



Advancing a Cross-Regional Connectivity Agenda with Central Asia, Türkiye and the South Caucasus

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Abbreviations

Abbreviation	Definition
ADB	Asian Development Bank
AGRI	Azerbaijan – Georgia – Romania - Hungary (Interconnector)
AI	Artificial Intelligence
AIB	Association of Issuing Bodies
AIIB	Asian Infrastructure Investment Bank
BCP	Border Crossing Point
BESS	Battery Energy Storage System
BRUA	Bulgaria, Romania, Hungary and Austria (corridor)
BSSC	Black Sea Submarine Cable
BTK	Baku - Tbilisi - Kars (railway)
CAPS	Central Asian Power System
CAREC	Central Asia Regional Economic Cooperation
CBAM	Carbon Border Adjustment Mechanism
CCGT	Combined Cycle Gas Turbine
CEF	Connecting Europe Facility
CRMs	Critical Raw Materials
CSIS	Centre for Strategic and International Studies
CTC	Common Transit Convention
CTCN	Central Trans-Caspian Network
DC	Data Centre
DPO	Development Policy Operation
DSM	Digital Single Market
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
eCMR	Electronic Consignment Note for Road Transport
eFTI	Electronic Freight Transport Information
ENTSO-E	European Network of Transmission System Operators for Electricity
ERTMS	European Rail Traffic Management System
eTIR	Electronic Customs Transit System (Transports Internationaux Routiers)
EU	European Union
FS	Feasibility study
FEZ	Free Economic Zone
GEFF	Green Economy Financing Facility
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Agency for International Cooperation)
GO	Guarantees-of-Origin
GDPR	General Data Protection Regulation
GTSOU	Gas Transmission System Operator of Ukraine
GW	Gigawatt
HPP	Hydropower Plant
HVDC	High-Voltage Direct Current
ICT	Information and Communication Technology
IEA	International Energy Agency
IFI	International Financial Institution
IGB	Interconnector Greece - Bulgaria
IPA	Instrument for Pre-Accession Assistance
IRENA	International Renewable Energy Agency



Abbreviation	Definition
IXP	Internet Exchange Point
kV	Kilovolt
KZ	Kazakhstan
LNG	Liquefied Natural Gas
LPI	Logistics Performance Index
MC	Middle Corridor (Trans Caspian Transport Corridor, TCTC)
MDB	Multilateral Development Bank
MMCs	Multimodal Logistics Centres
MoU	Memorandum of Understanding
MW	Megawatt
NCTS	New Computerised Transit System
NDP	Network Development Plan
NEMO	Nominated Electricity Market Operator
NEURC	National Energy and Utilities Regulatory Commission (of Ukraine)
NPP	Nuclear Power Plant
OIES	Oxford Institute for Energy Studies
OSCE	Organization for Security and Co-operation
PCI	Project of Common Interest
PPA	Power Purchase Agreement
PPP	Public-Private Partnership
PtX	Power-to-X
PV	Photovoltaic
RES	Renewable Energy Sources
REPowerEU	EU's clean energy plan
SEED	Systematic Exchange of Electronic Data
SMGS	Agreement on International Goods Transport by Rail
TA	Technical Assistance
TANAP	Trans Anatolian Pipeline
TAP	Trans Adriatic Pipeline
TAPI	Turkmenistan-Afghanistan-Pakistan-India (Pipeline)
TCTC	Trans Caspian Transport Corridor (Middle Corridor)
TEI	Team Europe Initiative
TEN-E	Trans-European Networks for Energy
TEN-T	Trans-European Transport Network
TEU	Twenty-foot Equivalent Unit (standard shipping container)
TRIPP	Transport Route for International Peace and Prosperity
TSO	Transmission System Operator
UGS	Underground Gas Storage
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UZB	Uzbekistan
WB	World Bank



1 Introduction

Reliable, predictable, and sustainable **connectivity between Europe, Türkiye, the South Caucasus and Central Asia** is an essential **enabler of trade, energy security, digital integration** and economic resilience. Diversified transport corridors and interoperable networks reduce exposure to bottlenecks, strengthen supply-chain continuity, and expand market access, while supporting the green and digital transitions. As the **European Commission is developing a [cross-regional Connectivity Agenda](#)**¹, a consolidated view of what exists, what is planned, and where cooperation could add the most value, is needed to inform subsequent action sequencing and prioritisation.

The **cross-regional Connectivity Agenda** aims to connect the EU with Central Asia through Türkiye and the South Caucasus, by coordinating strategic investments and soft connectivity measures to boost trade, and socio-economic development through resilient and efficient transport, energy, and digital connections, with sustainability and the green transition at its core. The Connectivity Agenda is a flagship under the Global Gateway and promotes the European Union's (EU's) comprehensive, sustainable, rules-based and people-centred approach to connectivity. It also contributes to the implementation of the Eastern Partnership, the new EU's strategic approach to the Black Sea region² and the EU Strategy on Central Asia. The Agenda addresses hard infrastructure (transport, energy, digital) and soft connectivity (trade facilitation, regulatory alignment, interoperability and governance), recognising that the Trans-Caspian Transport Corridor performance depends on both.

The Connectivity Agenda was launched in the 20 October 2025 [Cross-regional Security and Connectivity Ministerial Meeting](#) in Luxembourg and further advanced in the 27 November 2025 [Trans-Caspian Transport Corridor and Connectivity Investors Forum](#) in Tashkent. These meetings have confirmed the importance of deepening cooperation in areas of common interest, enhancing mutual resilience and promoting more connected, secure and prosperous regions. They have also confirmed that the Trans-Caspian Transport Corridor has transitioned from an aspirational route to a strategically essential one, reflecting geopolitical shifts and vulnerabilities in the Northern Corridor.

Goal of the meta-study

This assignment was commissioned by the European Commission (DG ENEST) and does not necessary reflect the views of the European Union, nor commit the European Union to take actions as suggested by the study. This meta-study encompasses the transport and trade, energy, and digital sectors, geographically covering the following countries: EU Member States (MSs) around the Black Sea (Bulgaria, Romania), Eastern Partnership countries (Ukraine, Republic of Moldova, Georgia, Armenia, Azerbaijan), Türkiye, and Central Asian countries (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan).

The scope of the assignment included conducting a **review of existing research and recommendations**, as well as a **mapping of ongoing and planned cross-regional projects**, with the aim to suggest regional connectivity development priorities. The results of this assignment are expected to provide a starting point for discussions on the development of a potential investment pipeline in subsequent phases. It should also support discussions with EU MSs and partner countries and contribute to recommendations for regulatory alignment, trade facilitation, and enhanced cooperation across the three sectors. A **summary of the key findings** from the meta-study was published on 27 November 2025, during the Trans-Caspian Transport Corridor and Connectivity Investors Forum³ (and can also be found in **section 5 of the report 'conclusions and key takeaways'**).

Methodology & scope

The research was conducted from 1 August to 16 October 2025, following the steps below:

- **Literature review** - findings and recommendations from EU bodies and EU-funded programmes, European and international financial institutions (IFIs), international organisations, business associations, researchers, regional and subject-matter expert consultations, and partner-country sources within scope were reviewed and summarised.
- **Initiative mapping** - supported by literature review, expert interviews, and additional desktop research, mapped (cross-regional) projects and sectoral initiatives, covering both soft and hard connectivity.
- **Sector-specific priority identification** - identified shared regional sector-specific connectivity development priorities informed by literature review and initiative mapping exercise. The team drafted recommendations with a view to suggest priority actions for EU stakeholders, as well as from the regions.



The steps above were implemented within the parameters set by the assignment and the intended use of results. To ensure comparability across sectors and geographies, and to maintain relevance for later phases and policy discussions, the analysis was conducted within the following scope and limitations:

- **Temporal focus.** The study team has mapped consolidated information primarily on **ongoing** and **planned** cross regional initiatives, considering studies carried out within the 2010 to 2025 period. It does not attempt to provide exhaustive historical catalogues nor full feasibility analysis.
- **Sectoral coverage.** The mapping distinguishes transport/trade, energy, and digital sectors, while highlighting crosscutting interoperability and other soft connectivity measures.
 - **Transport/Trade:** the mapping covered rail, road, and maritime connectivity, including logistics hubs, ports and intermodal terminals. Air transport was excluded from the analysis. Digital connectivity, trade facilitation, and customs information exchange systems were considered where they enhance regional corridor efficiency and support seamless cross-border movement of goods. Priority was given to assessing cross-border transport corridors and logistics chains that underpin regional integration and market access.
 - **Energy:** the mapping covered hard connectivity such as existing and planned electricity interconnections (subsea and terrestrial), gas and hydrogen pipelines, and renewable energy projects (wind, solar, hydro). References to existing nuclear energy infrastructure in the region were included where relevant. Energy storage (battery and pumped hydro) and grid upgrades were also addressed. For soft connectivity, the focus was on regulatory alignment, market integration, and harmonisation with the EU acquis. Renewable energy trading and governance support was a key theme when assessing projects. A detailed gap analysis and climate adaptation needs were excluded due to their technical complexity.
 - **Digital:** the mapping covered terrestrial/subsea fibre and mobile, satellite networks and data centres for hard connectivity as well as policy harmonisation/modernisation for soft connectivity. Digital services (such as platforms, applications, or content) were not included, as their development is primarily driven by market demand and tends to follow infrastructure upgrades as traffic boosters rather than shape cross-regional connectivity corridors. Due to limited data availability, interoperability with specific EU standards and technology lifespan information were not analysed.
- **Geography and materiality.** The emphasis is on **cross-regional significance** and **material** investments/measures affecting corridor performance; microlevel or purely national projects without cross regional impact are referenced only where they affect corridor reliability.
- **Data dependence.** The deliverables of this report depend on secondary sources and (expert) inputs available at the time of drafting. In that regard, some countries are less represented due to lack of publicly available and high-quality data.
- **Focus on reflecting connectivity approaches, instead of recommending specific projects or policy choices.** The authors reflect on approaches to connectivity based on a literature review and a collection of officially announced initiatives. The analysis deliberately operates at a high level and does not include assessments on the projects' feasibility, comparative economic benefits (for the EU and its partner countries), nor alignment with EU and national policies. Such analysis would be necessary to take related policy and investment decisions.
- **Disclaimer on use of AI.** Artificial Intelligence (AI) tools were used during the preparation of this report to support research, data analysis, and content structuring to enhance accuracy, efficiency, and clarity. All AI-generated outputs have been thoroughly reviewed, validated, and confirmed by human experts to ensure reliability and compliance.

Report structure

The report is organised around three core pillars - transport/trade, energy, digital. For each pillar, an introductory chapter presents EU sector-specific connectivity development priorities. It is followed by a table of ongoing and planned initiatives mapped against suggested priorities to show existing alignment, with respective recommendations, where relevant. The final section of the report provides governance and coordination recommendations to achieve tangible results.



2 Transport and Trade Sector

Based on the review of existing studies and ongoing/planned investment projects, this chapter outlines suggested regional priorities for the transport and trade sector connectivity development between Europe and the Eastern Partnership region, including South Caucasus, in Türkiye and Central Asia. This is followed by a structured overview of key ongoing and planned transport and trade infrastructure (hard and/or soft connectivity) projects. Each initiative is assessed for its alignment with the proposed shared regional priorities, providing a clear mapping of priority fit across the transport projects pipeline.

2.1 Regional Approaches in the Transport and Trade Sector

The European Union's strategic approach to the Black Sea region⁴ recognises the Black Sea and its neighbouring countries as a pivotal gateway linking Europe to Türkiye, the South Caucasus, Central Asia, and beyond. For the EU, enhanced transport connectivity with Türkiye, the Eastern Partnership region, incl. South Caucasus, and Central Asia, could enable faster and more reliable imports of raw materials and goods, while also opening new export markets across Eurasia, resulting in advancement of mutually beneficial trade.

In this pursuit, amid declining reliability of the Northern Corridor and the slower development of the Southern route, the Trans-Caspian Transport Corridor (TCTC) emerges as the most promising path for sustainable, diversified, and geopolitically resilient multimodal transport connectivity between Europe and Asia. Furthermore, the significant increase of traffic in the region and the 8 August agreement between Armenia and Azerbaijan further establishes the Trans-Caspian Transport Corridor as the most viable route for sustainable, diversified, and resilient regional connectivity.

Recent years have seen a surge in infrastructure investments along the Trans-Caspian Transport Corridor, although significant challenges and bottlenecks still prevail both in terms of hard infrastructure and soft connectivity issues. Those span from relatively quick fixes allowing to increase throughout of congested junctions (e.g., increasing border crossing point efficiency) to long term investments towards new infrastructure developments (e.g., new port).

Typically, when the TCTC is discussed, **Kazakhstan, Azerbaijan, Georgia, and Türkiye** emerge as key actors along the route from China to Europe. However, countries such as **Armenia, Uzbekistan, Kyrgyzstan, Uzbekistan, Moldova and Ukraine** have their important role to play as well:

- **Armenia:** Beyond the existing TEN-T extension, the TCTC could benefit operationally from developing resilience-enhancing branches through the South Caucasus (restoring connections between Armenia, Azerbaijan and Türkiye), which may have opened due to recent geopolitical developments in the south Caucasus – this may help diversify trade routes, potentially alleviating currently congested sections. These could also notably enhance connectivity between Armenia and the EU;
- Developing feeder lines and multimodal connections from Central Asian countries not directly located on the main corridor, such as **Uzbekistan, Kyrgyzstan, and Tajikistan**, would further enhance the corridor's ability to channel regional critical raw materials (CRM) and other exports to European markets and within the region. These links would help integrate inland producers into Trans-Caspian supply chains, expand EU sourcing options, and foster inclusive regional development^{5,6,7,8};
- The cases of **Ukraine and Moldova** represent a distinct but complementary dimension of the region's connectivity landscape. Their strategic orientation is primarily defined by EU integration, but they still connect to the TCTC via the western interface through Black Sea and Danube ports, linking to the EU TEN-T network.

The following priorities have been identified, further complementing actions already implemented via the Global Gateway strategy⁹ in the region:

1. **Invest in impactful infrastructure developments**, shortlisted by the EU as part of Ten-T extension and development partners such as EBRD, WB, aiming to promote open, rules-based governance of the corridor and solutions protecting the long-term interest of the countries and their citizens along the TCTC as well as in the EU;
2. **Improve connectivity in the South Caucasus** and identify possible missing links in the existing Ten-T extension due to recent geopolitical developments that may allow to integrate Armenia to the TCTC, increasing its resilience;
3. **Promote soft connectivity and compatibility with common standards along the TCTC.**



4. **Promote partnerships with the private sector in delivering corridor projects**, spanning engineering, construction, logistics, and digital systems. This would embed internationally compatible standards and technologies, expand industrial presence, and enhance sharing of best regional practices through local partnerships;
5. **Strengthen Moldova’s and Ukraine’s integration into European networks** through complimenting already existing hard infrastructure funding instruments with soft connectivity enablers (e.g., digital solutions for cross border procedures, digital transport documents, etc.).

The outlined priorities are further described in the following sections.

2.1.1 Investing in impactful infrastructure developments along the Trans-Caspian Transport Corridor

Despite recent progress, the TCTC faces operational constraints: fragmented logistics, multiple border crossings, and limited digitalisation. IFI studies consistently highlight that soft bottlenecks such as harmonised tariffs, digitalisation, and coordinated governance are as critical as hard infrastructure gaps^{10,11,12,13,14}. For the EU, enhanced corridor performance would enable faster and more reliable imports of goods (incl. critical raw materials, or CRM), while also further enhancing connectivity with export markets across Eurasia. By supporting priority projects identified in TEN-T expansion plans and other in regional strategies, the EU can help unlock the corridor’s full potential, strengthen supply chain resilience, and advance mutually beneficial trade.

At the EU level, strategic transport infrastructure priorities are defined through the **Trans-European Transport Network (TEN-T)**, including its planned extensions towards neighbouring regions. Several of these TEN-T extension projects contribute to the improving connectivity along the TCTC, thereby assigning strategic priority status to such key investments along the corridor. The TEN-T Investment Action Plan for the Eastern Partnership (initially drafted in 2018) was updated in 2025 to reflect evolving geopolitical realities and shifting national priorities, with particular emphasis on Ukraine and Moldova. It is also worth noting that while not represented in TEN-T extension list, given recent geopolitical developments in the South Caucasus, the TCTC could benefit operationally from developing resilience-enhancing branches through the South Caucasus (restoring connections between Armenia, Azerbaijan and Türkiye) – this may help further diversify trade routes, potentially alleviating currently congested sections (please see more details in the chapter 2.1.2).

Meanwhile, the **EBRD (2023)**¹⁵ identified 33 priority hard infrastructure investments in Central Asia, essential for improving capacity and efficiency along the TCTC and the **WB (2024)**¹⁶ outlined most immediate bottlenecks and investment needs to be addressed by 2030 to ensure the corridor’s long-term viability.

Table 1. Priority investments as identified in TEN-T extension as well as by EBRD and WB

Colour legend: priority projects that are prioritised among several sources (TEN-T extension plan, WB, EBRD)

- Investments into Anaklia Deep Sea Port (prioritised by TEN-T extension plan and WB)
- Investments into Almaty bypass (prioritised by EBRD and WB)
- Investments into Caspian port capacity upgrade in Kazakhstan (prioritised by EBRD and WB)
- Investments into Uzbekistan (Nukus) - Kazakhstan (Beyneu) rail link (prioritised by EBRD and WB)

#	Description	#	Description
TEN-T extension projects on TCTC			
T1	Azerbaijan: E60 Ganja – Georgian border road upgrade	T9	Georgia: Kutaisi bypass highway
T2	Azerbaijan: East – West Railways infrastructure modernisation	T10	Georgia: Logistics center in Kutaisi
T3	Azerbaijan: Alat free economic zone	T11	Georgia: East – West highway (Chumateleti – Argveta)
T4	Georgia: Poti road bridge	T12	Georgia: East – West highway (Zemo Osiauri - Chumateleti)
T5	Georgia: Grigoleti – Kobuleti highway	T13	Georgia: Railway modernization
T6	Georgia: Kobuleti bypass highway	T14	Georgia: Rustavi – Red bridge motorway
T7	Georgia: Samtredia – Grigoleti highway	T15	Georgia: Tbilisi Kumisi logistics center



#	Description	#	Description
T8	Georgia: Deep sea port in Anaklia	T16	Georgia: Rail/road connection to Anaklia deep sea port
Hard connectivity priorities – EBRD (2023)			
A9	Kazakhstan: Almaty Railway bypass	A30	Uzbekistan: Oq-Kuprik railway station capacity enhancement (4→6 lanes)
A10	Kazakhstan: Altynkol terminal expansion	A31	Uzbekistan: Expansion of railway into Namangan FEZ (8,2mEUR) and gradual replication of this practice to other FEZ (41mEUR)
A3	Kazakhstan: Aktau–Beyneu railway double-tracking (1,67bEUR) & electrification (368mEUR)	A33	Uzbekistan: Develop MMCs & A-class warehouses (Fergana, Tashkent, Samarkand/Bukhara, Navoi)
A2	Kazakhstan: Port capacity expansion (Caspian)	A26	Uzbekistan: Nukus–Beyneu (KAZ) railway reconstruction (Uzbekistan section)
A4	Kazakhstan: Beyneu–Nukus (UZB) railway reconstruction (Kazakhstan section)	A32	Uzbekistan: Further development of Farap/Alat BCP & approach roads
A11	Kazakhstan: Almaty–Khorgos railway double-tracking (927mEUR) & electrification (290mEUR)	A27	Uzbekistan: Uchquduq–Kyzylorda (KAZ) road (Uzbekistan section)
A12	Kazakhstan: Rail investments for multimodal logistics centres (MMCs)	A28	Uzbekistan: Enhanced capacity on Tashkent–Samarkand railway line
A13	Kazakhstan: Warehousing & distribution centres in multimodal logistics centers (MMCs)	A29	Uzbekistan: Construction of roads: Tashkent–Samarkand (1,3bEUR) and Tashkent–Andijan (2,5bEUR) on PPP basis
A6	Kazakhstan: Kyzylorda–Uchquduq (UZB) road (Kazakhstan section)	A23	Turkmenistan: Turkmenbashi–Garabogaz (Kazakhstan border) road rehabilitation
A14	Kazakhstan: Rolling stock expansion and fitting platforms in key ports/terminals	A22	Turkmenistan: Develop a logistics centre at the Turkmenistan–Kazakhstan border
A1	Kazakhstan: Fleet expansion	A25	Turkmenistan: Turkmenbashi–Gyzylgaya–Konye–Urgench road rehabilitation/reconstruction
A15	Kyrgyz Republic: Development & upgrade of multimodal logistics centres in Osh and Alamedin	A24	Turkmenistan: Increase Uzen–Bolashak–Bereket rail line capacity
A18	Kyrgyz Republic: Electrification (322mEUR) & rehabilitation (103mEUR) of Balykchy–Lugovaya rail line	A19	Tajikistan: Development of a one-stop border post; joint logistics centre at Fatehabad BCP
A16	Kyrgyz Republic: Construction of Torugart–Makmal–Jalal-Abad railway line	A20	Tajikistan: Extension of existing northern railway line to the Sughd Economic Zone and northern part of the region
A17	Kyrgyz Republic: Construction of Balykchy–Makmal railway line	A21	Tajikistan: Electrification (108mEUR) & rehabilitation (34,7mEUR) of the northern railway network (Khujand–Uzbek border)
Hard connectivity priorities – WB (2025)			
1	Urban bypass in Almaty, KZ	6	Georgia maritime port capacity (<i>ongoing in Anaklia, pending at Poti</i>)
2	New UZ–KZ rail link	7	Sivas(TR)–Kars(TR)–Georgia rail modernization
3	Aktau/Kuryk (KZ) port upgrades	8	Bosphorus rail crossing in Türkiye
4	Baku (AZ) port expansion	9	Romania/Bulgaria rail and port connectivity (<i>supported by EU funding but facing institutional bottlenecks</i>)
5	Locomotive procurement in Georgia		

Recent years have already seen a surge in infrastructure investments along the TCTC, driven by multilateral development banks (EIB, EBRD, ADB, AIIB) and bilateral partners. For example, in 2024, EIB signed Memoranda of Understanding totalling €1.47 billion with Governments of Kazakhstan, Kyrgyzstan and Uzbekistan as well as the Development Bank of Kazakhstan. Meanwhile, the EBRD financing in the region's transport sector rose from EUR350 million in 2023 to EUR950 million in 2024, ADB commitments tripled to USD925 million, while AIIB's investments reached USD1,4 billion in 2024.

