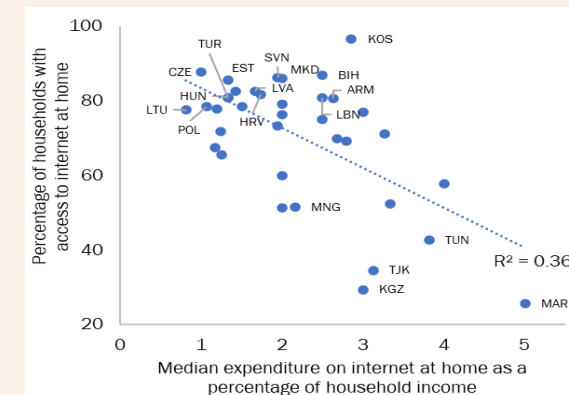
Source: Life in Transition IV Survey: Households in a turbulent world

Source: Life in Transition IV Survey: Households in a turbulent world.

Urban-rural gaps in access to internet at home tend to be larger in poorer economies



Access to internet at home is less common where it is more expensive relative to income¹



Source: Life in Transition IV Survey: Households in a turbulent world

1. "Access to the internet at home" reflects the wording of the LiTS IV survey. Respondents were asked: "Do you have access to internet at home, excluding through smartphone/3G/4G?" Consequently, "access to the internet at home" includes fixed-line access (via broadband, fibre, dial-up modems and so on) and satellite-based access, for example, but excludes access via 3G/4G mobile networks.



Key TMT Sector Challenges | Digital Divides – Gender Gaps

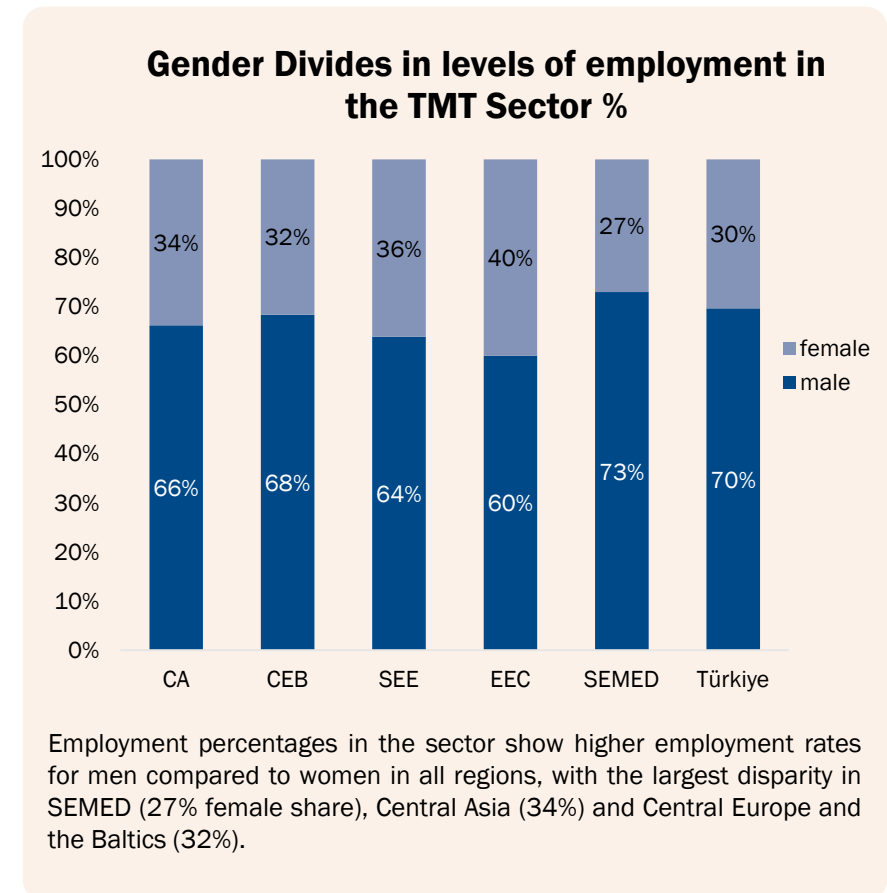
Women are less likely than men to use digital services. Globally, men are 21% more likely to access the internet than women, with this disparity rising to 52% in least developed countries. Women are globally 17% less likely to use smartphones than men and 16% less likely to use mobile internet. SSA has one of the widest mobile gender gaps in the world where over 74 million women are not connected. Key challenges include social norms and cultural beliefs typically assigning domestic and caregiving roles to women whereas technology, and the wider online world, are seen as male preserves. Women are also more likely to face economic constraints, limiting their ability to afford internet subscriptions - even in families with internet access, devices may be prioritized for men or boys in the household.

Women encounter significant gaps in digital literacy. The share of women with basic and advanced digital skills remains low compared to men. In SEMED, the share of women with basic digital skills is just 43% (vs. 55% for men). Advanced digital skills show even more pronounced gaps, with women being two to three times less likely to have proficiency in them. This translates into significant disparities in the labour force (see chart), particularly in most advanced technology fields - a recent study shows that women make up only 22% of AI talent globally, with even lower representation at senior levels – occupying less than 14% of senior executive roles in AI.

Gender gaps in digital skills are linked to unequal access to education and training programs, especially in technology fields where women remain underrepresented. Female graduates in STEM represent just 30% in Central Asia and SEE, and 42% in SEMED. Similar unbalances are visible amongst ICT graduates where the share of women is just 19% in CEB and 29% in EEC.

Addressing these challenges will require concrete action from key market players and institutional partners to foster women engagement in the TMT sector, including through improved access to digital skills development and career progression opportunities. With 85% of jobs in 2030 projected to emerge from new technologies, closing the gender digital divide will be essential to ensure that women can access and benefit from the significant economic potential of the digital economy.