These investments are closing infrastructure gaps and elevating operational standards but also serve as strategic levers for shaping governance and long-term alignment. For example, China is deepening and institutionalizing its influence from cargo originator to active stakeholder, shaping the corridor through equity, financing, and governance. Selected examples: **Khorgos Gateway** (KZ) – 49% owned by COSCO & Port of Lianyungang since 2017, anchoring westbound rail flows¹⁷; **CKU Railway** (CN–KG–UZ) – Chinese-backed financing and renewed 2024–25 push for a shorter Kashgar–Andijan route¹⁸; **Anaklia Port** (GE) – awarded May



2024 to a Chinese consortium, offering a future Black Sea foothold¹⁹; **Pap–Angren Railway** (UZ) – built by China Railway Tunnel Group as a feeder link back in 2016²⁰; and 2025 accession to **Middle Corridor Multimodal Ltd** – a coordination platform of Kazakhstan Railways, Azerbaijan Railways, and Georgian Railways – giving Beijing a formal role in shaping corridor operations, standards, and digital integration.

International cooperation is vital in establishing rules-based governance for the corridor and finding solutions that safeguard the long-term interests of partner countries. EU financial support could promote the development and use of EU standards to foster effective practices and market standards in these corridors. Additionally, creating favourable market conditions for businesses during the implementation phase of projects, such as through robust public-private partnerships and market structures, will enhance the exchange of efficient practices through local partnerships (see chapter 2.1.4).

Recommended Approach 1: Invest in impactful infrastructure developments (part of TEN-T extension, EBRD and WB identified priority project lists), aiming to promote open, rules-based governance of the corridor and solutions protecting the long-term interest of the countries and their citizens along the TCTC:

- Co-invest in critical hubs (e.g., logistics terminals, BCP, intermodal centres, key routes) to anchor EU role;
- Strengthen autonomy of partner countries and ensure the corridor’s governance remains open and rules-based.

However, it is important to note that existing TCTC transport projects identified not necessarily reflect the full scope of benefit of increasing CRM trade and in the longer-term additional opportunities for connectivity improvements may be identified. In some cases, additional investment in feeder lines connecting resource-rich countries that lie outside the direct route could substantially enhance the EU’s access to critical raw materials. For instance, according to the European Commission’s *Communication on Critical Raw Materials Resilience: Charting a Path Towards Greater Security and Sustainability*²¹, Türkiye, Kazakhstan, and Tajikistan are among the EU’s main global suppliers of borates, phosphorus, and antimony. Illustrating the importance of such feeder links, targeted connectivity upgrades within these countries can unlock access to major mineral-producing regions, even when they are not located directly on the TCTC. For example, Tajikistan’s Anzob (Istiqlol) Tunnel reconstruction project would enable reliable, year-round transport between Dushanbe and the mineral-rich northern provinces. Meanwhile, Turkmenistan has engaged in dialogue with the EU to promote cooperation on CRMs. The EU has also signed several Memoranda of Understanding (MoUs) to deepen strategic partnerships—most notably with Uzbekistan in April 2024 on CRM cooperation, and with Kazakhstan in 2022 on sustainable raw materials, batteries, and renewable hydrogen value chains. With corridor traffic projected to triple by 2030, enhanced connectivity could strengthen EU–Central Asia resource linkages, helping reduce dependency on single suppliers, integrate regional producers into EU value chains, and foster balanced, sustainable growth across the region.

2.1.2 Opportunities to improve connectivity in the South-Caucasus

The TEN-T was extended to the Eastern Partnership (EaP) countries, including Armenia, Azerbaijan, and Georgia, in 2018. The current TEN-T network in the Southern Caucasus reflects the prevailing political context of the region at that time, with no connections between Armenia-Azerbaijan and only one rail connection between Armenia-Türkiye. As peace negotiations between Armenia and Azerbaijan advance, opportunities are emerging to re-establish transport links connecting Armenia, Azerbaijan, and Türkiye, which could possibly be considered for a future addition to the TEN-T network in the region. A route via Syunik, positioned as an alternative to the Georgia-based segment of the TCTC, could significantly enhance regional connectivity. Restoring these connections would strengthen economic cooperation, stimulate cross-border trade, and improve the resilience and diversification of the corridor by adding new routing options. Although, more detailed economic impact studies still ongoing, but experts point that the southern rail connection between Azerbaijan and Türkiye via Armenia’s Syunik region could cut the travel time by up to 25 % compared to the traditional the Baku (AZ)–Tbilisi (GE)– Kars (TR) route.

Regional stakeholders are actively pursuing initiatives to reopen and develop transport links between Armenia, Azerbaijan, and Türkiye. These efforts reflect differing governance models and strategic objectives, yet collectively signal momentum toward restored connectivity. Notably, Armenia’s Crossroads of Peace focuses



on sovereignty-based, reciprocal access, including both northern and southern connections, while the TRIPP (Trump Route for International Peace and Prosperity) - emphasizes southern routes through Syunik.

Armenia's Crossroads of Peace (2023)²² initiative seeks to strengthen regional connectivity through reciprocal access. It proposes seven new road checkpoints on borders with Azerbaijan and Türkiye, alongside the rehabilitation of key rail segments. The U.S.-backed TRIPP initiative (2025) envisions a similar corridor developed under a long-term U.S. lease, linking more broadly to ongoing railway infrastructure projects in Azerbaijan, including in Nakhchivan, and in Türkiye.²³

Experts caution that inefficient cross-border operations could significantly undermine these benefits, particularly for time-sensitive and high-value goods. Realizing Armenia's potential as an integral part of the TCTC will require not only infrastructure investments but also coordinated policy actions to ensure efficient and competitive railway and cross-border logistics services.

Despite these parallel plans and advancing works, the EU has an opportunity to shape a sovereignty-respecting, rules-based model aligned with its connectivity principles and ensuring efficient, mutually beneficial connectivity for all regional partners, including Armenia, Azerbaijan, and Türkiye. Given EU's experience with initiatives focussed on transport facilitation (Green Lanes in the Western Balkans and Solidarity lanes for Ukraine and Moldova) and well-established digital solutions for border crossing operations, it holds a strong value proposition for the region to address soft connectivity issues.

Considering these developments, the European Commission and the countries in the region could consider initiating technical discussions on how to ensure that the reopening of these transport links is **aligned with the TEN-T extension**.

Recommended Approach 2: Opportunities to improve connectivity in the South-Caucasus: Targeted support could include co-financing last-mile links, technical assistance for customs and border management, and trade facilitation measures modelled on the Western Balkans Green Lanes initiative, Solidarity lanes in Ukraine and Moldova, as well as technical solutions adopted for cross border operations (e.g., NCTS, SEED).

2.1.3 Promoting soft connectivity and compatibility with common standards

The EBRD, World Bank, OECD, Asian Development Bank, and other international organizations repeatedly stress importance of soft measures to improve trade facilitation, border management, and service delivery. It is pointed out that absence of these measures can severely impede potential benefits of the hard infrastructure improvements. The EBRD (2023)²⁴ provides a comprehensive assessment of **soft connectivity priorities**, identifying seven core areas for reform in the Central Asia. The suggested measures well summarize recommendations provided also by other international organizations and are also applicable in the EaP, incl. South Caucasus, and Türkiye:

1. **Digitisation of transport documents** (incl. eTIR, eCMR, electronic signatures) and paperless trade;
2. Interoperability through **harmonised technical standards**, weights, and dimensions;
3. **Trade facilitation measures** such as joint border controls, one-stop border posts, and streamlined customs procedures;
4. Establishment of **transparent tariff-setting** mechanisms and coordinated pricing policies;
5. **Market liberalisation** to enable fair access for private operators and logistics providers;
6. **Stronger PPP** and market frameworks to attract sustainable investment;
7. Predictable and increased maintenance **funding to ensure corridor reliability**.



Meanwhile, promoting and / or ensuring compatibility with EU standards and digital tools, such as multimodal transport data platforms (for instance, modelled on eFTI¹ system), NCTS², National Single Windows³, and SEED⁴, would directly tackle the soft connectivity gaps identified in regional strategies through improved transparency, real-time data exchange, and cross-border interoperability. However, these efforts should be coordinated with similar solutions promoted by non-EU actors, such as the WB, UNECE, UNCTAD, CAREC, while ensuring interoperability between EU and non-EU systems in a way that respects data privacy and cybersecurity, supports seamless digital integration, and avoids fragmentation of the corridor's governance framework.

Recommended Approach 3: Promote soft connectivity and compatibility with common standards:

- **Advance digitisation and interoperability across the corridor** through adoption of common systems (e.g., solutions modelled on eFTI systems for multimodal transport data, NCTS, SEED solutions for roads BCPs, DAC, ERTMS based on the CCS TSI (technical specifications for railway signalling) for rail, Marine Single Window for maritime), enabling paperless trade, harmonised technical standards, and streamlined border procedures.
- Promote **interoperability solutions with non-EU systems** while upholding data privacy, cybersecurity, and coherent digital governance to avoid fragmentation.
- **The specific EU tech business offer for cross border digital trade could be tailor made to address the soft connectivity issues.**
- Support transparent and predictable frameworks for **tariff-setting, market access, and infrastructure maintenance**, fostering fair competition and long-term reliability.

2.1.4 Promoting partnerships with the private sector

Attracting private investment is essential for advancing transport infrastructure and ensuring the long-term sustainability of the TCTC. Beyond providing capital, private actors contribute efficiency, innovation, and operational discipline that can significantly improve the quality and reliability of transport services. In particular, the engagement of European and other international businesses can bring valuable market experience, innovation capacity, and exposure to best practices in sustainable logistics, green technologies, and digitalization.

To unlock this potential, governments and regional institutions should strengthen policy frameworks that facilitate public-private partnerships (PPPs) and reduce investment risks. This includes establishing transparent procurement processes, harmonizing regulatory standards, and developing clear mechanisms for cost recovery and revenue sharing. By creating predictable and attractive conditions for investors, countries along the TCTC can encourage deeper engagement from both local and international firms, accelerate the implementation of critical projects, and foster the emergence of a modern, resilient, and interoperable transport network across the region.

Recommended Approach 4: Promote partnerships with private sector: Partnerships with the private sector and local business in the implementation of corridor projects across engineering, construction, logistics, and digital systems can be fostered, with a focus on interoperability and high-quality, trusted solutions. This would promote global standards and technologies and enhance sharing of best practices. In this context, specific infrastructure development proposals could be tailor-made in cooperation with the private sector to address hard infrastructure challenges along the Trans-Caspian Transport Corridor.

¹ eFTI (electronic Freight Transport Information) - EU framework enabling the digital exchange of freight transport information between businesses and authorities, ensuring standardized, paperless, and interoperable data sharing. Not yet fully operational, with implementation expected progressively through 2025–2030 as delegated and implementing acts take effect.

² NCTS (New Computerised Transit System) - Electronic customs transit system used by the EU and Common Transit Convention countries.

³ National Single Windows (NSW) - Integrated national platforms that allow traders to submit all regulatory documentation through one digital entry point, streamlining border procedures and compliance.

⁴ SEED (System for Exchange of Excise Data) - EU electronic system used to register, validate, and exchange excise-related operator and warehouse information, supporting secure and compliant movement of excise goods.



2.1.5 Integrating Moldova and Ukraine's into European networks

While the TCTC serves as a key east-west artery linking Central Asia, the South Caucasus, and the EU, the cases of Ukraine and Moldova represent a distinct but complementary dimension of the region's connectivity landscape. Their strategic orientation is primarily defined by EU integration rather than participation in trans-Caspian transit flows, but they still connect to the TCTC via the western interface through Black Sea and Danube ports, linking to the EU TEN-T network²⁵.

Since 2022, the EU-Ukraine and EU-Moldova Solidarity Lanes have become critical for maintaining exports and supply chains, especially for agricultural, industrial, and raw material goods. Both countries are now part of the extended TEN-T network, with priority corridors under development to connect them directly to Central and Eastern Europe. Significant EU support is directed toward rail and port upgrades, gauge conversion, border terminals, and Danube navigation improvements, aligning infrastructure with EU standards. To achieve full integration, ongoing reforms should be sustained and deepened – continuing alignment with the EU transport acquis, further improving technical interoperability and digitalisation of procedures.

Recommended Approach 5: Integrating Ukraine and Moldova into European networks: While major investments in hard infrastructure are planned through the TEN-T network extension, achieving full integration requires **faster progress on soft connectivity measures**. As EU candidate countries, Ukraine and Moldova are encouraged to speed up the adoption and interoperability of EU digital systems, such as eFTI-compliant data exchange, and expand EU-aligned practices for cross-border trade.

2.1.6 Recommendations for actions in the transport and trade sector

This section outlines short-term recommendations and priority actions in transport and trade sector.

1. Investigate TEN-T, WB and EBRD shortlisted initiatives and define the EU business offer

Review the current status of shortlisted TEN-T, WB and EBRD transport and trade initiatives – verify which are operational, under preparation, or pending financing. Based on this, define clear EU offer, identifying areas where EU participation or co-financing would add value, including opportunities for private regional and local companies in implementation and technology deployment.

2. South Caucasus coordination (Armenia, Azerbaijan, Türkiye)

Promote coordinated corridor planning between Armenia, Azerbaijan, and Türkiye. Formulate a coordinated offer to support soft-connectivity measures and trade facilitation at Armenia-Azerbaijan-Türkiye border crossings.

Undertake feasibility assessments for introducing “green lanes,” drawing on the Western Balkans experience, and advance the digitalisation of customs data exchange to enhance transparency and processing efficiency.

3. Launch recommended soft-measure assessments in selected regions

Initiate soft-measure assessment studies (shortlisted in chapter 2.2 Trade and Transport Project Pipeline) to prepare region-specific project proposals for EU support. In Central Asia, where the EBRD has recently completed such an assessment and identified priority soft-connectivity actions, these should now be translated into an operational plan with clearly defined responsibilities and timelines. For Moldova and Ukraine, A WB's supply chain readiness study is currently ongoing, focusing on potential operational and capacity bottlenecks for trade, including port performance, logistics capacity, border crossing operations. Once the study is complete, the EU could engage in the operationalisation of recommendations. Meanwhile, for the South Caucasus and Türkiye studies could be launched to identify soft-connectivity improvement needs and specific opportunities.

In all cases, it is recommended to ensure that private-sector participation is embedded in the implementation, both through service delivery and the deployment of advanced technologies and standards.

4. Deploy a targeted EU business and technology offer across all regions

Develop a coordinated EU business and technology offer addressing multimodal soft-connectivity challenges along the corridor.

- a. Supporting the transition to electronic transport documentation and real-time cargo traceability systems
- b. Deploying port community systems and integrated IT platforms (starting in Azerbaijan and Georgia)



- c. Promoting the adoption of common interoperable/EU rail and customs technologies (ERTMS, DAC, eTIR, NCTS, SEED) to enhance interoperability and data exchange
- d. Encourage private companies to invest sections of the rail corridor and in intermodal freight operations that requires access to global know-how. Progressively introduce inter-country services to support transit and exports: insurance, factoring, digital services, etc.



2.2 Trade and Transport Sector Project Pipeline

This chapter outlines the pipeline of key ongoing and planned trade and transport infrastructure projects across the Eastern Partnership, Türkiye, and Central Asia. The initiatives are grouped by region (Ukraine & Moldova, Türkiye, the South Caucasus, and Central Asia) to provide a clear overview of the investment landscape. Each project is assessed for its relevance to the shared regional priorities, illustrating how these investments contribute to enhancing connectivity, diversifying trade routes, and improving regional logistics efficiency.

2.2.1 Key Ongoing and Planned Initiatives - South Caucasus

Table 2. List of Key Ongoing Initiatives in the South Caucasus (Armenia, Georgia, Azerbaijan).

No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
1	AM: North–South Road Corridor (from Georgia to Iran)	Road	Blended (EBRD, ADB, Others)	2300 (ongoing) 600 (planned)	Approach 2 (Improving connectivity in the South Caucasus), Approach 4 (Promote private sector partnerships) - prior further extension of transport network of Armenia, 77% of Armenia's cargo is transported via Georgia. Part of TEN-T extension network projects. Recommendation: Subject that not all the funds are committed and implementing partners selected, some of the road development projects could be structured as PPP and partnerships with companies could be explored.
2	AZ: E60 Ganja–Georgian Border	Road	EBRD	305	Approach 4 (Promote private sector partnerships) Part of TEN-T extension network projects. Recommendation: Subject not all the funds are committed and implementing partners selected, some of the projects could be structured as PPP and partnerships with companies could be explored.
3	GE: East-West Highway	Road	Blended (EIB, WB, ADB)	1000	Approach 4 (Promote private sector partnerships) - strategic East–West Highway, connecting Tbilisi to Black Sea ports, since over 85% of containers arriving at Batumi Port delivered by truck ²⁶ . Batumi Bypass Road is part of the East-West Highway. Part of TEN-T extension network projects. Recommendation: Subject that not all the funds are committed and implementing partners selected, some of the projects could be structured as PPP and partnerships with companies could be explored.
4	GE: Batumi Bypass Road	Road	Blended (ADB, AIIB)	266	
5	AM: eTIR Project	Road, Digital	UNECE	7	Approach 3 (Soft connectivity and standard's compatibility) Recommendation: Azerbaijan, Georgia, and Türkiye have previously piloted or initiated implementation of the eTIR system, and may maintain varying levels of readiness. Regional coverage could be pursued by extending eTIR participation to Armenia for faster border crossing, subject political agreement.
6	AM: Syunik Customs and Logistics Centre	Logistics	EBRD	12	



No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
7	AM: Yerevan Customs and Logistics Centre	Logistics	EBRD	45	Approach 2 (Improving connectivity in the South Caucasus) - customs and logistics center will be critical for transit flows, should Armenia be integrated to the MC (via connections with Azerbaijan and Türkiye).
8	AZ: Rail sections connecting to TRIPP	Rail	Not specified	0.25	Approach 2 (Improving connectivity in the South Caucasus) - Azerbaijan is about to complete railway sections bordering Armenia (Horadiz-Aghband and Osmanli-Horadiz). The missing link between Azerbaijan and Türkiye will be TRIPP, crossing via Armenia's Syunik region (see more detail in the planned projects section).
9	AZ: Azerbaijan Railways Digital Transformation Project	Rail, Digital	Blended (ADB, Government of Azerbaijan)	51	Approach 3 (Soft connectivity and standard's compatibility) Recommendation: Scope of the project to be investigated more in detail, provides potential for introducing digital transport documents and procedures interoperable with other countries, which is one of the major bottleneck along the MC. One of the possible avenues for utilising international best practices in rail digital transformation could be building on ERTMS (European Rail Traffic Management System). ERTMS could also provide an avenue to implement European standards since it would be based on the CCS TSI (technical specifications for railway signalling). This could open a window to harmonise further on technical standards.
10	GE: Railway Sector Reform Program, Subprogram 1 and Subprogram 2	Rail, Soft	Blended (French Development Agency, ADB)	44	Approach 3 (Soft connectivity and standard's compatibility) - the proposed program (loan) will support Georgia's railway sector reforms in accordance to the EU <i>aquis</i> (regulation, corporate governance, financial restructuring, and organizational restructuring). Recommendation: shortage of locomotives is one of the major operational constraints in the MC (BTK rail line) – projects scope to be investigated if acquiring locomotives could be financed.
11	AZ: Baku-Tbilisi-Kars (BTK), part of East-West Railway	Rail	Blended (EIB, Others)	1000	Approach 3 (Soft connectivity and standard's compatibility) - although not explicitly named as top priority by WB or TEN-T, still this is currently the major railway line connecting Port of Baku to Türkiye and further on to Europe. Recommendation: One of the possible avenues for utilising international best practices in rail digital transformation could be building on ERTMS (European Rail Traffic Management System). ERTMS could provide an avenue to implement European standards since it would be based on the CCS TSI (technical specifications for railway signalling). This could open a window to harmonise further on technical standards.
12	GE, TR: Baku-Tbilisi-Kars (BTK) Double Gauge Line Connection Upgrading of the railway connection between Akhalkalaki and Kars Logistics Center to double gauge to accelerate the border crossing between Türkiye and Georgia.	Rail, BCP	EIB	68	Approach 3 (Soft connectivity and standard's compatibility) - although not explicitly named as top priority by WB or TEN-T, still this is currently the major railway line connecting Port of Baku to Türkiye and further on to Europe. At Akhalkalaki, a transshipment terminal enables gauge changes between Soviet gauge and Türkiye's standard gauge. However, operational inefficiencies at Akhalkalaki such as delays due to wagon platform adjustments and harsh winter conditions frequently disrupt rail operations ²⁷ . This is also a potential future bottleneck as Sivas-Kars line in Türkiye ramps up ²⁸ .