Sources: WEF, WB, ITU





Key TMT Sector Challenges | Digital Divides – Skills Gaps

Digital skills are increasingly important for access to government services, online learning, health services, financial inclusion and other benefits provided by the digital economy. Insufficient digital skills are also a constraint holding back digitalisation, as low levels can hinder access to stable, better-paying jobs and limit the use of digital technologies.

The share of individuals with ICT skills at all levels remains low across all EBRD regions, with CEB recording the highest share for basic and intermediate digital skills, and CA and SEMED displaying the lowest shares. Many economies in the EBRD regions are also experiencing significant “brain drain,” with people with strong digital skills moving abroad. The resulting low levels of digital skills hold back people’s use of digital technologies, even where relevant digital infrastructure and services are available.

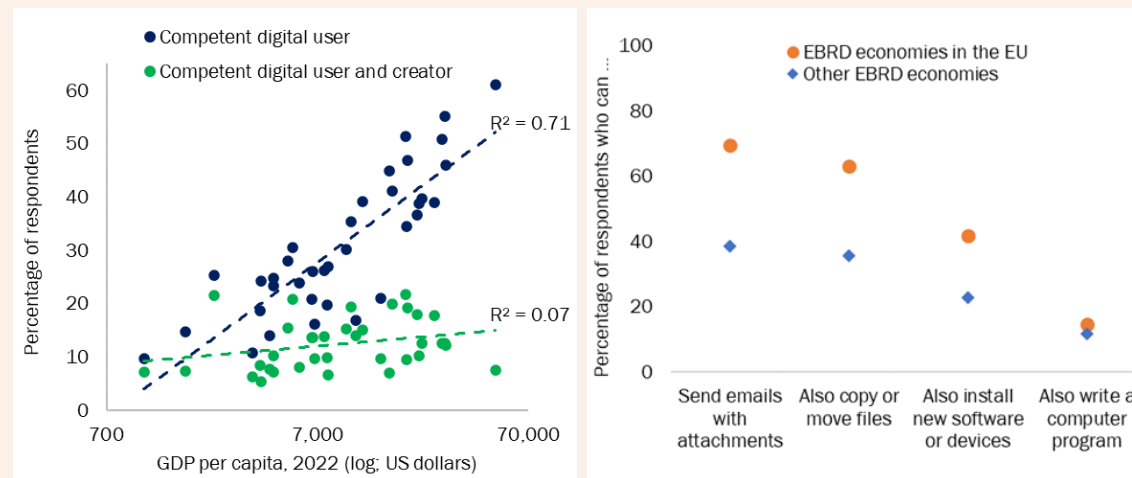
ICT skills are directly correlated with activities that set up or involve monetary transactions: Internet banking, online purchases and research about goods and services. According to the OECD, uptake of activities such as video calling or streaming/downloading content seems to be uncorrelated with formal education or ICT skills, while it matters in interactions with government online services.

Jobs that require digital skills further carry an estimated wage premium of 12 to 33 per cent relative to jobs with no digital skill requirements. Rapid growth in advanced technologies including data analysis, IoT, 5G, and cybersecurity further requires skillsets to allow for the growth of digital products and services. There is also a risk that AI will exacerbate the gap in digital skills between countries. This is because richer countries with higher labour costs and smaller pools of working-age labour have a larger incentive to implement AI and robotics.

Source: Life in Transition IV Survey: Households in a turbulent world.

Competency of digital users according to EBRD’s Life in Transition IV Survey

In EBRD economies in the EU, the distribution of digital skills primarily reflects a generational divide. Among younger cohorts, nearly everyone makes payments online, and uptake of e-government services is strong. In other EBRD economies, however, only around 40 per cent of respondents below the age of 30 report being able to send emails with attachments, copy files and install software. Thus, generational change may not, on its own, be sufficient to deliver near-universal digital literacy in the foreseeable future in those economies. In particular, female respondents and those living in rural areas tend to have weaker digital skills.



Source: Life in Transition IV Survey: Households in a turbulent world. Note: A “competent digital user” is a respondent who is able to (i) send emails with attachments, (ii) copy or move files and (iii) install software. A “competent digital user and creator” is, in addition to those three things, also able to write a computer program.

Key TMT Sector Challenges | Cybersecurity, High-Risk Vendors

The increased interconnectedness of the global economy, the high rate of digital transformation, and the rise of AI and technological advances increase cybersecurity risks. These are present for individuals, businesses, and governments given the exposure of critical infrastructure to cyberattacks.

Cyber-security threats to national critical infrastructure are becoming an increasing focus of government. Concerns range from the ownership of these infrastructure assets through the governance of their operation to technical measures. An example of how governments deal with such threats is the advent of the Network and Information 2 (NIS2) Directive and the Digital Operational Resilience Act (DORA) in the EU. DORA imposes stricter measures on technology providers supplying financial institutions, while NIS2 broadens the scope to include more entities, such as data centres and cloud providers. Critical National Infrastructure owners and operators must implement technical, operational, and organisational measures to ensure supply chain security. The EU Directive on the Resilience of Critical Entities, which covers Digital Infrastructure, requires member states to use a risk-based approach to designate critical entities, adopt a national strategy and carry out regular risk assessments, particularly as a very high share of critical digital infrastructure is in private sector ownership. The risk profile of such owners is critical since they are accountable for the implementation of the directive. The EU also introduced the Digital Services Act (DSA) and the Digital Markets Act (DMA), applicable from 2024 with the objective of creating a safer digital space and establishing a level-playing field. The DSA focuses on content moderation and illegal content, whereas the DMA introduces the role of gatekeepers with greater obligations and ways to prevent abuse of power. AI, and the associated training of models on large sets of data, has increased the risks stemming from data leaks, increased algorithm complexity, as well as phishing and deepfakes.