No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
13	GE: Railway Modernization Project (funded via Georgian Railway Green Bond, issued by EBRD, >400 m EUR)	Rail	Blended (EBRD, ADB)	230	<p>Approach 1 (Impactful Infrastructure developments)</p> <p>Recommendation: shortage of locomotives is one of the major operational constraints in the MC (BTK rail line), one of WB priorities. Projects scope to be investigated if acquiring locomotives could be financed.</p> <p>Although not explicitly named as top 10 priority, still this is currently the major railway line connecting Port of Baku to Türkiye and further on to Europe.</p> <p>Part of TEN-T extension network projects.</p> <p>Recommendation: One of the possible avenues for utilising international best practices in rail digital transformation could be building on ERTMS (European Rail Traffic Management System). ERTMS could provide an avenue to implement European standards since it would be based on the CCS TSI (technical specifications for railway signalling). This could open a window to harmonise further on technical standards.</p>
14	AZ: Development of the Port of Baku (phase 1)	Maritime/Port	EBRD	140	<p>Approach 1 (Impactful Infrastructure developments), Approach 4 (Promote private sector partnerships) - noted by WB as investment priority to improve MCs' viability by 2030.</p> <p>Part of TEN-T extension network projects.</p> <p>See recommendations for "Port of Baku expansion" project, phase 2, in the planned project chapter.</p>
15	AZ: Alat Free Trade Zone (Port of Baku)	Maritime/Port	Potential PPPs	410	
16	AZ: ASCO Fleet Expansion (non-sovereign loan) Azerbaijan Shipping Company (ASCO) is a State-Owned Enterprise, operates on both Caspian and Black Sea and is one of two providers for shipping services along the Caspian Sea.	Maritime/Port	EBRD	35.45 - 50.65	<p>Approach 4 (Promote private sector partnerships) – project links to WB²⁹, OECD³⁰, and ADB³¹ recommendations to raise container shipping capacity on Baku-Aktau route (after Baku Port's capacity improvement is completed, shipping companies' capacity would only be at 30-40 %), also need of new vessels due to the Caspian Sea level changes, all contributing to ensuring reliable sailing regularity to match rail freight inflows.</p> <p>Recommendation: Trusted, well-established international producers could be positioned as partners to provide the required vessels.</p>
17	AZ: Port of Baku "Digital Route" (trade/port single-window / web platform) & Port Management Information System	Maritime/Port	OSCE (more specifically, financed by Germany, Italy, Iceland, Azerbaijan)	Not specified	<p>Approach 3 (Soft connectivity and standard's compatibility), Approach 4 (Promote private sector partnerships) - project is aligned with specific ADB³² recommendation to introduce port community system and digital booking at Alat as well as more general WB directions to improves port's automation, transparency of procedures/prices as well as transition to electronic documents for the Caspian Sea.</p> <p>Recommendation: project to be investigated (since launch was expected on 2024, but not announced as completed yet). If project progress is stalling, partnerships with EU companies could be potentially explored to provide effective and well functional solutions for Maritime Single Window.</p>
18	AM, AZ, GE (+MD, UA): Expanding green and digital trade and transport in the Eastern Partnership	Trade facilitation	GIZ	5	<p>Approach 3 (Soft connectivity and standard's compatibility)</p> <p>Recommendation: Programme scope to be investigated and efforts to some extent could be targeted in addressing transport and trade related soft challenges – e.g., burdensome border crossing procedures, implementation of digital solutions</p>



No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
					(please see below a cross-cutting recommendations for improving digital connectivity at border crossing points, shirting to digital transport and trade data).
19	AM, AZ, GE: NCTS implementation (Europe-wide digital system for better management and control of goods, under the Common Transit Convention (CTC))	BCP, Road, Digital	Blended (AZ: EU Twinning project (ENI/ENEST), Italy's Customs and Monopolies Agency, State Customs Committee of the Republic of Azerbaijan, AM: no information, GE: Implemented)	Not specified	Approach 3 (Soft connectivity and standard's compatibility) - Armenia has recently applied. Azerbaijan have also earlier applied but did not follow up. Georgia has the NCTS operational. No political impact. Recommendation: It would be synergic to the cooperation between countries to proceed with national NCTS implementation (the full, cross-border application of NCTS is open only for the Contracting Parties of the CTC). In addition to NCTS, which covers transit procedures, another EU developed IT solution for automated exchange of data related to import and export customs procedures (SEED) could be considered alongside NCTS to improve efficiency of BCPs, following good practices in Western Balkans, Moldova, Ukraine and Romania.
20	GE: Logistics center in Kutaisi	Logistics	PPP	61	Approach 1 (Impactful Infrastructure developments) - part of TEN-T extension network projects on TCTC.
21	GE: E-70 Grigoleti – Kobuleti Bypass (FL 20160404)	Road	EIB	101	Approach 1 (Impactful Infrastructure developments) - part of TEN-T extension network projects on TCTC.
22	GE: Grigoleti–Kobuleti Highway	Road	Blended (EIB, Government)	75	Approach 1 (Impactful Infrastructure developments) - part of TEN-T extension network projects on TCTC.
23	GE: Poti Bridge	Road	Blended (Government, ADB)	17	Approach 1 (Impactful Infrastructure developments) - part of TEN-T extension network projects on TCTC.
24	GE: Samtredia–Grigoleti Highway	Road	Blended (EIB, Government, EU)	275	Approach 1 (Impactful Infrastructure developments) - part of TEN-T extension network projects on TCTC.

Table 3. List of Key Planned Initiatives in South Caucasus (Armenia, Georgia, Azerbaijan).

No.	Project	Type	Funding partners	Approx. total budget, EUR	Contribution to connectivity approaches
1.1	AM proposed: Crossroad of Peace (restoring railway communications between AM, AZ and TR, incl. TRIPP)	Rail, BCPs	Not specified	Not specified	Approach 3 (Soft connectivity and standard's compatibility), Approach 4 (Promote private sector partnerships), Approach 2 (Improving connectivity in the South Caucasus)



No.	Project	Type	Funding partners	Approx. total budget, EUR	Contribution to connectivity approaches
1.2	AM, AZ: TRIPP	Rail, Road, BCPs	Blended (mix of national government funding (Azerbaijan, Türkiye), international finance (Turkish financing, U.S. agencies))	Not specified	<p>Recommendations: Inefficient cross-border operations could significantly undermine potential benefits from the new hard investments in the new connections. Especially when BCPs are in focus, given EU's experience with green lanes initiatives and well-established digital solutions for border crossing operations (NCTS, SEED), it holds a strong value proposition for the region to address soft connectivity issues.</p> <p>Recommendation: EU could facilitate the process engaging regional / international companies to ensure competition (and thus better-quality services) in providing rail and logistics services.</p> <p>Recommendations: for delivering rail connectivity projects, break-of-gauge that happens on the border with Türkiye must be investigated and common standards and technologies for railway could be promoted.</p>
2	AM: Border Crossing Points Modernisation Project	BCP	EBRD	15	<p>Approach 2 (Improving connectivity in the South Caucasus)</p> <p>Recommendation: Significant Border Crossing Points Modernisation Project, potentially funded by EBRD, is under approval stage, could be an important instrument not only to improve BCPs with Georgia and Iran, but also target restoring operations of BCPs with Azerbaijan and Türkiye. It is recommended to assess the project scope and align it with the Crossroad of Peace initiative.</p>
3	AZ, GE: Feasibility Study for Introduction of Con trailer (Ro-La) Services in Georgia and Azerbaijan	BCP, Road, Rail	Feasibility Study supported by EBRD	Not specified	<p>Approach 4 (Promote private sector partnerships) - project is well aligned with WB recommendations to ensure availability of rolling stock, in particular on Georgia/Azerbaijan BCP, since this BCP (Gardabani - Böyük Kasik BCP) with the existing throughput capacity emerges as an important bottleneck on the MC. It will particularly impact the operation of the MC when the expansion of the railway's throughput capacity on the Azerbaijani side is completed (see ongoing project section "Baku-Tbilisi-Kars (BTK), part of East-West Railway").</p>
4	AZ, GE: Rustavi-Red Bridge Highway The highway connects the border with Azerbaijan at the Red Bridge to the Black Sea coast in Georgia.	Road, BCP	EIB	160	<p>Approach 4 (Promote private sector partnerships)</p> <p>Part of TEN-T extension network projects.</p> <p>Recommendation: Subject not all the funds are committed and implementing partners selected, some project could be structured as PPP with EU companies.</p>
5	AZ: Port of Baku throughput expansion, Phase 2 Port of Baku (Alat) – Azerbaijan's main maritime hub. It is currently undergoing major capacity expansion, to raise overall container throughput from 15 to 25 million tons annually.	Maritime/Port	Blended (World Bank, AIIB)	Not specified	<p>Approach 1 (Impactful Infrastructure developments), Approach 4 (Promote private sector partnerships) – one of WB recommendations.</p> <p>Recommendation: More in depth investigation is needed to understand if planned expansion is to address all the major issues in the current scope: capacity constrains (yards, cranes); poor navigation conditions in approach channel; high siltation rate in navigation channel; narrow port entrance (~50 m); poor connections between ports and highways/railway stations.</p> <p>Recommendation: It is also not evident from publicly available sources if planned expansion is to address number of soft issues: slow ship-to-shore handling operations; coordination gaps between port, railway, customs and freight-forwarders; time-consuming other inspection procedures (e.g. SPS checks).. This should be further investigated and measures promoting soft connectivity enablers addressed either under same or dedicated project. E.g., it is a common practice that a Port Community System (IT solution) is the best solution for better coordination and for reduced processing time by services involved.</p>



No.	Project	Type	Funding partners	Approx. total budget, EUR	Contribution to connectivity approaches
6	GE: Deep-Sea Port at Anaklia	Maritime/Port	Blended (PPP, Anaklia Development Consortium, Government of Georgia)	563	<p>Approach 1 (Impactful Infrastructure developments) - port capacity in Georgia is part of WB recommendations. However, project is very political, currently implemented by PPP under the leadership of China Communication Construction Company (CCCC).</p> <p>Part of TEN-T extension network projects. If realized, Anaklia could significantly expand Georgia's maritime capacity and support the growth of the MC.</p>
7	GE: Rail/road connection to Anaklia Deep-Sea Port	Maritime/Port, Rail, Road	Government of Georgia)	216	<p>Approach 1 (Impactful Infrastructure developments), Approach 4 (Promote private sector partnerships) - port capacity, incl. it's connections with roads and rail in Georgia is part WB recommendations.</p> <p>Part of TEN-T extension network projects.</p>
8	GE: Tbilisi–Kumisi Logistics Centre	Logistics	Potential PPP	75	<p>Approach 1 (Impactful Infrastructure developments), Approach 4 (Promote private sector partnerships) - this logistic hub is strategically close to new East–West Highway. Corresponds to the recommendations of ADB³³. Further investments in key logistic hubs is necessary to actually meet the increased demand for the transport and goods.</p> <p>Part of TEN-T extension network projects.</p> <p>Recommendation: There are good examples of EU companies investing in logistic hubs (Gebrüder Weiss, Austrian company “DLF – Georgia Logistics Terminal”), thus, potential partnerships with EU businesses could be explored.</p>



2.2.2 Key Ongoing and Planned Initiatives - Central Asia

Table 4. List of Key Ongoing Initiatives in Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan).

No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
1	KZ: Almaty rail bypass	Rail	Blended (IFC A, AIIB, Government of Kazakhstan, Kaztemirtrans JSC (KTT), Other Lenders)	450	Approach 1 (Impactful Infrastructure developments) - highlighted by the CAREC Transport Strategy 2030 ³⁴ , ADB (2024) ³⁵ , EBRD ³⁶ , WB ³⁷ as part of the regional effort to remove urban bottlenecks and increase rail throughput capacity. The bypass would divert heavy freight from central Almaty, improving transit efficiency along the TCTC and supporting multimodal integration between Kazakhstan's eastern logistics clusters (Korgos, Almaty) and western ports (Aktau, Kuryk).
2	KZ: Nuryl Zhol (Bright Path) national infrastructure programme — transport component Incl. West Europe – West China corridor	Road	Blended (State budget, PPPs, FDIs)	16 910	Approach 1 (Impactful Infrastructure developments), Approach 3 (Soft connectivity and standard's compatibility) - Kazakhstan's flagship development framework/programme, driving the West Europe–West China corridor.
3	KZ: Aktau and Kuryk port upgrades; expansion of the Sea Fleet	Port	Blended (EBRD, Others)	500	Approach 1 (Impactful Infrastructure developments) - OECD ³⁸ flags under-utilisation and weak co-ordination between Aktau and Kuryk, and urges stronger multimodal planning/PPP use; automation would directly tackle Caspian bottlenecks and pricing power. Ports are central to moving bulk/CRM and agri/metal exports across the Caspian.
4	KZ: Korgos hub (dry port)	Logistics	Blended (Mix of private investors (China), Government of Kazakhstan)	202 (Ongoing) 1525 (Planned)	Approach 1 (Impactful Infrastructure developments) - OECD ³⁹ notes Korgos "lacks a regional vision" beyond limited PRC co-operation; international equity/ops standards could professionalise terminal management and tie it into corridor-wide digital processes.
5	KZ: Dostyk–Moynty second track and capacity upgrades (Dostyk border capacity works)	Rail	Blended (Kazakh Railways (KZT), Government of Kazakhstan, Possible MDBs)	1000	Approach 1 (Impactful Infrastructure developments) - Kazakhstan-China border crossing improvement by adding second track on busy Dostyk–Moynty rail section (Kazakhstan–China corridor) to raise throughput for China–Europe transit.
6	KZ: Jezkazgan–Karagandy section on the Trans-Caspian route	Road	AIIB	550	Approach 1 (Impactful Infrastructure developments) - upgrades the Trans-Caspian route in Kazakhstan through climate-resilient reconstruction, dual carriageway design, electronic tolling, axle load control, last-mile connectivity, and institutional reforms to remove bottlenecks and strengthen the TCTC.
7	KZ: Logistics centers construction (Sukhoi port at logistics complex Qostanay, Kolzhat Dry Port, Kostanai strategic hub)	Logistics	Industrial Development Fund	200	Approach 1 (Impactful Infrastructure developments) - EBRD ⁴⁰ , CAREC ⁴¹ emphasise the need to expand inland logistics and intermodal terminals across Kazakhstan to relieve congestion at border crossings and ports.



No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
8	KZ: CAREC 1, 2 and 6 Connector Road	Road	ADB	260	Approach 1 (Impactful Infrastructure developments) - multiple KZ connector investments (Atyrau–Astrakhan; Balkhash–Burylbaital; Taldykorgan–Kalbatau; Kurty–Kapsagai) that raise TCTC road capacity
9	UZ: Railway Electrification (CAREC Corridor 2 Projects)	Rail	Blended (ADB, Government of Uzbekistan)	664	<p>Approach 1 (Impactful Infrastructure developments) - cited by CAREC⁴² and ADB⁴³ as approach projects enhancing reliability, speed, and energy efficiency on Uzbekistan's east–west corridors.</p> <ul style="list-style-type: none"> • Pap–Namangan–Andijan electrification: Links Uzbekistan's most densely populated and economically productive region Namangan, Andijan, and Fergana with Tashkent and the broader international rail network, ultimately integrating into the CKU corridor (ESCAP, 2021) • Bukhara–Miskin–Urgench–Khiva electrification: strengthens Uzbekistan's westward linkage into the TCTC; contributes to improving access to Turkmenistan and the Caspian Sea
10	UZ: A380 highway improvements	Road	Blended (ADB, AIIB, Government of Uzbekistan)	1000	Approach 1 (Impactful Infrastructure developments) - highlighted by CAREC ⁴⁴ and ADB ⁴⁵ as a critical north–south trunk route (Guzar–Bukhara–Nukus–Beyneu) connecting Kazakhstan, Uzbekistan, Turkmenistan, and Iran. Enhances regional trade and integration with the TCTC. The A380 connects Kazakhstan in the north with Uzbekistan's heartland and further south to Turkmenistan and Iran, reinforcing Uzbekistan's role as a regional transit bridge.
11	UZ, KY: China–Kyrgyzstan–Uzbekistan (CKU) Railway	Rail	Blended (China's, Kyrgyzstan's, Uzbekistan's governments)	4000	<p>Approach 1 (Impactful Infrastructure developments) - widely recognized as a major missing link providing shorter China–Europe route.</p> <p>For Uzbekistan, it opens a new export route through the Fergana Valley, reducing dependence on northern corridors and strengthening access to Turkmenistan and Caspian gateways. For Kyrgyzstan, it transforms the country from a landlocked transit bottleneck into a key regional bridge, stimulating trade, logistics, and industrial development along its southern corridor</p>
12	KZ, UZ, KY, TJ, TM: Better Customs for Better Client Services in CAREC Countries (CA, AZ, GE)	BCP	Blended (Regional Cooperation and Integration Fund, People's Republic of China Poverty Reduction and Regional Cooperation Fund, United Kingdom Fund for Asia Regional Trade and Connectivity under the Regional Cooperation and Integration Financing Partnership Facility, Republic of Korea e-Asia and Knowledge Partnership Fund)	1.6	<p>Approach 3 (Soft connectivity and standard's compatibility) - builds institutional capacity and transparency for seamless regional movement.</p> <p>Recommendation: support for digital interoperability pilots, focusing on technical interoperability and data exchange between national Single Windows and promoting regulatory convergence on data and customs procedures, interoperability with common systems.</p>



No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
13	KZ, UZ, KY, TJ, TM: Regional trade policy and facilitation support projects by ADB	Trade facilitation	ADB	1	Approach 3 (Soft connectivity and standard's compatibility) - builds institutional capacity for harmonised border procedures, data exchange, and transit facilitation, directly advancing interoperability with common, trusted international solutions systems. Recommendation: Coordinate with ADB to align technical assistance with EU digital trade and customs initiatives, ensuring compatibility with common interoperability frameworks.
14	KZ, UZ, KY, TJ, TM: Trans Caspian Corridor Capacity Development Programme	Trade facilitation	EC, BMZ	15.3	Approach 3 (Soft connectivity and standard's compatibility) Improve soft connectivity and gender-responsive regulatory frameworks in Central Asia and along the Trans-Caspian Transport Corridor, including regulatory approximation with EU and international technical standards and best practices in low carbon and resilient development.
15	KY: Alternative North–South Road (Kochkor–Jalal-Abad)	Road	Blended (ADB, China Exim Bank, CRBC)	80	Approach 1 (Impactful Infrastructure developments) - connecting the country's north and south, bypassing the existing, overburdened Bishkek-Osh Road; enhancing connectivity with Kazakhstan and Tajikistan. Improves domestic and cross-border freight flow.
16	KY: Alternative North–South Road CAREC Corridors 1 and 3 Connector Road Project, Epkin–Bashkugandy	Road	Blended (ADB, EFSD, Saudi Fund for Development, Islamic Development Bank, Government of Kazakhstan)	348	
17	KY: Issyk-Kul Ring Road	Road	Blended (~15% by EBRD, Others)	47	Approach 1 (Impactful Infrastructure developments) - Issyk-Kul – one of the economic centres of Kyrgyzstan (along with the capital Bishekek, and Osh), feeder line development/ connectivity to TCTC
18	KY: Reconstruction of Osh-Batken-Isfana Road Project	Road	Blended (Islamic Development Bank, Government of Kyrgyzstan)	20	Approach 1 (Impactful Infrastructure developments) - improves regional connectivity between southern Kyrgyzstan and Tajikistan, enhancing access for agricultural and mining outputs to regional trade routes
19	KY: Reconstruction of Karabalta – Chaldovar Road	Road	EBRD	50	Approach 1 (Impactful Infrastructure developments) - the project will enhance the Southern Trans-Caspian Corridor, improving connectivity with Kazakhstan via the Chaldovar checkpoint and supporting efficient regional transport and trade.
19	TJ: Central Asia Regional Road Links Program (2nd / 4th phases impacting Tajikistan)	Road	Blended (World Bank, ADB, Government of Tajikistan, Others)	45.59 (Phase 2), 110.6 (Phase 4)	Approach 1 (Impactful Infrastructure developments) - strengthening Tajikistan's links with Uzbekistan and the Kyrgyzstan
20	TJ: Obigarm-Nurobod Road Project	Road	Blended (~42% by EBRD, Others)	340	Approach 1 (Impactful Infrastructure developments) - ensures connectivity between Dushanbe and eastern Tajikistan and supports trade through Kyrgyzstan.
21	TJ: Road Network Sustainability Project	Road, Rail	ADB	106 + 37 (Additional financing)	Approach 1 (Impactful Infrastructure developments) - aims to improve asset management, climate resilience, and institutional capacity for Tajikistan's multimodal transport system.
22	TJ: Anzob Tunnel (M34, Dushanbe — Khujand)	Road	Government of Iran	42	Approach 1 (Impactful Infrastructure developments) - improves year-round connectivity on the Dushanbe–Khujand route within Corridor 2, addressing safety



No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
					and ventilation deficiencies that limit northern access and increase seasonal closure risk.
23	TJ: Rehabilitation of Guliston–Farkhar–Pyandj–Dusti Road	Road	Blended (China Road & Bridge Corporation, Islamic Development Bank)	27	Approach 1 (Impactful Infrastructure developments) - a key southbound connector linking Tajikistan with Afghanistan and Turkmenistan. Supports cross-border trade and access to regional value chains.
24	KZ: Darbaza–Maktaaral Railway Project	Rail	Not specified	468	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD's Central Asia Connectivity assessment ⁴⁶ . Improves north–south freight capacity and border linkages with Uzbekistan.
25	TM: Turkmenbashi–Garabogaz (Kazakhstan border) road rehabilitation	Road	Not specified	51	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD's Central Asia Connectivity assessment ⁴⁷ . The new highway will serve as a vital link between Turkmenistan and Kazakhstan, further integrating the nation into regional and international transport corridors.
26	TJ: Extension of existing northern railway line to the Sughd Economic Zone and northern part of the region	Rail	Not specified	68	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD's Central Asia Connectivity assessment ⁴⁸ . Work is under way to implement a project for railway construction from Spitamen station to the Sugd FEZ (22 km long), which will provide an opportunity for closer cooperation between railway logistics centers in Central Asian countries, China, European Union, Middle East, Iran and Afghanistan. This project is also considered as an integral part of a regional project for the construction of a railway with a length of more than 140 km to the largest silver deposit of Big Koni Mansur.
27	KY, KZ: Almaty–Bishkek Economic Corridor Regional Improvement of Border Services Project	BCP	ADB	26	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD's Central Asia Connectivity assessment ⁴⁹ .
28	KY: Construction of Torugart–Arpa–Makmal–Jalal Abad railway line	Rail	Not specified	4000	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD's Central Asia Connectivity assessment ⁵⁰ . Expands cross-border freight potential and opens access for CRM and industrial exports from southern Kyrgyzstan. The project will cut freight routes by over 1,000 km and reduce delivery time by a full week compared to the existing China-Kazakhstan-Uzbekistan routes.
26	TM: Ashgabat–Turkmenabat Motorway	Road	Not specified	2000	Approach 1 (Impactful Infrastructure developments) - provides a high-capacity expressway across Turkmenistan connecting Uzbekistan to the Caspian, improving corridor reliability.