High Risk Vendors

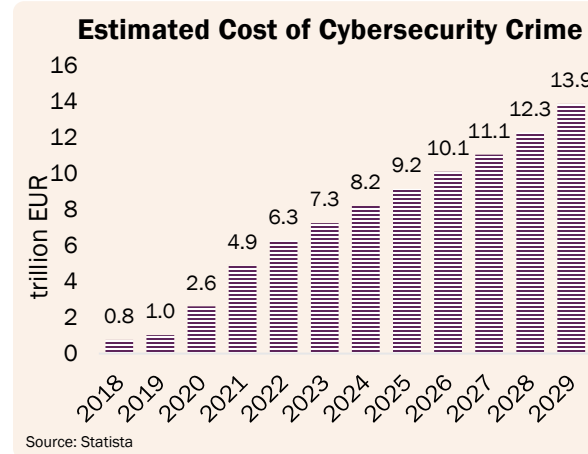
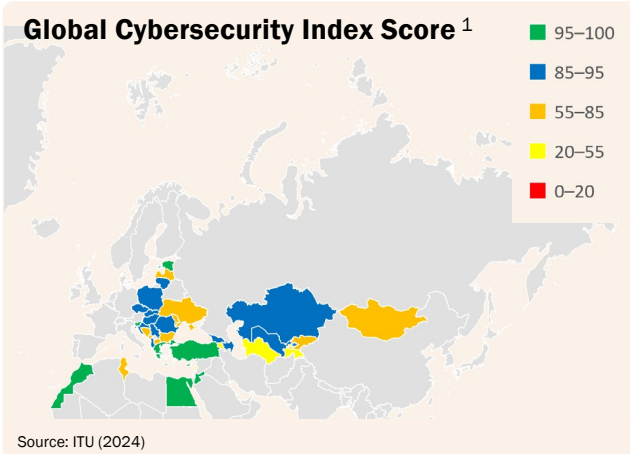
High Risk Vendors (HRVs) are suppliers who are susceptible to being influenced, or required, by a third-party government to act against the national interest of countries where the equipment is installed and in use.

The main risks associated with HRVs are:

- **Back Door Threat:** leakage of sensitive data
- **Sabotage Threat:** remote disabling of equipment
- **Supply & Maintenance Risk:** vendors / countries sanctioned or export prohibitions

G7 and other countries **have limited or restricted** the presence of companies deemed to be high-risk vendors in their 5G telecommunication infrastructure. This trend is expected to continue with some countries having implemented strict restrictions, while others have less restrictive approaches.

The EU developed a 5G Toolbox for cybersecurity which member states should use to strengthen the security of telecommunications infrastructure within the EU. The toolbox is a policy instrument listing a set of measures at government and operator level according to a unified risk assessment.



1. Tier 1 (T1) – Role-Modelling: Countries scoring 95+/100 with strong, coordinated government-driven cybersecurity actions across all five pillars or most indicators defined by ITU. Tier 2 (T2) – Advancing: Scoring 85+/100 with similar actions across four pillars or many indicators. Tier 3 (T3) – Establishing: Scoring 55+/100 with basic cybersecurity actions across a moderate number of pillars or indicators. Tier 4 (T4) – Evolving: Scoring 20+/100 with basic actions in at least one pillar or several indicators. Tier 5 (T5) – Building: Below 20/100 with basic actions in at least one indicator.

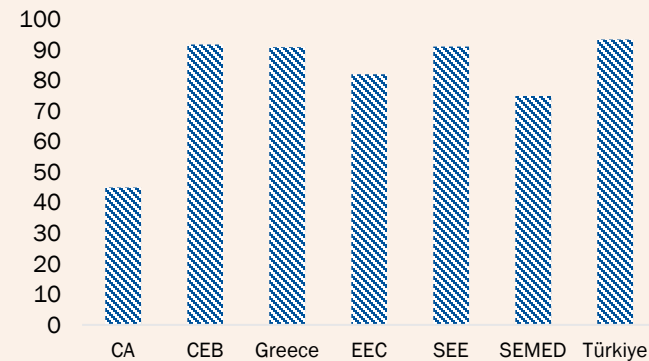
Key TMT Sector Challenges | State-Owned Enterprises and Regulatory Challenges

SOEs and national incumbent operators continue to play a dominant role in several EBRD COOs in the telecommunications and media sectors. This can be caused by inadequate and weak regulatory frameworks, which lack key features such as independent regulators and easier market (or sub-market) entry, as well as fair and effective access to existing digital infrastructure. These deficiencies lead to market distortions, underinvestment, and insufficient infrastructure development, impeding sectoral growth and innovation. Comprehensive reforms are required to foster competition, improve regulatory oversight, and ensure adequate infrastructure investment to meet evolving demand and technological advancement.

In many EBRD COOs, the historic infrastructure advantage of national incumbents continues to translate into dominance in downstream markets. This entrenched position, often supported by legacy assets and preferential access to critical infrastructure, limits the entry and expansion of competitors. Without the introduction of more competitive market conditions and regulatory reforms, incumbents are likely to maintain their market power, hindering investment and innovation. Regulatory challenges such as poorly structured communications regulation, restrictive spectrum licensing, and foreign ownership restrictions, further exacerbate the lack of competition in the sector. Additionally, insufficient investment in critical infrastructure, such as Internet Exchange Points (IXPs) and government data centres, as well as over taxation of digital services and devices hampers the development of a more robust digital ecosystem. Regulatory measures such as unbundling, duct access, interconnection fees, number portability, and infrastructure sharing, along with regulatory capacity and enforcement, are critical factors for ensuring a fairer market for the benefit of households and businesses.

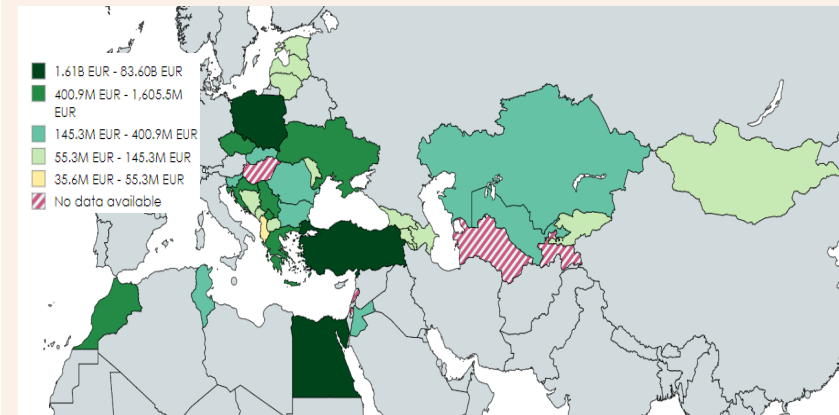
The ITU's Regulatory Score measures the regulatory environment based on the functioning of the regulator, the targets and reach of regulations, as well as the level of competition in the main market segments. A low score is often associated with higher pricing of telecommunications services as regulations supporting competition are either not implemented or not enforced.

ICT Regulatory Score



Source: ITU (2022)

Annual investment in telecommunication services¹



Source: ITU (2022)

1. Annual investment in telecommunication services refers to the investment during the financial year made by entities providing telecommunication networks and/or services (including fixed, mobile and Internet services, as well as the transmission of TV signals) for acquiring or upgrading fixed assets (usually referred to as CAPEX), less disinvestment owing to disposals of fixed assets.



Key TMT Sector Challenges | Transition Challenges



Well-Governed

Enhancing corporate and economic governance of SOEs, including via cybersecurity measures, and accelerating their commercialisation and remains crucial. Improving the governance of regulatory and policymaking institutions responsible for the sector fosters their ability to engage in reasoned, evidence based, transparent decision-making. Digital solutions can also improve transparency and efficiency in processes.



Competitive

Private sector participation in fixed networks is limited in many EBRD CoOs, requiring regulatory improvements, competitive safeguards and addressing issues of competitive neutrality and pricing. Innovation systems are also weak, needing stronger institutions, infrastructure, and skill investments to support start-ups and SMEs in the TMT sector.



Resilient

Access to finance is limited in many CoOs, worsened by weak local capital markets with few major corporate bond issuances and IPOs in local currencies. Additionally, increasing the reliability of internet connections as well as the cybersecurity resilience remains crucial across the EBRD region to ensure consistent access to vital communication, information, and services during crises.



Inclusive

Universal access to TMT services is crucial to unlock economic opportunities and reduce social exclusion across the EBRD region. Key challenges include low female workforce participation in the sector, rural-urban digital divides, affordability constraints and disparities in digital skills. Addressing these challenges requires ensuring equitable access to digital infrastructure and training opportunities on digital skills, promoting gender equality in TMT fields.



Integrated

Further enhancing international connectivity within the TMT sector is crucial for leveraging its positive impact on the economy and fostering regional economic integration. This includes improving infrastructure to support cross-border digital networks and export opportunities for Business Process Outsourcing (BPO) providers.



Green

The TMT sector plays a pivotal role in global energy consumption and emissions, with ICT alone responsible for 2%–4% of global carbon emissions and up to 7% of global electricity use. While overall demand is expected to grow, key innovations, particularly in IoT, 5G, AI, and big-data analytics have a critical role to play in promoting energy efficiency and decarbonising the TMT and other sectors.



4. Strategic Directions

TMT 2025 – 2029 Strategic Direction | More inclusive, resilient and green digital infrastructures, enabling a robust and innovative tech ecosystem



Digital Infrastructure

Invest in inclusive, resilient, and green digital infrastructure serving as the foundation for digital transformation



Technologies, Digital Services and Applications

Invest in technologies enabling the digital economy and facilitating innovation and adaptation

Financing

Debt: Loans and Bonds (incl. Sustainability-Linked and Green Financing, Supply-Chain Financing, Schuldschein, and Venture Debt among other debt products)

Equity: Private and Public Equity, Venture Capital, Mezzanine and Structured Investments

Blended Finance: Guarantees, Risk-Sharing Frameworks

Technical Assistance and Advisory

Energy efficiency, Digital Skills, Digital transformation support (including AI), Cybersecurity, Project Preparation

Policy Engagement

SOE governance, Competitiveness and Sector reform, Cybersecurity, Legal and Regulatory Frameworks

TMT 2025 – 2029 Strategic Direction I | **Inclusive, resilient, and green digital infrastructure**



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Our Objectives

- Invest in the roll-out and upgrade of digital infrastructure, ensuring alignment with the Bank's cybersecurity approach
- Narrow the digital divide through expansion of networks in underserved regions and support digital skills initiatives
- Support the 'twin transition' by financing energy efficient digital infrastructure and renewable energy diversification efforts

Our Engagements

Data Centres



Towers



Fibre Broadband



Satellite



Subsea Cables



Telecom Energy Service Companies



- Expansion and upgrade of fixed and mobile networks, data centres
- Public and private sector lending for rural fibre broadband rollout
- Pre-privatisation, commercialisation
- Policy engagement on competition, sector governance and cybersecurity
- Asset disposals, mergers and acquisitions

Competitive

Green

Inclusion

Integrated

Resilient

Well-governed



TMT 2025 – 2029 Strategic Direction II | Invest in technologies enabling the digital economy and facilitating innovation and adaptation

Our Objectives

- Catalyse digital entrepreneurship and a robust innovation ecosystem by financing digitally native companies offering technology enabled products, applications and services, including tech-enabled cross-cutting novel and disruptive technologies
- Invest in the provision of products and services via digital channels, including e-commerce and retail providers, as well as digital content, covering AdTech, media and entertainment
- Accelerate the digitalisation of companies in our CoOs by backing IT Services and Business Process Outsourcing providers which leverage the latest technologies to provide energy and cost-efficient services to their clients and facilitate digital transformation