Table 5. List of Key Planned Initiatives in Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan).

No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
1	KZ: Altynkol terminal expansion	Logistics	Potential: China	18	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD's Central Asia Connectivity assessment ⁵¹ . Expands cargo handling capacity at the Altynkol/Khorgos logistics hub, strengthening east–west rail operations.



No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
2	KZ: Aktau–Beyneu railway double tracking & electrification	Rail	Blended (State Budget, Possible MDBs)	1700	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD's Central Asia Connectivity assessment ⁵² . Increases freight capacity and energy efficiency on Kazakhstan's western corridor to the Caspian, supporting east-west transport.
3	KZ, UZ: Beyneu (KZ)–Nukus (UZ) railway reconstruction	Rail	Not specified	159	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD's Central Asia Connectivity assessment ⁵³ . Strengthens the Uzbekistan–Kazakhstan corridor linking to Aktau Port, enhancing Caspian access.
4	KZ: Almaty–Khorgos railway double tracking (927 m EUR) & electrification (290 m EUR)	Rail	Blended (State Budget, Possible MDBs)	927 (Double-tracking) 290 (Electrification)	Approach 1 (Impactful Infrastructure developments) – prioritised investment in EBRD's Central Asia Connectivity assessment ⁵⁴ . Expands rail capacity on the China-border segment, reducing bottlenecks at Khorgos.
5	KZ: Shalkar-Beyneu Road Project	Road	Not specified	709	Approach 1 (Impactful Infrastructure developments) – prioritised investment in EBRD's Central Asia Connectivity assessment ⁵⁵ . Enhances western Kazakhstan's connection to the Caspian through improved road reliability and resilience.
6	KY: Development & upgrade of multimodal logistics centres in Osh and Alamedin	Logistics	Not specified	68	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD's Central Asia Connectivity assessment ⁵⁶ . Strengthens Kyrgyzstan's southern and northern logistics capacity, linking economic centres production with regional corridors
7	KY: Electrification & rehabilitation of Balykchy–Lugovaya rail line	Rail	Not specified	322 (Electrification) 103 (Rehabilitation)	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD's Central Asia Connectivity assessment ⁵⁷ . Strengthens Kyrgyzstan's transit capacity and integration into regional rail supply chains.
8	TJ: Development of a one-stop border post; joint logistics centre at Fatehabad BCP	BCP	Not specified	18	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD's Central Asia Connectivity assessment ⁵⁸ .
9	TJ: Development of a one-stop border post; joint logistics centre at Tursonzoda	BCP	EBRD	tbc	Approach 1 (Impactful Infrastructure developments) - prioritised investment following discussions under TCTC Coordination Platform
10	TJ: Electrification & rehabilitation of the northern railway network (Khujand–Uzbek border)	Rail	Not specified	143	Approach 1 (Impactful Infrastructure developments) – prioritised investment in EBRD's Central Asia Connectivity assessment ⁵⁹ .
11	TJ: Construction of additional anti-avalanche galleries along Dushanbe–Chanak road (5,665 m)	Road	Not specified	43	Approach 1 (Impactful Infrastructure developments) – part of CAREC strategic projects; Tajikistan's main international corridor (M34) to Uzbekistan - Kazakhstan - Caspian. Enhances road safety and reliability on a vital trade artery.
12	TJ: Rehabilitation of Dushanbe–Rudaki–Yavan–A. Jomi–Sarband Road	Road	Not specified	425	Approach 1 (Impactful Infrastructure developments) - key CAREC project linking Dushanbe's industrial zones with the southern border region and Afghanistan, supporting CRM transport and regional integration.
13	TM: Develop a logistics centre at the Turkmenistan–Kazakhstan border	Logistics, BCP	Not specified	46	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD's Central Asia Connectivity assessment ⁶⁰ .



No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
14	TM: Turkmenbashi–Gyzylgaya–Konye-Urgench road rehabilitation/reconstruction	Road	Not specified	291	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD's Central Asia Connectivity assessment ⁶¹ .
15	TM: Increase Uzen–Bolashak–Bereket rail line capacity	Rail	Not specified	564	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD's Central Asia Connectivity assessment ⁶² .
16	UZ: Develop MMCs & A-class warehouses (Fergana, Tashkent, Samarkand/Bukhara, Navoi)	Logistics	Not specified	45	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD's Central Asia Connectivity assessment ⁶³ . Expands Uzbekistan's inland logistics and warehousing network at key industrial nodes, strengthening east–west supply-chain integration.
17	UZ: Reduction in regulations on cabotage for rail operations	Rail	Not specified	Not specified	Approach 1 (Impactful Infrastructure developments) - prioritised in EBRD's policy engagement framework to promote open market access. Supports CAREC (2024) ⁶⁴ goals to increase private-operator participation in multimodal corridors.
18	UZ: Oq-Kuprik railway station capacity enhancement (4→6 lanes)	Rail	Not specified	4.4	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD's Central Asia Connectivity assessment ⁶⁵ . Expands handling capacity at Uzbekistan's primary northern rail gateway to Kazakhstan, improving Corridor 2 efficiency.
19	UZ: Expansion of railway into Namangan FEZ (8,2mEUR) and gradual replication of this practice to other FEZ (41mEUR)	Rail	Not specified	49	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD's Central Asia Connectivity assessment ⁶⁶ . Connects Free Economic Zones in the Fergana Valley to the national rail grid, enabling industrial exports and logistics efficiency.
20	UZ: Enhanced capacity on Tashkent–Samarkand railway line	Rail	Not specified	1100	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD's Central Asia Connectivity assessment ⁶⁷ . Expands one of Uzbekistan's busiest passenger-freight lines, integrating high-capacity logistics flows along Corridor 2.
21	UZ: Further development of Farap/Alat BCP & approach roads	Road	Not specified	19.6	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD's Central Asia Connectivity assessment ⁶⁸ . Relieves bottlenecks along the south-western corridor linking Uzbekistan and Turkmenistan, improving border performance.
22	UZ, KZ: Uchquduq–Kyzylorda road (Uzbekistan section)	Road	Not specified	97	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD's Central Asia Connectivity assessment ⁶⁹ . Complements Corridor 2 upgrades, strengthening the north–south trade route to Kazakhstan.
23	UZ: Construction of roads: Tashkent–Samarkand (1,3bEUR) and Tashkent–Andijan (2,5bEUR) on PPP basis	Road	Not specified	3800	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD's Central Asia Connectivity assessment ⁷⁰ . Modernises core expressways connecting industrial hubs and the Fergana Valley, improving logistics efficiency.
24	UZ: Multimodal logistics hubs in Navoi and Andijan	Logistics	Blended (Mixed public and	Not specified	Approach 1 (Impactful Infrastructure developments) - integrates Uzbekistan's major production regions into international supply chains, addressing limited freight-network connectivity.



No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
			private companies)		
25	TM: Balkan Shipyard (part of Turkmenbashi complex) — shipbuilding & repair expansion + vessel procurement	Port	Blended (OPEC, Islamic Development Bank)	38	Approach 1 (Impactful Infrastructure developments) - expands the main Caspian shipyard supporting fleet modernisation and maritime logistics.
26	TM: TransTurkmenistan Railway Modernization (Turkmenabat–Mary–Ashgabat–Turkmenbashi / “TMAT” corridor)	Rail	ADB	700	Approach 1 (Impactful Infrastructure developments) - upgrades Turkmenistan’s principal east–west railway linking Uzbekistan to Caspian ports, enhancing throughput.
27	TM: Ashgabat–Turkmenabat Motorway	Road	Not specified	2000	Approach 1 (Impactful Infrastructure developments) - provides a high-capacity expressway across Turkmenistan connecting Uzbekistan to the Caspian, improving corridor reliability.
28	KZ, UZ: Kyzylorda–Uchquduq (UZB) road	Road	Blended (EBRD, others)	68	Approach 1 (Impactful Infrastructure developments) - prioritised investment in EBRD’s Central Asia Connectivity assessment ⁷¹ . Improves north–south connectivity and facilitates regional trade flows.

2.2.3 Key Ongoing and Planned Initiatives - Ukraine, Moldova and Türkiye

Table 6. List of Key Ongoing Initiatives in Ukraine, Moldova and Türkiye.

No.	Project	Type	Funding partners	Approx. total budget, EUR	Contribution to connectivity approaches
1	UA: Customs & Transit Core Systems	BCP	Blended (DG ENEST, DG TAXUD; State Customs Service of Ukraine)	Not specified	Approach 3 (Soft connectivity and standard’s compatibility), Approach 5 (Further Ukraine and Moldova integration) - UNECE ⁷² notes that paperless trade implementation rate in Eastern Europe (Moldova, Ukraine) averaged at 64%, compared to EU average of 88%. The WB ⁷³ (2025) and the Commission’s Solidarity Lanes updates point to better border procedures and targeted tech (e.g., joint controls, scanners, coordinated border control, etc.) as ways to lift throughput.
2	UA, MD: Paperless Transport & e-Freight eFTI implementation in Ukraine and Moldova, e-TTN / e-CMR (domestic electronic consignment note in Ukraine; steps toward EU e-CMR in Ukraine); Technical work/pilots to standardize rail/road/waterway data exchange in Ukraine	Digital	Blended (DG ENEST, UNECE, Government of Ukraine)	Not specified	Recommendation: deepen support for legal/technical interoperability with EU systems (UCC/CTC/NCTS6; eFTI/EMSWe) and scale eCustoms data exchange pilots on SEED solution successfully tested between UA, MD and RO with potential for further scaling with other EU countries. Recommendation: Build digital transport corridors: e.g. eFTI (electronic freight transport information exchange system) implementation roadmap has been completed for Ukraine and Moldova, but implementation funding is not assigned.



No.	Project	Type	Funding partners	Approx. total budget, EUR	Contribution to connectivity approaches
3	UA: Border Data & Legal Interoperability Joint customs/border control with EU neighbours;	BCP	Blended (DG TAXUD, Government of Ukraine)	Not specified	Same as for projects n°1 and 2 in the list.
4	UA: Western BCPs capacity	BCP, Road, Rail	Blended (EIB, ENBR, Government of Ukraine)	500	<p>Approach 1 (Impactful Infrastructure developments), Approach 5 (Further Ukraine and Moldova integration) - Western BCPs link Ukraine to TEN-T feeder routes and lowers friction on cross-border freight movements, as well as secure movement of key commodities like agri-food, energy. Includes multiple projects under TEN-T priorities and Solidarity lines, such as:</p> <ul style="list-style-type: none"> • Rail BCP Vadul Siret–Vicsani; • BCP Galati (RO)–Giurgiuilesti (MD)–Reni; • Road BCP Porubne–Siret (RO); • Rail BCPs with Hungary and Slovakia; • Road BCPs with Poland; • Rail BCPs with Poland (short-term works Medyka, Dorohusk–Yahodyn); • RO-MD–UA Organisation of transport flows at Galati/Giurgiuilesti/Reni road BCP (partially implemented); • Siret Cross Border Infrastructure RO-UKR. <p>Ukraine has adopted National Strategy of BCPs Modernization. However, some projects are still being consulted with relevant neighbouring country. Formal bilateral agreements at governmental level may be required.</p> <p>Part of TEN-T extension network projects.</p>
5	UA: Rail integration to EU; EU-gauge (1435 mm)	Rail	Blended (EIB, CEF, USAID)	15	<p>Approach 3 (Soft connectivity and standard's compatibility) - EU strategy for the integration of the UA/MD railway system into the EU transport system⁷⁴ highlights, that the difference in gauge, leading to complex and costly transshipment operations at the borders prevents the full interoperability between the respective EU, Ukrainian and Moldovan networks.</p> <p>Requires economic viability testing on which routes most beneficial to develop in 1435 mm gauge. Existing recommendations:</p> <ul style="list-style-type: none"> • Development of TEN-T Baltic–Black–Aegean (Lviv–Chernivtsi-to Black/Aegean Sea ports. future to Ternopil–Odesa); • Development of TEN-T North Sea–Baltic (Yahodyn–Kovel; Mostyska II–Sknyliv; extensions to Kyiv/Kharkiv/Mariupol. <p><i>Note: part of rail integration projects under 'Planned'</i></p> <p>Part of TEN-T extension network projects.</p>
6	MD: BCP Albita–Leuseni	BCP	Blended (50% by CEF, WB)	19.2	<p>Approach 1 (Impactful Infrastructure developments), Approach 5 (Further Ukraine and Moldova integration) - rehabilitation & Upgrades (Implementation): Upgrade access road and modernization of BCP</p> <p>Part of TEN-T extension network projects.</p>

No.	Project	Type	Funding partners	Approx. total budget, EUR	Contribution to connectivity approaches
7	MD: Giurgiulesti Port upgrades	BCP	Blended (EBRD, WB, CEF, EIB)	Not specified	Approach 1 (Impactful Infrastructure developments), Approach 5 (Further Ukraine and Moldova integration) - multiple projects, either under implementation or underway, around Giurgiulești Port and key border crossings with Romania and Ukraine. Aim to enhance multimodal connectivity, customs efficiency, and integration into the TEN-T network.
8	TR. TRIPP related Kars (Georgian Border)-Dilucu (Azerbaijani Border) Railroad	Rail	Blended (OPEC, Islamic Corporation for the Insurance of Investment and Export Credit (ICIEC), The Swedish Export Credit Agency (EKN), The Oesterreichische Kontrollbank (OeKB))	2 700	Approach 2 (Improving connectivity in the South Caucasus) - railway Project comprises the construction of a 224km electrified double-track, high-speed railway with modern signaling and safety systems, connecting Türkiye's eastern provinces of Kars and Iğdır with the Dilucu border crossing with Azerbaijan.
9	TR, AM. TRIPP related TR Kars - Gyumri (Armenian Border) Connection	Rail	Blended (EIB, others)	37	Approach 2 (Improving connectivity in the South Caucasus) - the Gyumri-Kars railway has been inactive since 1993. Double gauge construction of the rail link between Gyumri (Armenian Border) and Kars.
10	TR. Ispartakule-Cerkezkoy Rail Project (Previously: Halkali-Cerkezkoy Rail Project)	Rail	Blended (EBRD, AIIB)	300	Approach 5 (CRMs and Central Asia – EU trade) - Construction of ~67 km double-track electrified high-speed line to increase capacity/speed toward the EU border. Part of TEN-T extension network projects.

Table 7. List of Key Planned Initiatives in Ukraine, Moldova and Türkiye.

No.	Project	Type	Funding partners	Approx. total budget, EUR	Contribution to connectivity approaches
1	UA: Rail integration to EU; EU-gauge (1435 mm)	Rail	Blended (EIB, CEF, USAID)	700	Approach 3 (Soft connectivity and standard's compatibility) - EU strategy for the integration of the UA/MD railway system into the EU transport system ^{Error! Bookmark not defined.} highlights, that the difference in gauge, leading to complex and costly transshipment operations at the borders prevents the full interoperability between the respective EU, Ukrainian and Moldovan networks. <ul style="list-style-type: none"> • Lviv–Mostyska; PL border (Medyka/Przemyśl side); • Lviv – Chernivtsi – Vadul Siret – Lviv & Chernivtsi Oblasts; RO border (Vadul Siret / Vicșani); • Kovel–Yahodyn; PL border (Dorohusk/Poland side); • Uzhhorod–Chop; SK/HU border area; • PL/UA border –Mostyska II – Sknyliv (Lviv) Stage 1. Part of TEN-T extension network projects.



No.	Project	Type	Funding partners	Approx. total budget, EUR	Contribution to connectivity approaches
2	UA: Black Sea Port Upgrades – Pivdennyi	Port / Logistics	Blended potential (USPA, private PPP; CEF)	650	<p>Approach 1 (Impactful Infrastructure developments), Approach 5 (Further Ukraine and Moldova integration) - TEN-T port node on the Black Sea; upgrades deepens/clears approaches, fixes berths, adds terminal/rail capacity so larger ships can dock and cargo moves out faster.; supporting Solidarity Lanes capacity and diversified maritime exports.</p> <p>Consolidated from multiple (5) individual projects (grain terminal; fleet base; fairways/approaches & dredging; bulk complex; Berehova station tracks).</p> <p>Part of TEN-T extension network projects.</p>
3	UA: Black Sea Port Upgrades – Chornomorsk	Port / Logistics	Blended potential (USPA, private PPP; CEF)	700	<p>Approach 1 (Impactful Infrastructure developments), Approach 5 (Further Ukraine and Moldova integration) - TEN-T port node; upgrades remove first/last-mile bottlenecks and lift grain/container throughput for Solidarity Lanes. Consolidated from multiple individual projects (13); two PPP concessions (Universal & Grain; Multimodal Sea Terminal); new/rehab grain & liquid terminals and berths; warehouse/pier upgrades; near-port rail station works; checkpoint road and track overhauls.</p> <p>Part of TEN-T extension network projects.</p>
4	UA: Black Sea Port Upgrades – Odesa	Port / Logistics	Blended potential (USPA, private PPP; CEF)	800	<p>Approach 1 (Impactful Infrastructure developments), Approach 5 (Further Ukraine and Moldova integration) - TEN-T port node; channel, berth and yard works enable bigger ships and faster evacuation onto rail/road, strengthening EU–Ukraine maritime corridors. Consolidated from multiple individual projects (17); container-terminal hydraulic works; berth rebuild and extension; new/rebuilt transshipment complexes; approach-channel deepening and harbor reconstructions; rail-yard upgrades and access road/checkpoint improvements.</p>
5	MD: Chisinau Inland Freight Terminal	Logistics	EIB	100	<p>Approach 1 (Impactful Infrastructure developments), Approach 5 (Further Ukraine and Moldova integration) - construction of an inland freight terminal on the outskirts of Chisinau, to ensure quality customs clearance and the provision of essential freight services closer to the consumption and production centers concentrated in and around this capital city.</p>
6	MD: Rail integration to EU; EU-gauge (1435 mm)	Rail	Blended (Potential: EU, national Ukraine’s and Moldova’s governments, IFIs)	7	<p>Approach 3 (Soft connectivity and standard’s compatibility) - EU strategy for the integration of the UA/MD railway system into the EU transport system <small>Error! Bookmark not defined.</small> highlights, that the difference in gauge, leading to complex and costly transshipment operations at the borders prevents the full interoperability between the respective EU, Ukrainian and Moldovan networks.</p> <p>Requires economic viability testing on which routes most beneficial to develop in 1435 mm gauge. Existing recommendations under Strategy for the EU integration of the Ukrainian and Moldovan rail systems:</p> <ul style="list-style-type: none"> • 1435 mm link Medyka / Mostyska (PL/UA) - L’viv and Ungheni (MD/RO) – Chisinau; • additional 1435 mm extensions Chisinau – Odesa; • Modern signalling / communications (ERTMS/ETCS, GSM-R/FRMCS); • Border / node modernisation (L’viv, Kyiv, Chisinau etc.); • Feasibility studies for a new European-gauge railway corridor (UA–MD–EU).



No.	Project	Type	Funding partners	Approx. total budget, EUR	Contribution to connectivity approaches
7	TR. Eastern Türkiye Middle Corridor Railway Development Project (660-km Divriği–Kars–Georgia border railway)	Rail	Blended (World Bank (IBRD), AIIB, Government, Islamic Development Bank)	980	Approach 1 (Impactful Infrastructure developments) - one of WB recommendations. The Project Development Objective is to improve the rail connectivity of eastern Türkiye along the Divriği-Kars-Georgia border railway section of the TCTC.
8	TR. Modern gauge-change/transshipment station in Georgian border – Turkish border (Akhalkalaki)	Rail	Not specified	Not specified	Approach 1 (Impactful Infrastructure developments) - potential future bottleneck as Sivas line ramps up - the gauge difference necessitates wagon changes, which creates operational delays and bottlenecks due to limited capacity.



3 Energy Sector

In this chapter, the meta-study proposes regional approaches for energy connectivity in the Eastern Partnership region, including the South Caucasus, Türkiye, and Central Asia, followed by a structured overview of key ongoing and planned energy infrastructure (hard and/or soft connectivity) projects.

3.1 Regional Approaches in the Energy Sector

Both the EU and its partner countries face persistent energy **availability and accessibility challenges** due to dependencies on imported oil and gas and structural weaknesses in electricity networks, from transmission grids to cross-border interconnections leaving some of the countries in the region exposed to supply disruptions or price peaks, while infrastructure limitations demand urgent investments. The varying degrees of regulatory alignment of the partnering countries with EU standards also pose a challenge. In the EU, REPowerEU is the internal roadmap to address these vulnerabilities, by accelerating clean energy deployment, boost energy efficiency, and diversifying energy supplies.