Our Engagements

Digital Products and Services



Disruptive Tech



InfraTech



Business Process Outsourcing



IT Services



- Technology enabled products and services
- Novel and disruptive technologies / digital solutions
- Enterprise software and Cybersecurity
- AdTech, media, content providers

- Expansion, working capital
- Mergers and Acquisitions
- Growth Equity, IPOs
- Co-financing, risk-sharing instruments

Competitive

Green

Inclusion

Integrated

Resilient



Managing the cybersecurity risks in EBRD Projects

In line with its cybersecurity approach, the EBRD applies a risk-based framework to its investments in critical ICT infrastructure, with the level of risk assessed at the beginning determining the scope of the required due diligence. The Bank encourages the diversification of suppliers in its projects wherever possible and works with clients to develop cybersecurity plans. These aim at increasing their resilience, including the security of their supply chain, and mitigate risks associated with suppliers deemed to be high-risk vendors (“HRVs”).

Policy Engagement

EBRD will be engaging in policy dialogue to build regulator capacities which promote sector resilience to cyber threats. In addition to the Bank’s cybersecurity due diligence and approach to HRVs, policy engagement may include support for legal reforms, building technical and human capacity as well as raising awareness of key supply chain risks (including HRVs). Engagement with regulators will help enhance the overall resilience of digital infrastructure, catalysing digital based growth. Supporting regulators in mitigating strategic supply chain risks will further promote the sector’s interoperability with advanced markets and increase international investor trust.

TMT 2025 – 2029 Strategic Directions | Policy Engagement



SOE Transformation

Support commercialisation of and promote sound economic governance in SOEs. Key instruments such as Corporate Development Plans (CDPs) and Corporate Governance Action Plans (CGAPs) are designed to enhance the operational efficiency and governance of state-owned clients including on cybersecurity. Successful SOE transformation catalyse broader sectoral improvements, particularly in sectors where dominant SOEs impede overall market dynamism.



Private sector development and competitiveness

Provide policy advice and capacity building to drive sector-wide reform and enhance the effectiveness of key regulatory authorities to promote competitive TMT markets. Such interventions leverage investments to achieve systemic impact in markets stunted by distortive state measures, unfair competitive practices, and/or prohibitive entry barriers.



5. Delivery



Delivery | Links to EU Digital Transformation Priorities and Funds

The EBRD is a key member of Team Europe, and an implementing partner of several EU funding programmes. The TMT strategy further aligns with several EU initiatives, including Global Gateway, Digital Decade 2030 and the European Green Deal.

EBRD as an implementation partner to EU funding programmes

Neighbourhood, Development and International Cooperation Instrument (NDICI)

- **The European Fund for Sustainable Development Plus (EFSD+)** is the key financing tool of Global Gateway, aiming to mobilise up to EUR 135bn of public and private financing outside of Europe via a risk-sharing instruments. EBRD is a key implementing partner of the EFSD/EFSD+ having contracted a total of EUR 580m in guarantees to date, of which EUR 35m allocated to the digital sector. As of 2024, an additional guarantee allocation for this sector is also under negotiations under the EFSD+ as well as under the UIF.
- **The Neighbourhood Investment Platform (NIP)** combining EU grant resources with loans from IFIs, including EBRD supports projects in several sectors, such as the green transition and digital transformation in the Neighbourhood region.

NextGeneration EU ("NGEU") programme

- **InvestEU** is the European Commission's key programme supporting primarily private investments in EU Member States from 2022 until 2027. Under the programme, EBRD will deploy unfunded guarantees of up to EUR 450m, supported by EUR 38.6m of technical assistance funds. These funds are expected to be leveraged to finance investments of up to EUR 2.1bn in eligible sectors, including EUR 35m under the Digital Transformation PIP.
- **Recovery and Resilience Facility (RRF)**, the centrepiece of the new NextGeneration EU ("NGEU") programme, supports EU Member States following the COVID-19 pandemic with grants and concessional loans until 2027.

Instrument for Pre-accession Assistance (IPA) III and bilateral donors

- **Western Balkans Investment Framework (WBIF):** Since its inception, 60 flagship projects under the WBIF have been actively implemented, with over EUR 9bn invested since 2020. In 2024, the new Reform and Growth Facility entered into force to boost the region's socio-economic convergence with the EU and to increase the pace of accession. In 2017, Digital Infrastructure was incorporated as a standalone sector of the WBIF under the Digital Future Flagship, and an EUR 562m of estimated investment was mobilised via EUR 53m grants. The EBRD and EIB co-manage the European Western Balkans Joint Fund (EWBJF) a multi-donor fund under the WBIF and the key instrument for pooling of grants and loans within the WBIF.



Strategic alignment

The EBRD shares the values and objectives of the **EU Global Gateway**. The Bank has been actively engaged in its implementation from the outset, given its strong synergies with the EBRD's strategic priorities, with particular relevance of digital connectivity in the context of TMT. EBRD's policy engagement identifies impediments to investments in digital infrastructure, while its investments aim to bridge the digital divide and improve connectivity, and contributing to annual flagship projects of Global Gateway.



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Delivery | TMT and the EBRD Digital Approach

EBRD's Digital Approach recognises the catalytic role of digital technologies to achieve transition progress within CoOs. TMT works in close collaboration with the Digital Hub, which is mainstreaming digital across EBRD operations in all sectors and is a key unit providing cybersecurity support in investments and policy engagements.