The EU's new global climate and energy vision guides its external energy policy, promoting strengthened partnerships, driving sustainable change, while supporting industrial and technological strengths. To achieve this, the EU already supports its partners in investing in renewables and enhancing infrastructure (such as electricity grids, and intra-regional and inter-regional cross-border interconnections through the Global Gateway and TEN-E framework) to create a resilient, integrated energy system and ensure long-term security. To achieve this, the EU will also support its partners - when relevant and desirable - in advancing regulatory alignment with EU best practices, including the development of policy frameworks and regulations that promote the transition to a low-carbon energy system, to facilitate a more integrated and sustainable energy market.

For regional cooperation in the Black Sea and Central Asia, the strategic focus should be on accelerating the rollout of renewables and energy efficiency improvements, investing in grids, expanding cross-border interconnections to bolster connectivity and security, fostering diversified and future-proof energy routes for mutual economic benefit, and ensuring the resilience of energy infrastructure.

The present meta-study recommends six approaches to energy connectivity, outlined in the following chapters, showing where the EU and partner countries could most effectively align their efforts to build a resilient, competitive and climate-aligned regional energy system. They connect immediate security and affordability needs with longer-term transition goals, translating the EU's broader strategic frameworks into actionable regional directions. The six recommended approaches are as follows:

- Connecting the electricity markets.
- Transitioning towards a resilient energy mix.
- Soft connectivity measures to support market integration.
- Strengthening Infrastructure Security.
- Public private partnerships for regional energy infrastructure development.
- Ensuring energy decarbonisation in sectors affected by CBAM.

Disclaimer:

Please note that in this report statements regarding energy import requirements and Renewable Energy Sources (RES) deployment are leveraged as established baseline assumptions for investigating connectivity needs, rather than being the subject of in-depth analytical verification of feasibility of specific project.

As no dedicated economic analysis has been undertaken, this study's findings should not be treated as definitive assumptions. The approaches outlined stem from a high-level review of energy market trends in the EU, Eastern Partnership countries, Türkiye, and Central Asia, as well as EU energy priorities. References to 'envisioned' infrastructure or corridors reflect proposals by specific countries in the region—not EU initiatives—and may not align with EU policy objectives. The study's takeaways should therefore be understood as reflections on connectivity approaches rather than policy orientation or project-level investment recommendations.



3.1.1 Connecting electricity markets

Cross-border electricity interconnections can provide substantial benefits for the region's energy transition and security. By integrating diverse energy markets, nations can share renewable resources across different geographies, and more efficiently balancing the variability of wind and solar power. This interconnectivity can contribute to stabilising prices by allowing surplus low-cost energy to flow where it is needed most and can also enhance overall system resilience against supply shocks. However, achieving this vision of a fully integrated regional market requires improving market conditions and a robust physical foundation at the national level. Investments in domestic grid upgrades and energy storage are crucial to unlock the vast renewables potential in the region. National grid reinforcement is the foundational layer for a resilient and interconnected energy system. As countries commit to higher shares of variable Renewable Energy Sources (RES) like wind and solar, their national transmission and distribution grids must be substantially modernised and strengthened; for example, distribution systems need handle two-way flows from increasing RE injections while accommodating rapidly rising electricity demand from electrification. Therefore, approach must be given first and foremost to increasing market conditions and reinforcing national transmission and distribution grids as essential preconditions for enabling effective cross-border electricity trade and regional market integration. Without this domestic stability, cross-border projects cannot operate at full capacity, leading to congestion and wasted clean **energy**. This creates a critical bottleneck, preventing the effective import of cost-competitive electricity from neighbouring nations. Only once this domestic stability is secured can major cross-border projects be fully effective.

A major strategic step in connecting the energy markets is the planned subsea power cable from Georgia to Romania, which was included in the 2nd list of Projects of Common Interest and Project of Mutual Interest (PCI/PMI list) in December 2025, and which will support the balancing of both power systems and the integration of more renewable energy on both sides. The project is expected early in the 2030s. Crucially, to make most use of this link, domestic networks must be reinforced, notably with stronger 400 kV lines in Romania and Bulgaria (e.g., in Dobrogea and across the Danube).

To physically realise these market interconnections, the region is also developing the necessary logistical backbone to deploy large-scale energy infrastructure. In Georgia, the modernisation of the Batumi and Poti ports, alongside the revival of the Anaklia deep-sea port, is strategically aligned to handle the heavy equipment required for the subsea cable and renewable generation projects. This logistical readiness is mirrored on the European shore of the Black Sea, where Bulgaria and Romania are upgrading the ports of Constanța and Varna. By equipping these hubs with heavy-lift quays and specialized storage for offshore wind components, these nations are establishing a synchronized industrial ecosystem essential for constructing the physical corridors that will link these energy markets.

The EU-Ukraine-Moldova interconnection is another key channel. Ukraine's and Moldova's grids have been synchronised with Continental Europe since 2022. Upgrades, such as the Vulcănești–Chișinău 400 kV line and stronger Romanian lines near Isaccea, will make this trade more reliable and ensure that cost-competitive surplus Ukrainian or Moldovan power can move west during low-price hours. Further east, Türkiye, permanently synchronised with the Continental European grid since 2015, is a critical energy conduit. Its existing alternating current interconnections with Greece and Bulgaria already allow power flowing west from the South Caucasus to reach European markets. To export its cost-competitive power, Türkiye could increase capacity on its existing Thrace interconnectors, building on the existing plans under the ENTSO-E 10 Year Network Development Plan.

In the EU's Neighborhood, efforts are ongoing to connect the electricity markets in the region. Through support for the Caucasus Transmission Network, the EU is promoting reliable and flexible cross-border electricity exchange by linking the Armenian and Georgian power systems, aligning them with EU technical standards and enabling a future connection to the ENTSO-E network.

Finally, in Central Asia, a Trans-Caspian electricity link is envisioned by Azerbaijan, Kazakhstan, and Uzbekistan to connect Kazakhstan and Uzbekistan's growing renewable output (such as the 1.5 GW Karakalpakstan wind project) to the South Caucasus and onward to Europe.



Recommended Approach 1: Connecting electricity markets. Prioritize reinforcement of national transmission and distribution grids and energy storage as essential preconditions for effective cross-border electricity trade and market integration. In parallel, support the gradual development of strategic interconnections, while ensuring that any longer-distance connectivity options are subject to rigorous economic and system-level assessment before being considered within the EU's long-term strategy.

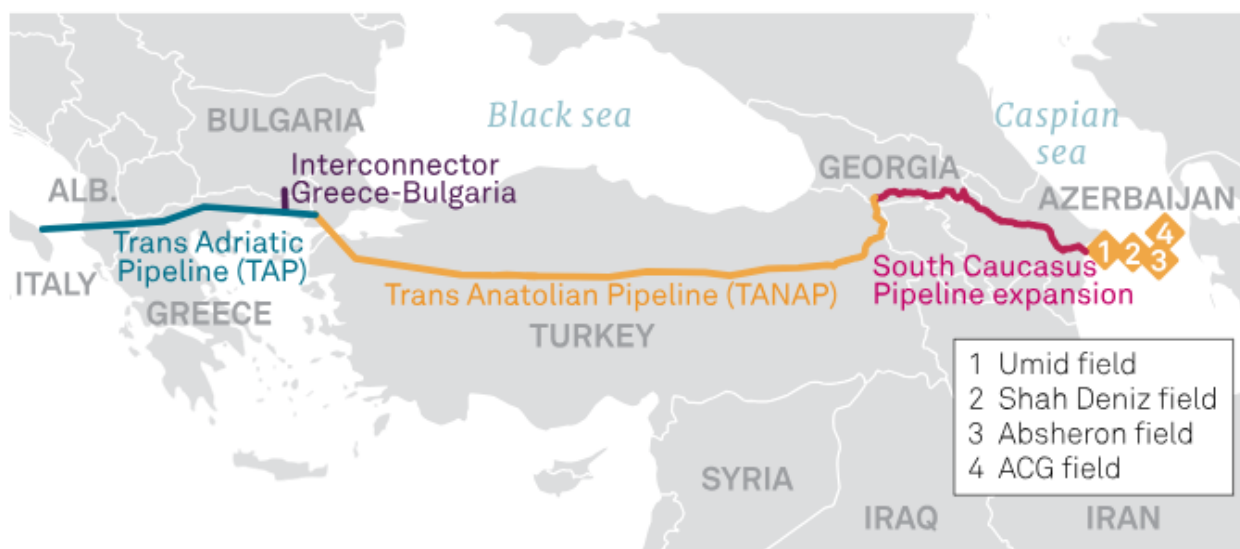


3.1.2 Transitioning towards a resilient energy mix

Ensuring a secure energy supply is a major priority that constitutes both - the diversification of supply of traditional fossil fuels and transitioning to RES. **The EU's long-term plan centers on the development of RES and energy efficiency measures**, which is the most effective way to reduce reliance on fossil fuels. To successfully transition towards a resilient energy mix, it is furthermore essential to prioritise the increasing electrification of all sectors, including heating, which is of particular importance in most parts of the region. Already, the region is seeing large-scale RES projects contributing increasingly to the energy mix. This includes new wind and solar farms in the South Caucasus, such as the 240 MW Khizi-Absheron wind farm in Azerbaijan and the 200 MW Ayg-1 solar plant in Armenia. The Black Sea is also a key area, with Romania moving forward with plans for offshore wind. Kazakhstan's highly ambitious Hyrasia One project aims to produce up to 2 million tonnes of green hydrogen annually through massive wind and solar generation, in parallel to flagship renewable developments like TotalEnergies' 1 GW Mirny wind farm and ACWA Power's 1 GW Zhetysu project.

However, building up these capacities, making the necessary grid and market connections for renewables, and electrifying domestic and industrial heat takes time. In the meantime, the **immediate focus is on diversifying existing gas supply to ensure stability during the transition.** This is done through established infrastructure, such as the Greece-Bulgaria Interconnector (IGB), which brings Caspian gas north via the Southern Gas Corridor (SGC). The capacity of this system is being monitored for potential further expansions in line with market demand. Further security comes from the BRUA corridor, which allows for two-way flow of LNG (liquefied natural gas) from new terminals like Alexandroupolis. Romania's upcoming Neptun Deep offshore field will add a major domestic source, and Ukraine's underground storage sites act as a crucial seasonal energy reserve for its neighbours.

Figure 12. The Southern Gas Corridor that Connects the Caspian Sea Gas Fields to EU.



Source: BP, S&P Global Commodity Insights

For the transition to a low-carbon energy mix, some gas routes might benefit from upgrades. This could in some cases involve a repurposing to hydrogen and green fuels. A key part of the energy transition is the plan to make the **Ukrainian gas network "hydrogen-ready"** for the **Central European Hydrogen Corridor**, a technical process that requires validation from TSOs (Transmission System Operators) in Ukraine, Slovakia, and Germany to ensure everything works together. This corridor aims to reuse existing pipes to deliver Ukrainian green hydrogen to Central Europe by around 2030. Furthermore, new logistics routes, such as the **TCTC** across the Caspian Sea, could open a path for green ammonia imports from Central Asian projects, diversifying trade beyond traditional energy streams.



Recommended Approach 2: Transitioning towards a resilient energy mix. Ensuring security of supply is a major concern. While the long-term priority is on the development of renewable energy sources, in the short term the diversification of existing gas supply continues to play a stabilising role. This is supported by key infrastructure like the expanded Greece-Bulgaria Interconnector (IGB), the BRUA corridor, and new domestic sources such as Romania's Neptun Deep. Over the medium-to long-term, a key priority for enhancing resilience is to reduce dependence on fossil fuel supplies by advancing the transition to low-carbon energy sources. This includes options such as assessing the potential for limited capacity enhancement along existing gas corridors and evaluating the technical readiness of the Ukrainian gas network for hydrogen integration within the Central European Hydrogen Corridor, subject to further technical, economic and policy analysis.

3.1.3 Soft connectivity measures to support market integration

In addition to addressing infrastructure challenges, there are **soft regulatory nature reforms needed to achieve a well-integrated energy market.**

Domestic market-driven energy policy reforms constitute the foundation for any regional market integration. Developing domestic power markets should be prioritized to ensure competitive energy pricing, transparent tariffs, and predictable investment conditions for the private sector. Facilitating market integration requires stepping up reform momentum.

The lack of harmonization and the absence of compatible measures can impede hard infrastructure benefits. For example, Türkiye's cross-border trading rules need to align with EU practices to facilitate flows to Greece and Bulgaria. Standardisation measures can help as Georgia and Azerbaijan require grid codes and settlement rules aligned with European standards (e.g., Guarantees of Origin) to make the planned subsea cable viable. For tariff-setting, transparent and predictable frameworks are needed to foster fair competition, particularly in Bulgaria, Romania, Moldova, and to maximize the use of assets like the IGB pipeline and Ukraine's storage.

Recommended Approach 3: Soft connectivity measures to support market integration. Targeted technical assistance through instruments like EU4Energy and organisations like the Energy Community to harmonise grid codes, balancing, capacity auctions and GOs could unlock these bottlenecks, let cost-competitive power and gas flow across borders and give Europe more value from the new interconnectors.

3.1.4 Strengthening infrastructure security

Energy security is another challenge. Protecting critical energy infrastructure, including electric grids, smart grids, gas pipeline sensors, and wind and solar technologies from technical failures, cyberattacks or sabotage, is vital because it enables stable energy flows between countries, prevents supply shortages, and supports the EU's goal of an integrated, secure energy market.

For example, according to International Energy Agency (IEA), global manufacturing capacity for solar panels has increasingly moved out of Europe, Japan and the United States over the last decade and into China. China's share in all the key manufacturing stages of solar panels exceeds 80% today and for key elements including polysilicon and wafers, this is set to rise to more than 95% in the coming years, based on current manufacturing capacity under construction. China has been instrumental in bringing down costs worldwide for solar PV, with multiple benefits for clean energy transitions. At the same time, the level of geographical concentration in global supply chains also poses potential challenges.⁷⁵ Due to various factors it is unlikely that European manufactures can be competitive in the sector in the medium term; however, promoting European sourced installations' control components could be prioritised, especially, given strong software production capabilities in Europe. Protecting electric grids, smart grids, gas pipeline sensors, and renewable technologies is vital to stable energy flows.



Supporting neighbours integrating with the EU (especially Ukraine and Moldova) so essential services (water, hospitals, heat and power) stay online under stress support the same goal.⁷⁶ That means hardening grids against cyber and physical attacks, adding more decentralised generation and storage near demand, upgrading key lines and substations, and keeping synchronised operation and trading with the EU system. This reduces spill-over risks for EU consumers and advances enlargement-related energy integration. As digital connectivity grows alongside energy routes, actions should include conducting regular risk assessments, implementing robust cybersecurity measures (aligned with the EU's 5G cybersecurity toolbox where applicable), and developing emergency response plans.

Recommended Approach 4: Strengthening infrastructure security. Ensuring that energy infrastructure remains reliable, resilient, and protected against disruptions, whether from technical failures, cyberattacks, or geopolitical tensions, shall stand as major cross-cutting principles in prioritising potential investments. Supporting **EU partner countries in the region to reduce their energy sector** reliance on external actors contributes to the same energy security objective while potentially enhancing regional stability. In the short term, a priority action could involve piloting joint physical and cybersecurity stress tests, potentially focusing initially on the Southern Gas Corridor infrastructure, subject to further assessment and planning.

3.1.5 Public private partnerships for regional energy infrastructure development

As mentioned already, in some areas like solar power, Europe relies on imported equipment. However, in others, even despite strong cost and scale driven competition mainly Asia, **EU companies have deep industrial know-how, global suppliers and an established manufacturing base.** That's where public investment and policy support can make the biggest difference. By focusing on projects and sectors where European companies already lead and can scale fast, would help accelerate the buildout of regional energy infrastructure that is necessary for the integration and security of the whole region:

- **Grids:** Europe is home to world-class cable and high-voltage-equipment makers - Prysmian in Italy, Nexans in France, NKT in Denmark for subsea and land cables; Siemens Energy in Germany and Hitachi Energy in Switzerland for converter stations, transformers and other HVDC gear.
- **Generation and flexibility:** Firms such as Vestas and Siemens Gamesa already dominate offshore-wind turbines. Utility-scale batteries and pumped storage, also largely sourced from European suppliers (for example like Saft or Leclanché), round out the system so renewable power is dependable even at peak times. While China dominates global solar manufacturing, controlling most production of wafers, cells and modules, Europe remains relevant in the control layer of solar systems technologies - the inverters, trackers and plant-management electronics that keep power stable and grid-compliant. Firms such as SMA Solar Technology in Germany, Fronius in Austria, FIMER in Italy, Ingeteam in Spain, and Schneider Electric in France still lead these niches, supplying high-efficiency, grid-supporting equipment that are integrated in many European and export projects.
- **Hydrogen and green molecules:** Equipment producers like ThyssenKrupp Nucera, the Air Liquide - Siemens Energy electrolyser venture in Berlin, and Sunfire are ready to supply early hubs for green hydrogen tied to steel, chemical and fertiliser plants - ideally sited near strong grids or dedicated renewables and linked into emerging hydrogen backbones, including the planned routes through Ukraine into Central Europe.

Recommended Approach 5: Public private partnerships for regional energy infrastructure development. Public private partnerships shall be explored and encouraged in sectors where European companies have deep industrial know-how and established manufacturing bases, thereby accelerating the development of resilient regional energy infrastructure. This involves focusing on areas where EU companies are competitive and can bring added value and expertise for the region, such as grids, generation and flexibility, and hydrogen and green molecules. This approach can enhance the impact of investments while supporting regional integration and security.



3.1.6 Ensuring energy decarbonisation in sectors affected by CBAM

From 2026, the European Union will start charging for the carbon embedded in a short list of imports: **steel and iron, aluminium, cement, fertilisers, electricity and hydrogen**. For sellers in the Black Sea region and Central Asia, that means the carbon footprint of how these GOs are made will show up in the final price at the EU border. If a producer's home country already puts a real price on carbon and the producer can prove what was paid, that amount can be knocked off the bill. If not, and if emissions are high, the extra cost will be larger. However, a 2025 Policy Brief from OECD outlines that the policy is intentionally narrow, covering roughly only 3% of EU imports by value (but consequential for heavy industry).⁷⁷

- **The clearest exposure is in steel.** Türkiye is the EU's largest external supplier. Mills that still run the traditional coal-based blast furnace route will face the highest charges, while plants that melt scrap in electric arc furnaces or move towards direct-reduced iron made with low-carbon hydrogen will fare better. **Ukraine's steel** sales to the EU will also be affected; older plants that rely on coal will pay more, whereas reconstruction plans that pivot to cleaner routes could cut the burden over time. In **Central Asia**, integrated steel plants in Kazakhstan are in a similar position: unless they modernise and switch to cleaner power, their slabs and flat products will carry a noticeable surcharge on entry to the EU;
- **Aluminium** trade is in a similar position but a bit from a different angle. Smelters tied to coal-heavy power grids, some in Türkiye and parts of the Caucasus and Central Asia, produce metal with a higher carbon footprint and will therefore attract a higher charge. Producers powered by low-carbon electricity, backed up by credible evidence of sourcing, will be better placed. Even within the same country, firms that can lock in cleaner power through long-term contracts will have an advantage with EU buyers of cable, vehicle components and packaging. A clearer price split between "low-carbon" and "high-carbon" metal in EU sales is expected;
- **Fertiliser exporters**, particularly ammonia and urea from Azerbaijan, Türkiye and across Central Asia, will see costs depend on plant efficiency and energy source. Newer, efficient gas-based plants carry a lower footprint than older or poorly maintained units⁵; the latter will face a higher charge unless home-country climate policies can be counted against the EU's adjustment. **Cement** and **clinker** exporters in Kazakhstan and Uzbekistan face similar dynamics: high-clinker mixes and coal-fired heat drive up emissions and therefore the price at the border, while blended cements, alternative fuels and waste-heat recovery help bring it down⁶;
- **Electricity traded** into the EU is also in scope. As Ukraine and Moldova expand power links with the EU, any electricity with a high emissions profile will be less competitive. **That tilts the case toward cleaner generation and stronger market integration**, so that power sent west is both reliable and low-carbon. Looking ahead, hydrogen and green ammonia projects in Kazakhstan, Azerbaijan and Ukraine could find a foothold in Europe, but only if they can show convincingly low lifecycle emissions from the start.

The bottom line is simple: producers in the region may face higher costs if carbon intensity remains high. Those who modernise, secure cleaner power and put robust measurements in place will keep selling into Europe with far less friction.

Recommended Approach 6: Ensuring energy decarbonisation in sectors affected by CBAM To reinforce this shift, the EU could consider prioritising energy transition projects in sectors that represent more significant and critical imports, helping ensure that its trade relationships align with its climate goals and incentivise cleaner production at the source.

3.1.7 Recommendations for priority actions in the energy sector

This section outlines short-term recommendations and priority actions in the energy sector, intended as indicative guidance given the methodological limitations and the absence of detailed feasibility or economic analysis.

⁵ IEA. *Ammonia Technology Roadmap: Executive Summary*. Paris: IEA, 2021. <https://www.iea.org/reports/ammonia-technology-roadmap/executive-summary>

⁶ Yumashev, Dmitry, and Maria Kozlova. "Assessment of the Decarbonization Pathways of the Cement Industry in Uzbekistan." *ResearchGate*, 2024. https://www.researchgate.net/publication/372141371_Assessment_of_the_Decarbonization_Pathways_of_the_Cement_Industry_in_Uzbekistan



- 1. Accelerate the EU's electricity connectivity with the South Caucasus and Türkiye and regional connectivity through grid reinforcements, interconnections in the region and with the EU**
- 2. Continue providing technical assistance in the Eastern Partnership countries and Türkiye to allow for gradual market regulation convergence**
- 3. Strengthen critical infrastructure resilience and promote EU technological know-how**
- 4. Proactively prepare key industries for the green transition (CBAM)**



3.2 Overview of Energy Sector Projects

This chapter provides an overview of key ongoing and planned energy projects across the Eastern Partnership, Türkiye, and Central Asia. Each project is assessed for its contribution to the connectivity approaches defined in the previous sub-chapter.

3.2.1 Key Ongoing and Planned Initiatives - Ukraine & Moldova

Table 8. List of Key Ongoing Initiatives in Ukraine and Moldova.

No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
1.	Wartime support for Ukraine	Finance, Policy & TA	EBRD	8 000	Approach 4 (Energy security) - Keeps Ukraine's energy system functional under wartime conditions, preventing regional supply shocks and protecting ENTSO-E synchronisation.
2.	Ukraine Energy Rescue Plan	Finance, Policy & TA	EIB	600	Approach 1 (Connecting markets), Recommended Approach 4 (Energy security) - Restores damaged grids and renewables; stabilises eastern EU supply. Recommendation: Pair emergency funding with long-term renewable PPAs to ensure predictable revenue and investor confidence.
3.	UA: Naftogaz emergency and decarbonisation support	Finance, Policy & TA	EIB	300	Approach 4 (Energy security) - Urgent financing to replenish gas reserves ahead of winter and support decarbonisation.
4.	UA: Decentralised Generation Programme (Ukrnafta)	Generation	EBRD	361	Approach 4 (Energy security), Approach 3 (Soft connectivity measures) - 350 MW distributed generation strengthens balancing and resilience within the synchronised system.
5.	Moldova Renewable Energy Tender, Round 1	Generation	Blended (Winning Bidders (Local & Foreign))	190	Approach 1 (Connecting markets), Approach 3 (Soft connectivity measures), Approach 4 (Energy security) - Expands clean generation in a candidate country linked to the EU grid. Recommendation: Support Moldova in integrating renewable PPAs and Guarantees of Origin trading mechanisms that are comparable with the ones in the EU.
6.	UA: Khmelnytskyi NPP expansion, and South Ukraine NPP expansion	Generation	State Budget (Energoatom)	>4 000	N/A: major low-carbon baseload addition; strengthens regional security and decarbonization.
7.	UA: Tyligulska Wind Farm expansion to 498 MW	Generation	Blended (DTEK, International Lenders)	Not specified	Approach 2 (Resilient energy mix), Approach 5 (Climate/industrial competitiveness) - Expands export-ready renewables, potential for technological partnership and engineering (DTEK renewables work with EU companies including Siemens). Recommendation: Help facilitate cross-border long-term PPAs and access to EU carbon-credit mechanisms.



No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
8.	UA: Galnaftogaz (OKKO) wartime bioethanol plant	Generation	Blended (EBRD, backed by EU guarantee)	110	Approach 2 (Resilient energy mix), Approach 5 (Climate/industrial competitiveness) - First wartime biofuels project; compliant with EU RED III.
9.	UA: Finance package for 147 MW private wind farms (OKKO Group)	Generation	Blended (EBRD, IFC, BSTDB, backed by EU guarantee)	225	Approach 1 (Resilient energy mix), Approach 4 (Energy security) - Boosts private greenfield renewable generation and energy independence.
10.	UA: DTEK Renewables BESS Projects	Storage	Blended (Oschadbank, PUMB, Ukrgasbank)	67	Approach 2 (Resilient energy mix), Approach 5 (Climate/Industrial competitiveness), Approach 4 (Energy security) - 200 MW battery storage supports system stability and renewable integration.
11.	UA: Distributed Generation & Grid Resilience Programme	Storage	Blended (Japan, Sweden, UNDP)	Not specified	Approach 4 (Energy security), Approach 2 (Resilient energy mix) . Solar-storage microgrids keep hospitals and water systems running; strengthens local resilience.
12.	PL, DK, SK, UA: Diversification of gas supply sources & Three Seas integration	Transmission Infrastructure	EU MSs	1 562.6	Approach 2 (Resilient energy mix), Approach 4 (Energy security), Approach 3 (Soft connectivity measures) - Expands LNG and pipeline routes providing a new, alternative import route for the EU
13.	UA: Pivdennoukrainska NPP - Isaccea (RO) 400 kV line	Transmission Infrastructure	Ukrenergo	388.4	Approach 1 (Connecting markets), Approach 4 (Energy security) - Adds 1 - 1.2 GW capacity, unlocking Ukrainian wind/solar exports to the EU.
14.	UA: Brody - Adamova Zastava oil pipeline	Transmission Infrastructure	International Pipeline Enterprise "Sarmatia"	450	Approach 2 (Resilient energy mix) but is in conflict with Approach 5 (Climate/industrial competitiveness) . Diversifies crude supply away from competitors, though outside EU green priorities.
15.	MD: Trans-Balkan Pipeline capacity expansion	Transmission Infrastructure	GTS Operator of Ukraine (GTSOU)	70	Approach 1 (Connecting markets), Approach 2 (Resilient energy mix), Approach 4 (Energy security) . Raises reverse-flow capacity up to 10 bcm/y, enhancing flexibility in SE Europe. Recommendation: To explore a possible extension to EU technical standards and methane-leak reporting to the corridor.

Table 9. List of Key Planned Initiatives in Ukraine and Moldova.

No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
1.	UA, MD: EU4Energy Programme (Phase III)	Finance, Policy & TA	Blended	3	Approach 3 (Soft connectivity measures) primary; Approach 1 & 4 secondary - deepens market coupling, harmonises grid codes and balancing rules across Energy Community partners.
2.	UA: Naftogaz urgent gas purchases (EBRD)	Finance, Policy & TA	EBRD	500	Approach 4 (Energy security), Approach 2 (Resilient energy mix) - Additional package being prepared for urgent gas imports.



No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
3.	World Bank Moldova DPO Series	Policy/Budget Support	Blended (WB, IMF, EU)	98.3	Approach 3 (Soft connectivity measures) - The European Union provides direct budget support as part of this program to drive the adoption of EU-aligned energy market reforms.
4.	Moldova - CHP (approximately 250 MW)	Generation	JSC Termoelectrica	275	Approach 2 (Resilient energy mix) and Approach 4 (Energy security) - improves district heating efficiency and reduces fuel consumption; aligns with REPowerEU heat priorities if fuel switches or efficiency gains are real.
5.	Moldova - Balancing plant (≈130 MW gas ICE)	Generation	Blended (Ministry of Energy (MD); Moldelectrica)	120	Approach 1 (Connecting markets) and Approach 4 (Energy security) - provides fast-flexibility to integrate variable RES.
6.	UA: Slavyansk II coal 660 MW	Generation	Donbasenegro	643	Conflicts with Approach 2 & 6 (diversification and CBAM/climate)
7.	MD: Burlaceni 500 MW CCGT	Generation	RWE AG	282	Short-term Approach 2 (Resilient energy mix) and Approach 4 (Energy security) ; weak alignment with Approach 6 unless abated. Burlaceni CCGT can support Moldova's grid stability and regional integration, but its alignment with the EU's climate and decarbonisation priorities is limited due to high CO ₂ emissions, reliance on fossil gas, and lack of current hydrogen-readiness or CCS, unless mitigations and future-proofing are built in.
8.	UA, Unconventional gas exploration	Generation	Blended (MVM Zrt. (Hungary, state-owned))	185	N/A.
9.	UA: Kernel 234-250 MW Solar Plant (Bukovina)	Generation	Private - Kernel Group	125	Approach 1 (Resilient energy mix), Approach 4 (Energy security), Approach 5 (Industrial competitiveness) - Large-scale solar to power major agricultural exporter.
10.	UA: Kryvy Rih Cement 24MW distributed generation	Generation	Private - Concorde Capital	14	Approach 4 (Energy security), Approach 5 (Industrial/climate competitiveness) - Gas-fired facility to ensure stable operations for critical industry.
11.	UA: Kaniv Pumped Storage, 1,000 MW.	Storage	Blended (EIB, World Bank, EBRD, Deutsche Bank)	1 311	Approach 2 (Resilient energy mix), Approach 5 (Industrial competitiveness) and Approach 4 (Energy security) - large-duration firming that enables high shares of RES for synchronised UA - EU operation.
12.	Moldova 100 MW Pumped Storage	Storage	Not specified	200	Approach 2 (Resilient energy mix), Approach 4 (Energy security) and Approach 1 (Connecting markets) - increases RO-MD interface flexibility and long-duration storage capability.
13.	Moldova 100 MW BESS	Storage	Ministry of Energy (MD); Moldelectrica	100	Approach 2 & 4 (fast-response flexibility)
14.	UA: Central European Hydrogen Corridor (UA-SK-CZ-DE)	Transmission Infrastructure	Blended	1 500	Approach 2 (Resilient energy mix - diversification via green H₂), Approach 5 (Industrial competitiveness) and Approach 1 (Connecting markets).



No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
			(Gas TSO of Ukraine, Eustream (SK), NET4GAS (CZ), OGE (DE))		
15.	Vulcănești - Chișinău 400 kV line (MD-RO/EU anchoring)	Transmission Infrastructure	Blended (WB, State Budget)	65.8 (Part of a 387.6 programme)	Approach 1 (Connecting markets) and Approach 4 (Energy security).
16.	MD, UA: Bălți - Dnestrovsk HPP 330 kV interconnection (MD - UA)	Transmission Infrastructure	Not specified	22	Approach 1 & 4 - strengthens operational security for integrated UA - MD - ENTSO-E operations.
17.	UA: Ukrenergo 10-Year Network Development Plan (2025 - 2034)	Transmission Infrastructure	Ukrenergo	Not specified	Approach 1 (Connecting markets), Approach 2 (Resilient energy mix), Approach 4 (Energy security) and Approach 5 (Industrial competitiveness) - prerequisite roadmap for higher cross-border exchanges and storage rollout. Recommendation: EU could offer a structured NDP (network development plan) review, co-financing for priority 400 kV corridors and TSO technical assistance to align with TEN-E and ENTSO-E standards.
18.	UA: ROHU Gas Interconnector , Phase II (RO - HU)	Transmission Infrastructure	Blended (FGSZ (HU TSO), Transgaz (RO TSO))	Not specified	Recommended Approach 1 (Connecting markets) and Recommended Approach 2 (Resilient energy mix) - increases capacity to ~4.4 bcm/yr, routing Black Sea gas into CEE.

3.2.2 Key Ongoing and Planned Initiatives -Türkiye

Table 10. List of Key Ongoing Initiatives in Türkiye.

No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
1.	TR: EBRD Green Economy Financing Facility (GEFF)	Finance, Policy & TA	EBRD	1 900	Recommended Approach 5 (Industrial competitiveness) - mobilises private EE/RE investments where EU companies can supply tech; Recommended Approach 6 (Critical supply sectors) - reduces emissions intensity in SMEs and municipalities, supporting climate-aligned trade.
2.	TR: AFD - Vakifbank Green Housing Project	Finance, Policy & TA	Blended (Agence Française de Développement (AFD - France), Vakifbank)	200	Recommended Approach 5 - scales EE/green buildings using EU-linked equipment; Approach 6 - lowers residential emissions, improving trade compliance with CBAM-relevant sectors.
3.	TR: Instrument for Pre-Accession Assistance (IPA) - Energy Sector	Policy/Technical Assistance	EU-supported	93.5	Recommended Approach 3 (Soft connectivity measures) - A direct funding instrument of the European Commission to align Türkiye's energy legislation and market rules with the EU acquis.



No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
4.	TR: Offshore Wind Roadmap & IPA Phase IV Support Project	Finance & Technical Assistance	EU-supported (EU - IPA)	7.98	Recommended Approach 2 (Resilient energy mix), Recommended Approach 5 (Industrial competitiveness) - Directly funded by the EU's IPA program to build institutional capacity and de-risk investment in a key future technology.
5.	TR: Akkuyu Nuclear Power Plant , (4.8 GW, under construction 2018 - 2028).	Generation	Rosatom (Russia)	28 200	Conflicts with Approach 2 and 4 - Low alignment with EU diversification goals. The project is developed by Rosatom (Russia), which could create long-term strategic dependencies and raises concerns regarding technological standards.
6.	TR: Accelerating the Market Transition for Distributed Energy Programme	Storage	Blended (WB (IBRD, CTF))	940	Approach 5 (Industrial competitiveness) - EU suppliers active in PV/BESS; Approach 4 (Energy security) - distributed storage hardens the grid and reduces peak imports; Approach 3 (Soft connectivity measures) - pushes DER interconnection and settlement rules toward EU practices; Approach 6 - lowers SME/building emissions relevant for CBAM.
7.	TR: National HVDC Backbone (40 GW; ~14,700 km; 40 converters)	Transmission Infrastructure	Ministry of Energy & Natural Resources	25 000	Approach 1 (Connecting markets) - enables large-scale wind/solar export corridors toward EU; Approach 3 (Soft connectivity measures) - drives HVDC planning/operations closer to EU standards.
8.	Sakarya Natural Gas Area Development	Transmission Infrastructure	Turkish Petroleum Corporation (TPAO)	1 626	Approach 2 (Resilient energy mix) - domestic Black Sea gas reduces imports, including Russian volumes; Approach 4 (Energy security) - strengthens regional gas balance affecting EU neighbours.
9.	TR: Transforming Power Transmission System (TPTS)	Transmission Infrastructure	Blended (WB (IBRD), Clean Technology Fund (CTF))	658.8	Approach 3 (Soft connectivity measures) - modernizes grid operations, SCADA/EMS; Approach 1 (Connecting markets) - adds ~1.7 GW RES integration capacity, supporting EU-aligned export corridors.
10.	Akhalsikhe - Borçka 400 kV + HVDC station (GE - TR)	Transmission Infrastructure	Blended (EIB €80 m + EU NIF grant ~€25 m on ~€270 m total)	270	Approach 1 (Connecting markets) - cornerstone of the Black Sea Transmission Network enabling higher renewable transit from the Caucasus toward Türkiye and EU; Approach 3 (Soft connectivity measures) - improves operational links between ENTSO-E perimeter and South Caucasus.
11.	Türkiye - Iraq Interconnector (115 km, 300 MW)	Transmission Infrastructure	Bilateral project	Not specified	N/A: addresses Iraq's deficit and strengthens regional ties.
12.	TR, BG, GR: Second Greece-Bulgaria Electricity Interconnection	Transmission Infrastructure &	EU-supported (Connecting Europe Facility - CEF)	29	Approach 1 (Connecting markets) - A designated Project of Common Interest (PCI) directly co-funded by the EU's Connecting Europe Facility to increase electricity transfer capacity between Türkiye and the EU.



Table 11. List of Key Planned Initiatives in Türkiye.

No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
1.	TR: Thrace Nuclear Power Plant (İğneada) - 5.6 GW (proposed)	Generation	Discussions with SPIC (China)	Not specified	N/A: Massive baseload addition that would cut Türkiye's gas burn, strengthen system adequacy, and indirectly ease regional gas demand and support more stable cross-border power flows later (discussions with China as the partner).
2.	TR: Sinop Nuclear Power Plant (proposed)	Generation	Not specified	Not specified	N/A: Türkiye's planned second NPP to deepen long-term energy independence and decarbonisation; important domestically even if EU linkage is only indirect at this stage. Discussions with Rosteam (Russia)), China, South Korea.
3.	Türkiye, National HVDC Backbone (≈40 GW; ~14,700 km; 40 converters)	Transmission Infrastructure	Ministry of Energy & Natural Resources, Türkiye	25 000	Approach 1 (Connecting markets) - absorbs large-scale wind/solar; enables exports toward EU; Approach 3 (Soft connectivity measures) - aligns national HVDC planning and operation closer to EU practices; strengthens future cross-border clean-power flows.
4.	TR, AZ, EU: Southern Gas Corridor , TANAP expansion (to 31 bcm/y) (see also Error! Reference source not found. No. 4)	Transmission Infrastructure	EBRD, blended	Multi-billion, Not specified	Approach 2 (Resilient energy mix) and Approach 4 (Energy security) - increases Caspian gas transport capacity through Türkiye, supporting medium-term EU supply diversification and regional balancing.
5.	AZ, GE, TR, EU: Azerbaijan - Türkiye via Nakhchivan 400 kV line (see also Error! Reference source not found. No. 6)	Transmission Infrastructure	Blended (SOCAR, SGC CJSC; TANAP/TAP consortia)	Not specified	Approach 1 (Connecting markets) - establishes a direct transmission path for Azerbaijani renewable electricity into Türkiye, laying groundwork for eventual exports to the EU through projects such as the Black Sea Submarine Cable and Green Energy Corridor - Azerbaijan - Georgia - Romania - Hungary (AGRI/Black Sea route). Approach 2 (Resilient energy mix) - enhances system stability and redundancy in the South Caucasus - Türkiye interface, reducing bottlenecks and improving regional security of supply..
6.	AZ - GE - TR - BG Landline Transmission Interconnection (MoU signed Apr 2025; scoping)	Transmission & Infrastructure (400 kV land interconnections + B2B upgrades)	Not specified (MoU stage)	Not specified (MoU stage)	Approach 1 (Connecting markets) - Creates an alternative land route to channel Caspian/South-Caucasus renewables westwards via Türkiye and Bulgaria toward EU markets, increasing low-cost supply options. Approach 3 (Soft connectivity measures) - Requires harmonised grid codes, GO frameworks and market-coupling arrangements to monetise cross-border flows. Approach 4 (Energy security) - Adds redundancy and high-capacity transmission paths that reduce bottlenecks and improve regional balancing. Approach 5 (Industrial competitiveness) - Potential to stimulate demand for EU-controlled transmission and converter equipment if procurement is steered accordingly.

3.2.3 Key Ongoing and Planned Initiatives - South Caucasus

Table 12. List of Key Ongoing Initiatives in South Caucasus (Armenia, Georgia, Azerbaijan).

No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
1.	Armenia, Enabling the Energy Transition Programme (PforR) Phase I	Finance, Policy & TA	WB	36.8	Approach 3 (Soft connectivity measures) - tariff and market reforms, grid modernisation; Approach 4 (Energy security) - enables investable RE projects and stabilises system operations.
2.	Armenia, Strategic Programme for Energy Sector (to 2040)	Finance, Policy & TA	Government of Armenia	Not specified	Limited shared approach fit - sets long-term energy pathway (Metsamor NPP life extension/replacement, solar scale-up, North - South corridor); could eventually feed into Approach 2 (Resilient energy mix) and Approach 4 (Energy security) .
3.	Azerbaijan, "Azerbaijan 2030" National Priorities	Finance, Policy & TA	Government of Azerbaijan	Not specified	Approach 1 (Connecting markets) - 30% RE target supports export corridors; Approach 6 (Climate competitiveness) - enables lower-carbon electricity exports.
4.	Georgia, 2030 Climate Strategy & Action Plan	Finance, Policy & TA	Government of Georgia	Not specified	Supports Approach 3 (Soft connectivity measures) and 6 (Climate competitiveness) .- 35% GHG cut target; RE share to 27.4% TFEC.
5.	Azerbaijan, Masdar 1 GW Renewables Portfolio (solar + wind)	Generation	EBRD, Blended (lenders incl. OPEC Fund (for ACWA project))	600	Approach 2 (Resilient energy mix) - builds South Caucasus supply for future Georgia - EU cable; Approach 6 (Climate competitiveness) - lower-carbon power supports EU decarbonisation goals.
6.	Georgia, Gardabani-2 CCGT (230 MW)	Generation	Not specified	210	Limited shared approach fit - thermal back-up stabilises hydro-heavy system; indirectly supports Approach 4 (Energy security) , but fossil fuel-based.
7.	Armenia, Masrik-1 Solar PV (55 MW)	Generation	Blended (EBRD, IFC)	Not specified	Approach 2 (Resilient energy mix) - first-of-kind utility-scale PV project, sets template for subsequent solar projects; minor Approach 6 (climate competitiveness) support via local industrial capacity.
8.	GE, AZ, RO, HU: Black Sea - Europe Green Energy Corridor (HVDC subsea + onshore)	Transmission Infrastructure	Blended (EU (Global Gateway); National TSOs/ministries; private)	>2 000	Approach 1 (Connecting markets) - first direct South Caucasus - EU link; enables large renewable exports, tighter regional coupling.
9.	AM: Caucasus Transmission Network (AM - GE HVDC B2B + reinforcements) (Lot 1)	Transmission Infrastructure	Blended (EU, EBRD, HVEN, Government of Armenia)	500	Approach 1 & 3 - enables asynchronous AM - GE exchanges, backbone for future Black Sea exports toward EU; supports market integration.
10.	Armenia - Iran No.3 400 kV line	Transmission Infrastructure	Iranian investment	100.6	N/A: boosts the Iran - Armenia swap corridor (southern leg of a North - South route)



No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
11.	GE, TR: Akhaltsikhe - Borçka 400 kV + HVDC station (operational) and Batumi - Muratlı 154 kV (underway)	Transmission Infrastructure	WB	Not specified	N/A: incremental to Georgia - Türkiye capacity.

Table 13. List of Key Planned Initiatives in South Caucasus (Armenia, Georgia, Azerbaijan).