Digital Approach - Areas of Focus

Foundation



Building the foundations of a digital economy through digital infrastructure and enabling regulatory environments

Adaptation



Promoting the digital transformation of businesses, large or small, to enhance productivity, inclusivity and sustainability

Innovation



Spurring digital innovation by supporting start-ups, accelerators and regulation to foster innovation.

TMT Alignment with Digital Approach

Foundation

The *Foundation* focus is provided by TMT investments in digital infrastructure, along with the associated policy engagements and technical assistance programmes.

Innovation

TMT as the key tech investment team supports innovative companies through delivery tools across the Bank's capital structure, investing in digitally native companies offering technology enabled products, applications, and services. *Adaptation* of companies in EBRD CoOs is facilitated through innovative BPO and IT Services companies which provide products and services which serve as an important tool in promoting digital transformation.

Delivery | Bank-wide Cooperation and Complementarities

Strategic Complementarities and Interlinkages

The new TMT Sector Strategy 2025-2029 integrates with the Bank's existing strategies and policies, including:

- **Country and Sector Strategies**, such as the Agribusiness, Energy, Infrastructure, and Real Estate sector strategies
- **Other Thematic Strategies** and programmes, including:
 - The Green Economic Transition Approach,
 - The Strategy for the Promotion of Gender Equality,
 - The Equality of Opportunity Strategy, and
 - CFMD, SBI Initiatives
- The cross-cutting priorities and enablers of the **Strategy and Capital Framework (SCF)**
- Key EBRD policies, including the **Environmental and Social Policy, Procurement Policies**, and the **Rules and Access to Information Policy**
- **National and international agendas**, including National Development Strategies and Sustainable Development Goals (SDGs)
- The Bank will also continue to seek complementarity with other IFIs and look to leverage additional sources of funding from key partners

Cross-sectoral collaboration within Banking






TMT is cross-sectorally engaged with all EBRD banking teams for digital infrastructure and tech-enabled products and services engagements.

Key collaborations include:

- **Real Estate Banking:** Data Centres
- **Sustainable Infrastructure Group:** TMT Sector Renewable Energy investments
- **Financial Institutions:** FinTech, PaymentTech

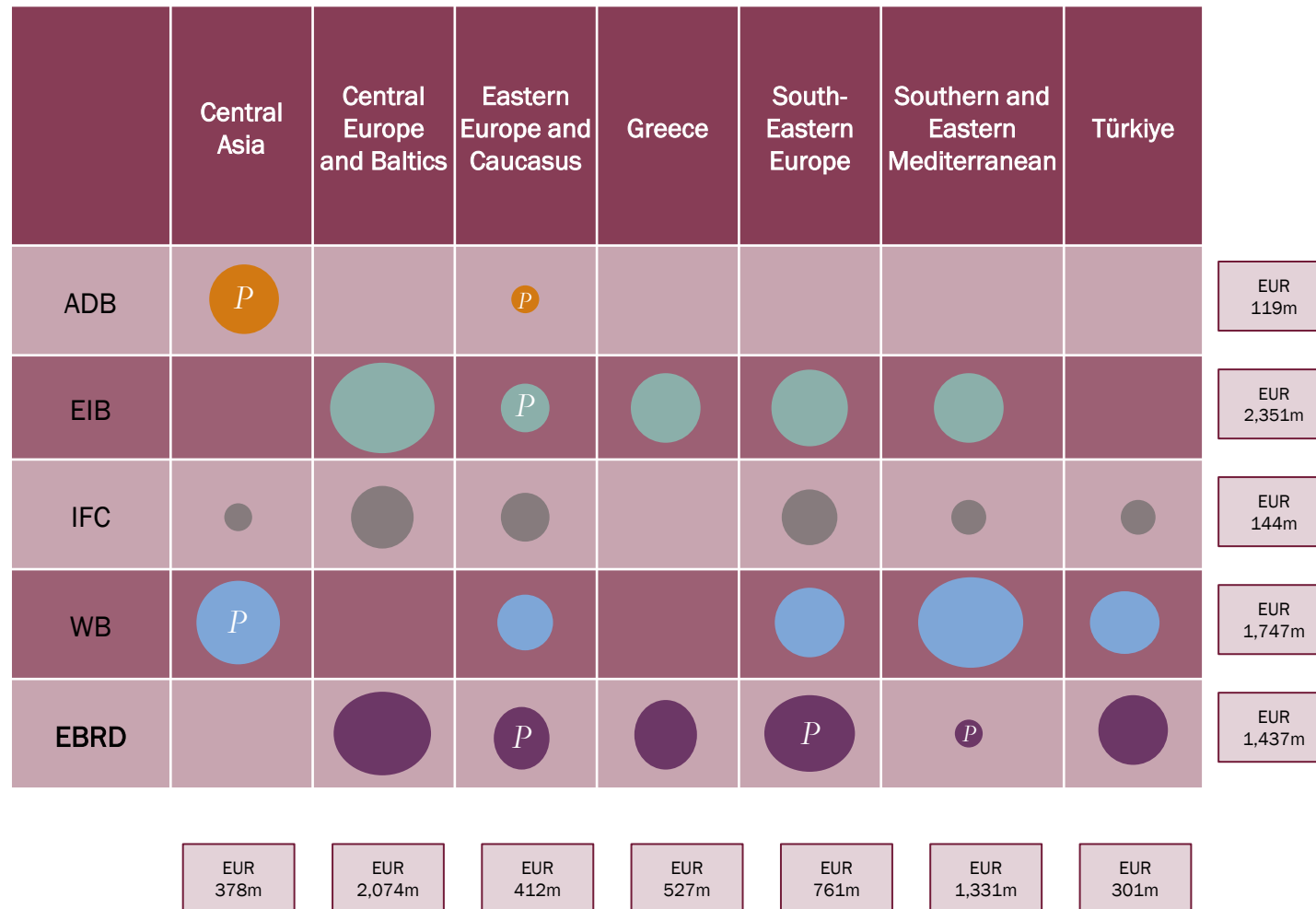


Cross-departmental collaboration

	Legal Transition Team	Sector legal, regulatory and governance reform
	Climate, Strategy and Delivery	Energy Efficiency
	Gender and Economic Inclusion	Digital skills, Digital divides,
	Competitiveness and Governance Team	Sector competitiveness and SOE Reform
	Environmental and Social Department	Environmental and social considerations