No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
1.	Georgia - Khudoni HPP (702 MW, revival under discussion)	Generation	Blended (Government of Georgia, EBRD (cancelled))	940	Approach 1 (Connecting markets) - strengthens Black Sea power export corridor; Approach 2 (Resilient energy mix) - adds firm winter capacity, stabilises grid and enables higher RES penetration for future EU exports.
2.	Georgia - New Gas-Fired Power (Gardabani-3 / PPP concept, ~272 - 350 MW)	Generation	Not specified	210	Approach 4 (Energy security) - dispatchable backup for renewables; Approach 2 (Resilient energy mix) - ensures reliability during winter imports; transitional fossil role should align with EU decarbonisation strategy.
3.	Armenia - New Nuclear Power Plant (ANPP replacement)	Generation	Government Armenia	5 700	N/A: Replaces Metsamor with low-carbon baseload, cutting import risk and supporting a stable Caucasus transit system.
4.	AZ, GE, TR, EU: Southern Gas Corridor expansion (SCPX/TANAP/TAP debottlenecking), (order-of-magnitude) (see also Error! Reference source not found. No 4)	Transmission Infrastructure	Blended (SOCAR, SGC CJSC; TANAP/TAP consortia)	Not specified (multi-billion)	Approach 2 (Resilient energy mix) - facilitates gas flows complementary to renewable corridors; - increases TANAP/TAP volumes; Approach 4 (Resilience) - reduces system risk.
5.	Armenia - Georgia HVEN back-to-back HVDC + 400 kV reinforcements,	Transmission Infrastructure	Blended (KfW (lead), EIB, EU grants (NIF/Global Gateway))	105,2 Earlier: 85,2 KfW; 10 EIB; 10 EU grant	Approach 1 (Connecting markets) - enables South Caucasus power to route toward ENTSO-E; asynchronous AM - GE exchanges; Approach 4 (Energy security) - strengthens grid stability.
6.	Azerbaijan - Türkiye via Nakhchivan 400 kV line (see also Error! Reference source not found. No 5)	Transmission Infrastructure	Blended (EBRD, EU, Regional Govts.)	Not specified	Approach 1 (Connecting markets) - exports Azeri RE to Türkiye; - supports coordinated scheduling; Approach 2 (Resilient energy mix) - redundancy for east-to-west green power flows.
7.	Azerbaijan - Georgia - Türkiye - Bulgaria landline interconnection	Transmission Infrastructure	Blended (Governments of Azerbaijan & Türkiye; BOTAS/SOCAR (related gas link))	Not specified	Approach 1 (Connecting markets) - enables the transfer of Caspian renewable electricity toward the EU through interconnected regional grids; supports cross-border electricity trade and coordinated system operation; contributes indirectly to Approach 4 (Energy security) by creating additional transmission routes that enhance network reliability.

3.2.4 Key Ongoing and Planned Initiatives Central Asia

Table 14. List of Key Ongoing Initiatives in Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan).

No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
1.	Kazakhstan, Inclusive & Sustainable Economic Growth DPO	Finance, Policy & TA	Blended (WB, AIIB)	282	Approach 3 (Soft connectivity measures) - aligns tariffs, ETS, EE/RES policies; Approach 5 (Critical supply transition) - unlocks bankable RE/EE projects aligned with EU standards.
2.	Turkmenistan-Türkiye gas-swap supply agreement (1.3 - 2 bcm/y) (also see Error! Reference source not found. No. 3) Error! Reference source not found.	Finance, Policy & TA	Blended (Governments of Türkiye, Turkmenistan, and Iran)	Not specified	N/A: notable diversification step for Türkiye; commercial.
3.	KG: Kambarata-1 HPP donor coordination	Finance, Policy & TA	Blended (WB, ADB, EBRD, AIIB, IsDB, EU, EIB, OPEC Fund, USAID)	Not specified	Approach 2 (Resilient energy mix) coordination of a major cross-border hydro project; enables future regional exports, but limited EU leverage at project prep stage.
4.	KZ, KG, TJ, TM, UZ - Renewable Energy in Central Asia (GIZ regional programme / “Driving the green energy transition in Central Asia”)	Finance, Policy & TA (regional)	Blended (GIZ / BMZ lead; EU co-finance €5m)	12	Approach 1 (Connecting markets) - improves conditions for grid integration of large-scale RE in KZ, KG, TJ, TM, UZ (planning, rulebooks, operator training). Approach 3 (Soft connectivity measures) - develops national rulebooks, coordination and research networks to increase bankability and cross-border planning. Approach 5 (Industrial competitiveness) - supports local capacity and creates demand signals for European equipment/suppliers through improved investment conditions.
5.	TJ: Rogun HPP (Hydropower Plant in Tajikistan)	Generation	Blended (WB, AIIB, IsDB, OPEC Fund, Government of Tajikistan)	6 016	Approach 2 (Resilient energy mix) - large, firm hydro supply; Approach 4 (Energy security) - stabilises CAPS grid and seasonal deficits; Approach 6 (Climate competitiveness) - provides low-carbon power for CBAM-exposed industry.
6.	KG, KZ, UZ: Kambarata-1 HPP	Generation	Blended (WB, ADB, EBRD, AIIB, IsDB, OPEC Fund, National Govts.)	3 290 - 5 640	Approach 1 (Connecting markets) - cross-border hydro; Approach 6 (Climate competitiveness) - decarbonises grid.
7.	KG: Kazarman HPP Cascade	Generation	Blended (WB, ADB, EBRD, IsDB, EIB, others)	2 484	Approach 1 (Connecting markets) - exportable summer surplus; Approach 2 (Resilient energy mix) - firm capacity + regulation; ; Approach 6 (Decarbonisation)
8.	KZ: Ulken Nuclear Power Plant	Generation	Blended (Rosatom (Russia), Government of KZ)	13 600	N/A: large low-carbon baseload, but Rosatom BOO model and fuel reliance run against the EU's 1.1 diversification aim



No.	Project	Type	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
9.	KZ: Turkistan CCGT 1,000 MW	Generation	Samruk-Kazyna	1 380	Minimal or no relevance to shared approaches: flexible gas capacity that helps integrate RE; primarily domestic reliability
10.	Uzbekistan, Alat Battery Energy Storage System (500 MW / 1,000 MWh)	Storage	Blended (IFC, WB, Government of UZ)	752	Approach 1 (Connecting markets) - system-scale flexibility for regional trade. Approach 2 (Resilient energy mix) - supports PV/wind exports;
11.	UZ: Gubar Solar + BESS (300 MW PV + 75 MWh)	Storage	Blended (Masdar, ADB)	Not specified	Approach 4 (Energy security) - hybrid model that smooths intermittency and builds operating know-how useful for future cross-border trade.
12.	UZ: Nukus-2 Wind + BESS (200 MW + storage)	Storage	Not specified	Not specified	Approach 4 (Energy security) - strengthens Karakalpakstan grid and adds dispatchable clean capacity; relevant stepping-stone for regional integration.
13.	Turkmenistan, National Power Grid Strengthening Project	Transmission Infrastructure	ADB	582.8	Approach 1 (Connecting markets) - 1 100 km of lines + substations; - enables cross-border trade.
14.	Kazakhstan, Grid Unification (West - UPS, 500 kV)	Transmission Infrastructure	Blended (EBRD, ADB, Government of Kazakhstan)	470	Approach 1 (Connecting markets) - links isolated western zone; Approach 4 (Energy security) - strengthens North - South corridor for RE export.
15.	Uzbekistan, Electricity Grid Modernisation & CAPS reintegration (to 2030)	Transmission Infrastructure	Blended (ADB, WB, EBRD)	Not specified	Approach 4 (Energy security) -phased upgrades with an implied multi-billion cost; key for regional balancing
16.	Tajikistan, Digital Energy & Trade Infrastructure Modernisation	Transmission Infrastructure	WB	Not specified	To some extent supports Approach 1 (Connecting markets) -smart-grid/AMI backbone to enable cross-border exchanges.
17.	TM, UZ, TJ, AF, PK: TUTAP & TAP-500	Transmission Infrastructure	ADB	Not specified	Indirectly supports Approach 1 (Connecting markets) by linking Central Asian generation zones with South Asia, relieving pressure on EU-facing export corridors; contributes to Approach 4 (Energy Security) by enhancing regional system flexibility and enabling seasonal balancing through summer hydro exports and winter imports.

Table 15. List of Key Planned Initiatives in Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan).

No.	Project	Type	If EU supported	Approx. total budget, M EUR	Contribution to connectivity approaches
1.	AZ, GE, KZ, KG, TJ, TM, UZ, MN, PK, AF, CN-XJ: CAREC Green Energy Alliance (financing vehicle, concept)	Finance, Policy & TA	CAREC/ADB	Not specified	N/A: helps finance cross-border RE and grid links that later feed the Black Sea/Caspian corridors; crowds in private capital for projects where preferred suppliers are strong; standardizes prep and bankability across CA markets
2.	Kazakhstan - Hyrasia One (green H ₂ / PtX)	Generation	Svevind (Germany/Sweden),	40 000	Approach 2 (Resilient energy mix) - exports as green ammonia toward EU; Approach 6 (Climate competitiveness) - low-carbon molecules for EU industry;



No.	Project	Type	If EU supported	Approx. total budget, M EUR	Contribution to connectivity approaches
			private equity, Gov. of KZ)		Approach 5 (EU industrial competitiveness) - supports EU supply chains for electrolysers/BOP equipment.
3.	Uzbekistan - Navoiy Wind Complex (1.5 GW)	Generation	ACWA Power	Not specified	Approach 2 (Resilient energy mix) - potential export-oriented RE hub feeding future EU corridors.
4.	Tajikistan - Solar & Wind pipeline (up to 1.5 GW)	Generation	TBEA; Powerchain (China)	Not specified	Approach 2 (Resilient energy mix) - enables future cross-border exports; Approach 4 (Energy security) - diversifies winter-constrained system.
5.	KZ: Mirny Wind + 600 MWh BESS	Storage	Blended (TotalEnergies, Samruk-Kazyna, KazMunayGas)	Not specified	Approach 2 (Resilient energy mix) - strengthens export potential; Approach 4 (Energy security) - grid-level stabilisation; indirect industrial relevance to Approach 5 via clean supply.
6.	KZ: Zhetysu Wind + BESS	Storage	ACWA Power (Saudi Arabia)	1 410	Approach 1 (Connecting markets) - enables future Caspian - Black Sea exports; Approach 6 (Climate competitiveness) - lowers carbon intensity for industry; supports Approach 5 (Industrial competitiveness) - demand for grid/BESS equipment for EU firms.
7.	KG, TJ, AF, PK: CASA-1000 Interregional Power Line	Transmission Infrastructure	Blended (WB, EIB, IsDB, USAID)	1 128	N/A: 1,300 MW HVDC/HVAC corridor moving surplus summer hydro from CA to South Asia (progress paused inside Afghanistan). is sponsored by EIB (amongst others), but generally, all items are south- or east-facing (to China/South Asia) or purely domestic.
8.	TM, AF, PK, IN: TAPI Gas Pipeline	Transmission Infrastructure	Blended (Galkynysh - TAPI Pipeline Co. Ltd., ADB)	9 400	N/A: 33 bcm/y Turkmen gas to South Asia; transformational for regional gas trade (stalled in Afghanistan).
9.	TM, UZ, TJ, KG, CN: Central Asia - China Gas Pipeline, Line D	Transmission Infrastructure	Blended (CNPC; national gas companies)	5 700	N/A: Adds ~30 bcm/y to China via TJ/KG; shifts export balance eastward.

4 Digital Sector

This chapter outlines the identified and suggested regional priorities for digital connectivity development in the Black Sea region, including Türkiye, in South Caucasus, and Central Asia, followed by a structured overview of key ongoing and planned digital infrastructure (hard and/or soft connectivity) projects. Each initiative is assessed for its alignment with the proposed regional priorities for digital connectivity, thus providing a clear mapping of how projects align across the current digital pipeline.

4.1 Regional Approaches in the Digital Sector

Countries in the Black Sea region, including Türkiye, in the South Caucasus, and Central Asia still face challenges in accessing **high-capacity, secure, and affordable digital infrastructure** - which is limiting their ability to fully benefit the potential of the digital economy^{78 79 80}.

The **shared cross-regional interests** may be twofold:

1. Keep **digital corridors open, secure, and reliable**, with fair access and internationally aligned security standards across fibre networks, internet and cloud exchange points (IXPs), and data centres^{81 82}.
2. **Improve interoperability with global digital markets**, including the EU Digital Single Market (DSM), enabling partner countries to connect more easily, expand digital services, and support digital trade and innovation.^{83 84}

For instance, installing fibre cables at the same time as building energy and transport routes and setting up carrier-neutral IXPs in Türkiye, the South Caucasus and Central Asia, are among the most effective ways to increase capacity, reduce costs, and keep data traffic local^{85 86 87}. These priorities are fully aligned with the EU Global Gateway strategy, which aims to boost smart, clean, and secure links in digital, energy, and transport sectors, and with the Digital Decade Policy Programme 2030^{88 89}, which sets ambitious targets for secure and sustainable digital infrastructure, digital skills, and digitalisation of public services.

Accordingly, the following suggested priorities provide **an investment-oriented pathway** to develop alternative, resilient and secure digital networks while also boosting innovation and competitiveness:

1. **Secure and diversify strategic digital corridors.**
2. **Integrate digital infrastructure with energy and transport.**
3. **Build regional internet exchange points (IXPs) and caching hubs.**
4. **Use satellite connectivity as interim solution for resilience and coverage gaps.**
5. **Promote active participation of trusted regional and international companies in corridor projects.**
6. **Ensure cyber resilience and promote internationally recognised technology and standards.**
7. **Support emerging and enabling technologies, with a focus on AI.**
8. **Grow start-up ecosystems and increase cross-regional and international linkages.**

The outlined priorities are further described in more detail below.

4.1.1 Secure and diversify strategic digital corridors

The corridor map is rapidly evolving on two fronts:

- 1) **Black Sea routes** - a potential **Black Sea Submarine Cable (BSSC)** could deliver an open-access Georgia-Romania link^{90 91 92}, while the private-sector led **Kardesa** system (Vodafone) and Caucasus Cable system upgrade under the Digital Silk Way are seeking to add competitive capacity;
- 2) **Trans-Caspian-TCTC routes**, notably the **Digital Silk Way** Trans-Caspian cable and the **Caspian Green Energy Corridor** concept, that contemplate parallel fibre deployment^{93 94 95}.

These projects pursue the objective of multi-route paths that diversify transit corridors and reduce dependency on any single route, thereby shortening the distance to EU IXPs, promoting inter-regional integration. But careful phasing is essential: overlapping Black Sea systems are unlikely to be commercially viable in parallel, with first to -market- advantage decisive for wholesale pricing and utilisation.



Adoption of quantum-safe designs is increasingly important, combining post-quantum cryptography for terrestrial and subsea data transit with quantum key distribution on high-risk cross-border links and landing-station interconnectors. Aligned with EuroQCI and ETSI QKD interfaces, this mitigates ‘Harvest Now, Decrypt Later’ risks, hardens backhaul links, and broadens eligible vendor options where risk-based assurances are met. In turn, this approach/solution presents opportunities for broadening eligible vendor options where risk-based assurances are met.

In parallel, Ukraine’s reconstruction (e.g., **Amber Dragon** fund; **Datagroup-Volia-lifecell** network expansion) and Armenia’s network and compute upgrades (**Telecom Armenia Sustainability linked bond**; **AI datacentre plan**) can anchor future East-West traffic while aligning security and (carrier-neutral) governance with EU frameworks. Consequently, efforts should be taken to include Armenia and Ukraine into cross-regional corridor development.

Collectively, these moves underpin the Global Gateway objectives and create credible access points for Central Asian traffic once Transcaspien segments are live. The use of blended finance and anchor-tenant models are key to crowding in private capital and ensuring interoperability and diversity across Romania, Bulgaria, Türkiye, the South Caucasus, and Central Asia. A resilient, policy-aligned path from Central Asia and the South Caucasus to EU IXPs lowers systemic risk to networks, trims latency/costs for users, and positions the regions to interconnect with the EU as the default trusted gateway between Asia and Europe.

Recommended Approach 1: Secure and diversify strategic digital corridors (between Central Asia, the South Caucasus, Türkiye, Ukraine, and the EU):

- Build resilient, multi-route terrestrial and subsea corridors to reduce dependency on single paths and enhance security, enabling trusted connectivity between Central Asia, the South Caucasus, Türkiye, Ukraine, and the EU.
- Co-invest in high-capacity systems, ensuring open-access governance and quantum-safe designs, and integrate Ukraine, Türkiye and Armenia as key nodes to strengthen inter-regional connectivity.

4.1.2 Integrate digital infrastructure with energy and transport

Installing infrastructure for different sectors together is becoming the quickest and safest way to scale^{96 97}. Examples include fibre along TANAP via the **TurkNet - SOCAR partnership** in Türkiye, the energy-digital **BSSC route**, the **Trans Adriatic Express** fibre-optic route laid along TAP gas line between Italy and Greek/Turkish border, the **railway leave fibre planning in Bulgaria** (USTDA-backed feasibility), the proposed **Digital CASA corridor** integrated with energy in some segments, the **BRUA gas-fibre corridor** across Romania-Bulgaria-Hungary-Austria, and pipeline-aligned **fibre on the Turkmenistan-Afghanistan-Pakistan-India (TAPI) corridor**. These models cut capex, accelerate permits (‘dig once’), and embed long-life rights-of-way that are difficult to replicate with standalone telecom builds, establishing- operational logic to mainstream across TCTC- energy and rail assets.

As corridor operations digitalise (SCADA, edge compute, telemetry), placing carrier-neutral nodes at multi-sector junctions and regional hubs becomes an efficient way to hard-wire resilience and interconnect traffic with EU gateways in Romania and Bulgaria^{98 99 100}. Fibre should be treated as standard kit in new energy/rail builds, instituting one-stop permitting and corridor-wide service level agreements^{101 102}. In segments with heightened political dimension (e.g., **Crossroads of Peace**), it is recommended to sequence investment with modular segments and pre-agreed interconnection points so projects can progress even amid partial access constraints. Bundling digital links with transport/energy infrastructure allows to deliver higher impact, accelerates delivery, and supports the integration of open-access governance into multi-sector assets.

Recommended Approach 2: Integrate digital infrastructure with energy and transport:

- Deploy fibre alongside energy and transport routes using “dig-once” principles to leverage existing rights-of-way and infrastructure to accelerate rollout, reduce permitting complexity, and increase resilience of multi-sectorial assets.
- It would ensure that digital connectivity grows in tandem with strategic energy and transport corridors, creating operational synergies and economies of scale, while also harmonising governance processes across sectors.



4.1.3 Build regional internet exchange points (IXPs) and caching hubs

To convert transit corridors into reliable, affordable services, **local capabilities to handle traffic** should be developed. In that regard, enhancing national fibre-optic backbones can create redundancy through network of interconnected routes and reduce single points of failure^{103 104}, contributing to service continuity not only locally but also regionally. Targeted EU/IFI support for carrier neutral - IXPs and edge facilities – for instance, in Baku, Tbilisi, Yerevan, Almaty, Tashkent and future Ukrainian hubs - can shorten paths to content, lower wholesale prices, and improve Quality of Service (QoS), especially if paired with open-access rules and harmonised interconnection policies^{105 106 107}. Complementary investments in data centres (DCs) (e.g., **Azerbaijan’s green government DCs; Armenia’s AI supercomputing campus; Kazakhstan’s Data Transit Centre; Türkiye’s TSKB Sustainable Energy and Infrastructure**) can boost demand in the region and offers future opportunities to reinforce - EU aligned - trust and security regimes.

On the EU side, Romania and Bulgaria are expanding backhaul and landing point roles, which, coupled with regulatory harmonisation in the Eastern Partner countries, can streamline cross-border peering^{108 109}. The net effect is a step-change in resilience - less dependence on distant IXPs and single country transit - and a better investment case for Over-The-Top caches and content delivery networks across the South Caucasus and Central Asia^{110 111}. Technical upgrades should be combined with clear rules and competition measures to avoid depending on a single provider at important locations.

Recommended Approach 3: Build regional internet exchange points (IXPs) and caching hubs:

- Co-investment in national fibre backbone development, IXPs and caching hubs (local servers storing frequently accessed online content) in regional cities to keep data closer to users, strengthen redundancy, and reduce reliance on distant IXPs, thus also improving quality of service.
- Harmonise peering rules using carrier-neutral facilities to create better interconnection conditions, boost market visibility, and accelerate traffic growth.

4.1.4 Use satellite connectivity as interim solution for resilience and coverage gaps

With observed and projected significant market growth¹¹², satellite connectivity provides a practical bridge to stay connected during the development of terrestrial and subsea corridors^{113 114}. It ensures continuity in geographically challenging areas, preventing service gaps that could stall economic and social development. For example, a **Team Europe Initiative (TEI)** is deploying SES O3b mPOWER backhaul to thousands of rural sites in Central Asia, while commercial lower earth orbit satellite options (e.g., **Starlink**, already active in some South Caucasus and Central Asian countries) are extending reach and redundancy, where security or geography complicate fibre commercial viability. Combining satellite and ground networks provides a reliable backup if problems occur^{115 116}.

Strong, internationally aligned security standards should be applied, so that universal-service funds can support backhaul development (links between local access networks and the operators’ core networks) without distorting wholesale markets.

Recommended Approach 4: Use satellite connectivity as interim solution for resilience and coverage gaps:

- Deploy secure satellite backhaul in hard-to-serve areas as a temporary bridge.
- Select hybrid satellite-terrestrial solutions to integrate network operations into terrestrial network management.
- Plan for migration to terrestrial and subsea solutions as capacity demand grows. For example, design alternative scenarios for partial coverage or performance (e.g., satellite fallback) to mitigate risks from political changes or project delays.



4.1.5 Promote active participation of trusted regional and international companies in corridor projects

Trusted digital suppliers bring technologies and standards that underpin secure, interoperable corridors. For instance, multiple live/planned projects create opportunities to showcase trusted regional/international technology and leverage standards. Such projects include a potential **Black Sea digital cable**; the **Kardesa project** (with Vodafone) and Data Centre(DC)/edge upgrades (**Azerbaijan green DCs**; **Armenia AI supercomputing campus**; **Kazakhstan Data Transit Centre**)^{117 118 119 120 121}. But competition is intense and procurement often favours vertically integrated, non-neutral infrastructure. Thus, the facilitation of trusted technology offers relying on public-private cooperation would provide regional and international companies the opportunity to contribute and lead the development of corridors' projects through coherent, standards-based and security-aligned solutions. Such coordinated offers can accelerate deployment and embed trusted architectures in the design of connectivity cables, while fostering collaboration with local partners and developing in-country operational skills/capabilities.