Delivery | EBRD Positioning and Collaboration with IFI Partners in the TMT sector



- **ADB projects** focused on enhancing **digital and financial technologies**, supporting **tech startups**, and improving public and private **digital infrastructure**. Policy engagement focused on promoting female entrepreneurship through digital technology, enhancing digital transformation, and strengthening financial inclusion through fintech innovations. Going forward, EBRD will seek enhanced collaboration with ADB in some of these areas, particularly in Central Asia and the Caucasus.
- Between 2020 and 2024, the **EIB** invested in several telecom projects in EBRD CoOs, partnering with companies such as **Telecom Egypt SAE**, **Telekom Slovenije DD**, **Telecom Srbija**, **Elektrilevi OU** (Estonia), **Open Net** (Georgia), and **Magyar Telekom** (Hungary). EBRD will look for opportunities to co-invest with EIB, including in upgrades to telecom infrastructure.
- The **IFC** made six investments in EBRD CoOs, including **ElCat** in Kyrgyzstan, joint investments with EBRD in **Telecom Armenia**, **Polsat** (Poland), and the **Lifecell Group-Datagroup-Volia** merger in Ukraine and **Connectis Towers** in the Western Balkans. EBRD will build on this collaboration to seek new opportunities for co-investment, particularly in the Western Balkans.
- **World Bank** projects focused particularly on **modernising public sector operations** in multiple countries such as Kosovo, Jordan and Georgia, **advancing digital procurement systems** in Lebanon, and **upgrading tax and statistical systems** in Tajikistan and Uzbekistan. Where possible, EBRD will look to collaborate with the WB in relevant areas, including policy engagement and TA on digital transformation and related topics.

Note: Table based on publicly available information collected for 2019-2023 as of end-September 2024. The size of the circles illustrates the proportional scale of investment. EBRD investment numbers on this slide are different than those reported on Slide 7 because a different timeframe is being considered.

P indicates area of policy engagement.

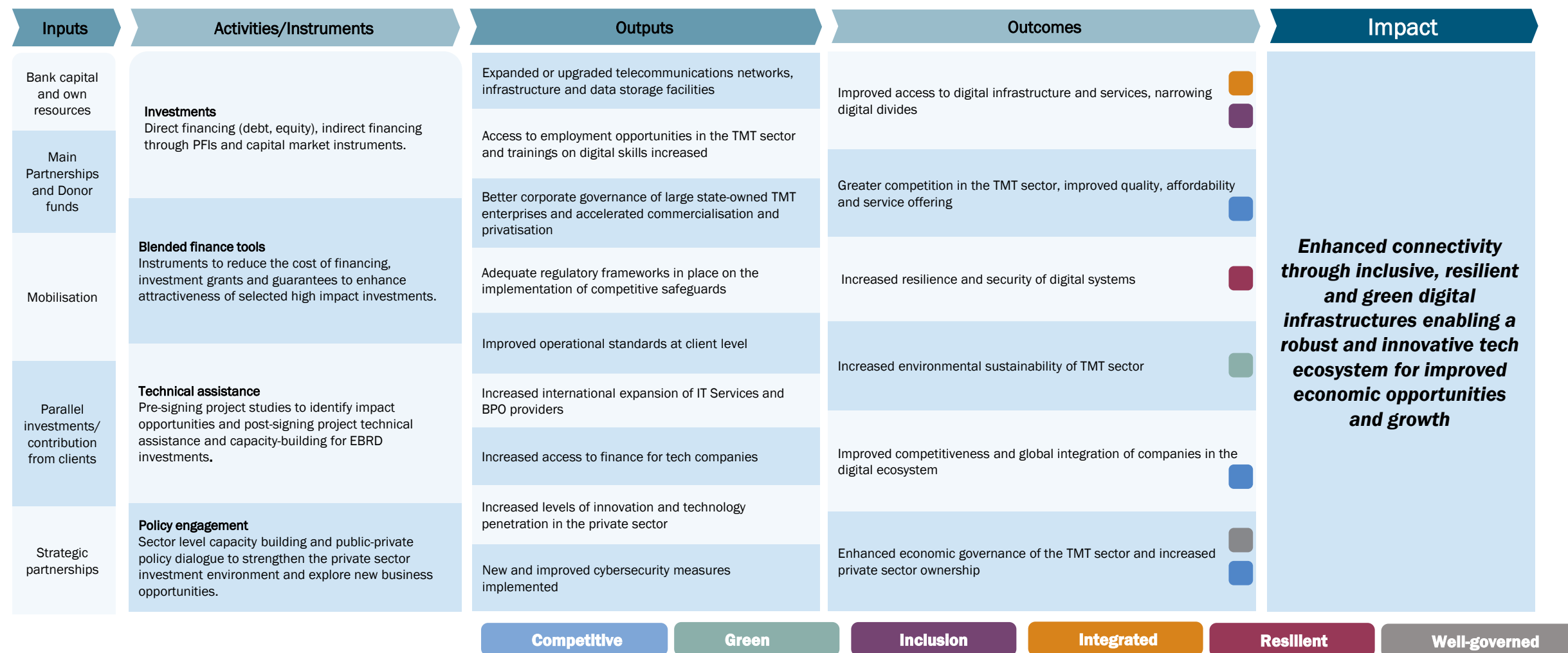
6. Measuring Results





Measuring Results | Theory of Change

TMT 2025 – 2029 Sector Strategy





Measuring Results | Performance Monitoring Framework

Tracking Indicators			Context Indicators
Strategic Objectives	Outputs	Outcomes	Impact
Invest in resilient, inclusive, and energy efficient digital infrastructure	<ul style="list-style-type: none"> Number/volume of digital infrastructure built or expanded, of which fixed/mobile network, data centres, of which in underserved regions or groups Number of transactions supporting commercialisation, pre-privatisation and privatisation of digital infrastructure and services Number of digital skills trainings implemented 	<ul style="list-style-type: none"> Number of new/improved digital infrastructure connections Number of commercialisation programmes completed Number of people (gender-disaggregated) who benefit from access to digitalized public and private services Number of people (gender-disaggregated) with digital skills trainings completed Total CO2 Emissions reduced (tonnes/yr) Number of clients with improved energy management standards 	<ul style="list-style-type: none"> Fibre Penetration (%) – disaggregated by urban vs rural 5G Coverage (%) Renewable energy share and emissions of the TMT Sector
Invest in digitally native companies offering technology enabled products, applications, and services	<ul style="list-style-type: none"> New or updated GET technology or product leading to energy efficiency introduced Number of new/updated digital product or service introduced, (including AI,ML) Number/volume of transactions supporting disruptive tech or e-commerce companies, IT Services and Business Process Outsourcing providers Partnership between private sector and education providers established or strengthened 	<ul style="list-style-type: none"> Number of clients with improved cybersecurity standards Energy savings (kWh) Number of disruptive tech or e-commerce companies, IT Services and business process outsourcing providers with improved performance (demonstrated by quantified financial or operational metrics) 	<ul style="list-style-type: none"> Penetration of mobile and online payment methods (%) Global Cybersecurity Index (GCI) Score

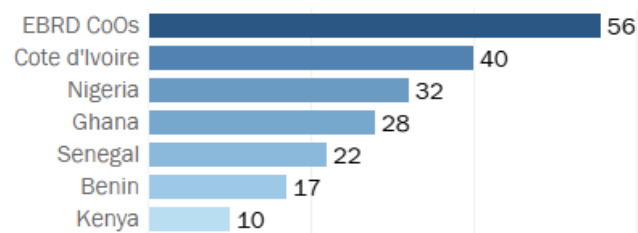


7. Annex

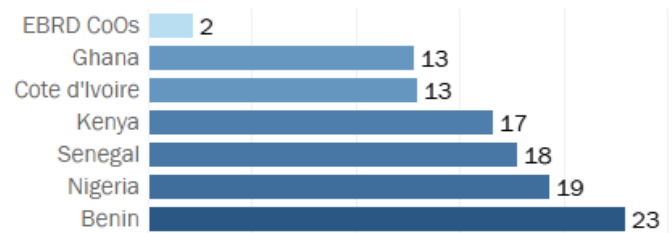


Annex I | TMT in Sub-Saharan Africa

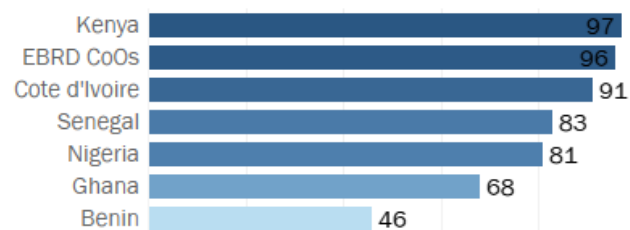
Median fixed broadband download speed (mbps)



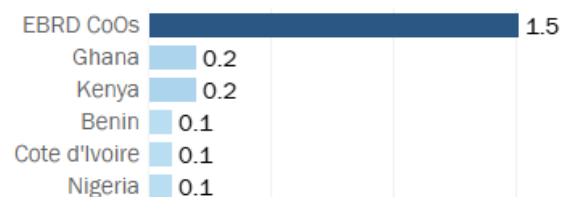
Fixed broadband price (5GB, % of monthly GNI per capita)



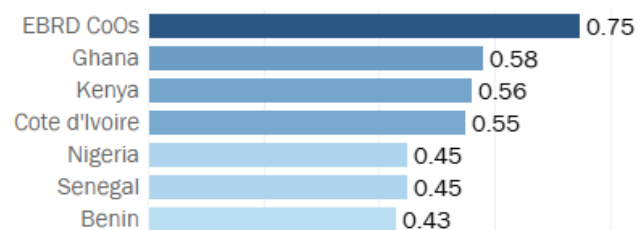
4G+ mobile coverage (% of population)



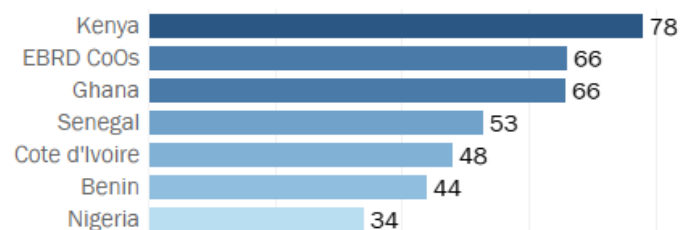
Connected Data Centres (per million people)



UN e-government index



Made or received a digital payment (% of population, 15+)



Key Challenges

- Access to electricity
- Skills mismatches
- Data infrastructure lags significantly behind data growth
- Internet, software and hardware affordability
- Financial inclusion: Gender and urban-rural disparities
- Legal framework start-up ecosystem
- Cash-based economy/Informal economy
- Lack of support to early-stage financing in start-up ecosystem

Tech Funding

- Startups are raising increasing amounts of money, with Nigeria and Kenya leading, Senegal and Ghana emerging, Côte d'Ivoire and Benin lagging.
- Fintech, energy, and logistics sectors receive the most funding.
- Region is leading globally in mobile money adoption.