Also, EU instruments (Global Gateway / Team Europe), regulatory alignment efforts in Eastern partner countries (i.e., **EU4Digital**), and the EU - Central Asia Digital Bridge concept create the enabling frame for trusted digital suppliers to shape these routes¹²² with engineering, construction and digital systems, provided that bids arrive as packaged, neutral, security assured offers that are financially viable and meet cross-border interoperability needs. In this context, a formalised approach following the example of **EU Tech Business Offer**¹²³ (single-window packaging of finance, reference designs, and compliance) could enable international firms to compete on value, not just price, while reinforcing trusted international standards across corridor operations

Packaging these opportunities as a coordinated EU Tech Business offer can accelerate time to service, lock in trusted architectures and extend the traffic gravity eastward. Offers should be technology neutral, but standards anchored, modular (so segments can go live even if cross-border timing diverges) and comply with open architecture to avoid vendor lock-in. Carrier-neutral facilities, transparent/compliant interconnectivity and security built in from the start are essential for engaging regional and international technology companies. Working with local partners also helps develop skills and reliable operations and maintenance capacity in country.

Recommended Approach 5: Promote active participation of trusted regional and international companies in corridor projects

- Encourage trusted regional and international companies to deliver complete, packaged solutions for corridor infrastructure, combining engineering, construction, digital systems and services.
- Facilitate “one-stop-shop” offers through the EU Tech Business Offer, including financing, technical support, and compliance with internationally recognised technology and standards.
- Expand industrial presence and foster collaboration through local partnerships, ensuring projects meet high standards for security, transparency, and sustainability.

4.1.6 Ensure cyber resilience and promote internationally recognised technology and standards

This approach is focused on the technical and regulatory standards - ensuring that digital infrastructure and operations are secure, interoperable, and aligned with internationally recognised, regardless of who invests or operates them. As corridors expand towards inter-regional reach, trust and interoperability become critical for scale and security. By promoting the adoption of internationally recognised and EU standards such as the EU's 5G cyber-security toolbox, including data privacy standards, partner countries can build secure, future-proof networks that are compatible with European and global markets, further reducing vendor and supply chain risks, facilitating interconnection and unlocking concessional finance.

In that regard, integration of internationally recognised standards and technologies in digital projects can be fostered by offering technical assistance, sharing best practices, and facilitating dialogue on topics like secure 5G deployment, robust cybersecurity frameworks for critical infrastructure, and effective incident response coordination. Supporting 5G Security Toolbox-conformant designs for mobile and transport networks that touch



the corridors; backbone, IXPs and DCs operation under NIS-style risk management, business-continuity and incident-reporting will determine success.

In addition to this, corridor sponsors, IFIs and countries in the region are seeking to modernise their digital infrastructure and enhance resilience against cyber threats. Thus, partners could also explore options for developing regional Computer Emergency Response teams and Computer Security Incident Response Teams to enhance resilience against cyber threats.

Recommended Approach 6: Ensure cyber resilience and promote internationally recognised technology and standards:

- Promote adoption of internationally recognised standards and regulations, such as the EU 5G Security Toolbox, the European Electronic Communications Code, GDPR, Digital Markets Act, Digital Service Act, Network and Information Security 2 Directive and others, as well as best practices for secure deployment and operation of next-generation networks and corridors.
- Support implementation of robust cybersecurity frameworks for digital infrastructure, including critical assets such as fibre backbones, IXPs, and data centres.
- Explore options for developing regional Computer Emergency Response teams and Computer Security Incident Response Teams to enhance resilience against cyber threats.

4.1.7 Support emerging and enabling technologies, with a focus on AI

Beyond connectivity, advanced technologies like AI and high-performance computing drive innovation and competitiveness. For example, in the South Caucasus, the completed EaPConnect programme under the EU4Digital umbrella has been a key enabler for research networks and has supported the establishment of the National Supercomputing Centre of Armenia (ANSCC) in Yerevan, which now drives AI research, big-data analytics, and regional scientific cooperation^{124 125}. In parallel, Armenia's AI and compute pipeline - most notably the USD 500 million **AI supercomputing data centre initiative** (with Firebird, Team Group/Telecom Armenia and NVIDIA, scheduled for 2026) - signals strong local demand for high-performance-computing and trusted AI services that offers potential to be linked to EU innovation ecosystems¹²⁶. Regionally, complementary nodes such as **Azerbaijan's green public data centres**, **Kazakhstan's Data Transit Centre**, **Türkiye's Sustainable Green Infrastructure** efforts including DCs can anchor edge compute, caching, innovation and research workloads along EU facing routes, creating a basis for cross-regional technological synergies when paired with open and carrier-neutral interconnectors.

Further promoting and facilitating such cross-regional collaboration through research partnerships, joint labs, and pilot projects would ensure responsible deployment and interoperability with international trust frameworks and would better position countries to translate scientific collaboration into growth and competitiveness gains.

Recommended Approach 7: Support emerging and enabling technologies, with a focus on AI:

- Co-fund targeted AI pilots and launch cross-border pilots in priority use-cases to prove value and scalability.
- Expand access to advanced compute by opening computing/cloud/data platforms via national research/education networks and regional hubs like ANSCC to power research and prototyping.
- Facilitate cross-regional collaboration through research partnerships with joint labs and exchanges for AI and emerging tech.

4.1.8 Grow start-up ecosystems and increase cross-regional and international linkages

Start-up ecosystem drives sustainable digital transformation and technological synergies¹²⁷. In the Black Sea region, including Türkiye, in the South Caucasus, and Central Asia, local entrepreneurs are increasingly seeking opportunities to scale innovative solutions, but often face barriers such as limited access to capital, mentorship, and international markets¹²⁸. The EU, through its innovation networks (such as the European Innovation Council, EIT Digital, and Horizon Europe), offers resources, funding instruments, and best practices that can help bridge



these gaps. Notably, the **EBRD Star Venture programme**¹²⁹ and **EU4Innovation East**¹³⁰ have played an important role in the region by identifying high-potential start-ups, providing funding and tailored advisory support, and connecting them with global investors and mentors. Similarly, **EU4Digital** under Information and Communication Technology (ICT) Innovation thematic area provides support for Eastern Partner countries in developing regional innovation ecosystems through policy harmonisation for predictable investment environment, networking platform creation and startup support¹³¹.

In that regard, connecting local entrepreneurial ecosystems to more established international and European business networks would increase opportunities for mutually beneficial partnerships. This involves promoting access to international funding instruments, facilitating participation in accelerator and exchange programs, and delivering targeted capacity-building initiatives. Success is reflected in the increasing number of start-ups from the region participating in cross-regional and EU-backed programs, the growth of cross-border investment and mentorship networks, and the emergence of local innovation hubs that serve as bridges between regional and European markets. The ultimate goal is to empower local entrepreneurs to scale their solutions, attract local innovation & cross-regional tech synergy promotion. Such efforts would create a dynamic innovation landscape that would perfectly complement the Trans-Caspian Transport corridor development.

Recommended Approach 8: Grow start-up ecosystems and increase cross-regional and international linkages:

- Promote the development of local innovation hubs and cross-border partnerships to strengthen the regional start-up ecosystem.
- Facilitate access for partner country start-ups to international and European business networks, accelerator programs, and funding opportunities.
- Support participation in capacity-building and mentorship initiatives, including those offered by the EBRD Star Venture program.

4.1.9 Recommendations for actions in the digital sector

This section outlines short-term recommendations for actions in digital sector.

1. Investigate shortlisted initiatives and define the EU tech business offer:

- a. Systematically review the status and progress of all key cross-regional digital connectivity initiatives (as mapped in the 4.2. Digital Sector Projects Pipeline) and conclude where EU participation or co-financing would add value.
- b. Prepare a targeted EU tech business offer for each relevant initiative, highlighting opportunities for EU companies (engineering, digital systems, cybersecurity, etc.).
- c. Actively promote EU company participation in relevant corridor tenders, ensuring internationally recognised standards are embedded.

2. Promote and encourage regulatory reforms and adoption of internationally recognised technology and standards in key corridor countries:

- a. Explore possibilities to launch an EU–Türkiye digital regulatory dialogue to promote open access and discuss cooperation.
- b. Support regulatory reform in Central Asia by offering technical assistance and fostering gradual alignment with international best practices.
- c. Encourage adoption of internationally recognised standards (e.g., 5G Security Toolbox, GDPR, NIS2) in corridor countries and projects to strengthen trust, security, and interoperability.

3. Support the upgrade and diversification of strategic digital corridors (i.e., BSSC & Digital Silk Way):

- a. For the Black Sea, support the integration and potential upgrade of the existing submarine cable as well as laying a second cable system to enhance capacity and network resilience.
- b. For the Digital Silk Way, initiate dialogue with project sponsors to explore possibilities for EU to become active partner by offering expertise, financial tools, business engagement, and regulatory alignment – helping ensure the Digital Silk Way delivers secure and open



connectivity, including the introduction of robust data encryption measures to safeguard information flows.

4. Promote local innovation and cross-regional technology synergies:

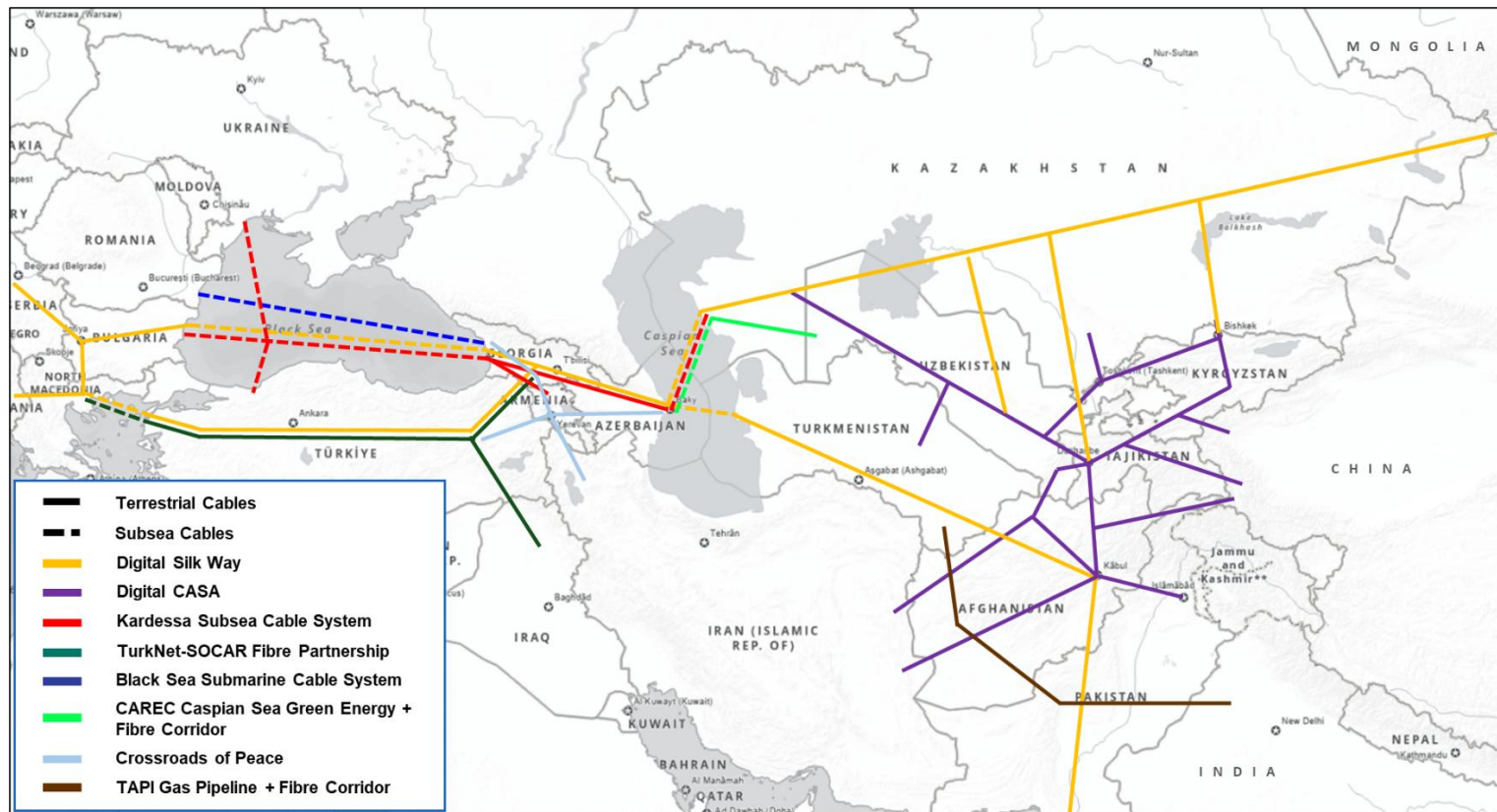
- a. Explore the possibility to launch joint EU–partner country pilot calls for AI and emerging technologies.
- b. Support the creation of shared research labs and innovation hubs and expand access to advanced computing and cloud platforms for research.
- c. Support capacity-building and mentorship programs, including collaboration with initiatives like the EBRD Star Venture, to strengthen local entrepreneurial skills and scale-up potential.

4.2 Digital Sector Project Pipeline

This chapter details the pipeline of key ongoing and planned digital projects across the Black Sea region, including Türkiye, in the South Caucasus and Central Asia. Each project is assessed for its relevance to and fit with the regional priorities for digital connectivity defined in the previous sub-chapter.

Additionally, the map below presents key planned/ongoing fibre-optic initiatives. It should be noted that a majority of the routes in the figure are illustrative as there are no concrete route plans available for all initiatives. However, potential connectivity/coverage/route connections can be assumed as presented below.

Figure 2. Illustrative map of key ongoing/planned fibre-optic cable initiatives in Eastern Partnership, including South Caucasus, Türkiye, and Central Asia.





4.2.1 Key Ongoing Digital Initiatives

Table 16. List of Key Ongoing Initiatives across Eastern Partnership, including South Caucasus, Türkiye, and Central Asia.

#	Project	Connectivity type	Beneficiary countries	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
1.	<p>Digital Silk Way (includes two sub-sea cables under the Caspian Sea, one via terrestrial connectivity in Azerbaijan and one under the Black Sea).</p> <p>First leg is a new Black Sea submarine cable, called Kardesa, in cooperation with Xtera cable supplier.</p>	<p>Hard: Terrestrial / subsea fibre, DCs</p>	<p>Georgia, Türkiye, Ukraine, Azerbaijan, Kazakhstan, Turkmenistan, Uzbekistan, Italy, Germany.</p>	<p>NEQSOL Holding</p> <p>Black Sea leg is sponsored by Vodafone UK, to connect Bulgaria, Georgia, Türkiye and Ukraine, in cooperation with Vodafone Ukraine (subsidiary of NEQSOL holding).</p>	<p>Total budget for the Digital Silk Way is not specified.</p>	<p><u>Caspian Sea legs</u></p> <p>Approach 1 (Secure and diversify strategic digital corridors) - builds a new, shorter EU - Asia corridor via Caucasus/Caspian, diversifying away from northern routes;</p> <p>Approach 3 (Build regional internet exchange points (IXPs) and caching hubs) - DC/IXP elements help localise traffic and strengthen resilience.</p> <p><u>Black Sea leg</u></p> <p>Approach 1 (Secure and diversify strategic digital corridors) - alternative open access Black Sea route diversifying away from northern paths.</p> <p>Approach 5 (Promote active participation of trusted regional and international companies in corridor projects) - new Black Sea corridor led by European firm offers more trusted and open access platform for EU firm involvement</p>
2.	<p>Team Europe Initiative (TEI) for Digital Connectivity in Central Asia</p>	<p>Hard: satellites, data centres, fibre</p> <p>Soft: policy/regulation, cybersecurity</p>	<p>Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan</p>	<p>EU, EIB, EBRD</p>	<p>78.85</p>	<p>Approach 1 (Secure and diversify strategic digital corridors) - establishes a new, resilient satellite connectivity route, reducing reliance on single pathways.</p> <p>Approach 3 (Build regional internet exchange points (IXPs) and caching hubs) - DC/IXP elements help localise traffic and improve QoS along the corridor.</p> <p>Approach 4 (Use satellite connectivity as interim solution for resilience and coverage gaps) - deploys SES O3b mPOWER to reach remote/risky areas until terrestrial corridors mature.</p> <p>Approach 5 (Promote active participation of trusted regional and international companies in corridor projects) - directly engages EU firm in regional connectivity development, increasing trust for others.</p> <p>Approach 6 (Ensure cyber resilience and promote internationally recognised technology and standards) - promotes EU data protection and cybersecurity standards, creating interoperable environment for data flows with Europe.</p>
3.	<p>Digital CASA</p>	<p>Hard: terrestrial fibre-optic cable</p>	<p>Kyrgyzstan, Tajikistan, Uzbekistan</p>	<p>WB IDA, Swiss Agency for</p>	<p>147</p>	<p>Approach 1 (Secure and diversify strategic digital corridors) - upgrades international connectivity routes that can feed EU via Caucasus/Türkiye.</p>



#	Project	Connectivity type	Beneficiary countries	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
		Soft: policy reform	(halted), Afghanistan (halted)	Development & Cooperation		Approach 2 (Integrate digital infrastructure with energy and transport) - lays fibre-optic cable along energy lines. Approach 3 (Build regional internet exchange points (IXPs) and caching hubs) - national fibre backbone upgrades and DC/IXP elements that help localise traffic and improve QoS along the corridor
4.	Turkmenistan-Afghanistan-Pakistan-India (TAPI) gas pipeline - fibre component	Hard: terrestrial fibre	Turkmenistan, Afghanistan, Pakistan, India	ADB	Not specified, estimated 34 500 for full project	Approach 1 (Secure and diversify strategic digital corridors) - creates a potential Central/South Asia terrestrial data path that can ultimately link into EU-bound Caucasus/Black Sea segments. Approach 2 (Integrate digital infrastructure with energy and transport) - cross sector codeployment (energy + digital) reduces capex/time.
5.	Datagroup-Volia-lifecell Merger and Expansion	Hard: terrestrial fibre, mobile broadband	Ukraine	EBRD, WB IFC	373	Approach 3 (Build regional internet exchange points (IXPs) and caching hubs) - rebuilds national backbone/access to keep more traffic local and improve QoS ahead of future Black Sea/TCTC capacity.
6.	Armenian AI Supercomputing Data Centre	Hard: DC	Armenia	Government of Armenia	428	Approach 3 (Build regional internet exchange points (IXPs) and caching hubs) - creates data gravity and traffic computational capabilities that attracts caching/peering on EU-facing routes. Approach 5 (Promote active participation of trusted regional and international companies in corridor projects) - creates a high-value market for specialised and internationally trusted technology, software, and expertise. Approach 7 (Support emerging and enabling technologies, with a focus on AI) - supports regional AI computational capabilities linked to EU innovation ecosystems.
7.	Kazakhstan Digital Acceleration for an Inclusive Economy (DARE)	Hard: terrestrial fibre, mobile Soft: regulation, data protection	Kazakhstan	WB IBRD	110	Approach 3 (Build regional internet exchange points (IXPs) and caching hubs) - upgraded national backbone increases service quality and better anchors Trans-Caspian traffic onto EU-bound routes.
8.	EU4Georgia - REDI (Internet Access Flagship)	Hard: broadband/access points, mobile Soft: digital skills, services, cybersecurity	Georgia	EU	5.5	Approach 3 (Build regional internet exchange points (IXPs) and caching hubs) - last-mile uptake and skills increase local traffic retention and QoS. Approach 6 (Ensure cyber resilience and promote internationally recognised technology and standards) - sharing of expertise in deploying digital infrastructure and promoting digital inclusion in line with EU standards
9.	EiCat fibre-optic cable expansion	Hard: terrestrial fibre & mobile backhaul (last-mile)	Kyrgyzstan	WB IFC	2.6	Approach 3 (Build regional internet exchange points (IXPs) and caching hubs) - expands access and fibre-to-tower, strengthening domestic grid and keeping more sessions local



#	Project	Connectivity type	Beneficiary countries	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
10.	Telecom Armenia Sustainability-Linked Bond Project	Hard: mobile broadband, fibre, base stations	Armenia	IFC, Team Telecom Armenia, EBRD, ADB	64	Approach 3 (Build regional internet exchange points (IXPs) and caching hubs) - upgrades improve QoS nationally and attracts peering/caching. Fortifies an EU-adjacent node feeding Black Sea/TCTC traffic.
11.	Public Administration Digitisation through Data Centres (AzInTelecom)	Hard: DCs	Azerbaijan	EIB	43	Approach 3 (Build regional internet exchange points (IXPs) and caching hubs) - green government DCs create compute/storage nodes that localise sessions and steady EU facing flows. Approach 5 (Promote active participation of trusted regional and international companies in corridor projects) - creating demand for high-end, specialised and internationally trusted technologies and expertise to build and operate a modern, secure digital infrastructure Approach 6 (Ensure cyber resilience and promote internationally recognised technology and standards) - public DCs are natural venues to embed internationally-aligned security/interoperability by design.
12.	Broadband Infrastructure Rollout (Aztelekom)	Hard: terrestrial fibre	Azerbaijan	EBRD	42.8	Approach 3 (Build regional internet exchange points (IXPs) and caching hubs) - rural/backbone expansion increases penetration, lowers wholesale costs, and strengthens a key transit state on the TCTC.
13.	Log-in Georgia	Hard: terrestrial fibre Soft: competition & affordability regulation	Georgia	WB IBRD, EIB	68.5	Approach 3 (Build regional internet exchange points (IXPs) and caching hubs) - rural fibre and affordability reforms lift take-up ahead of new Black Sea capacity. Approach 6 (Ensure cyber resilience and promote internationally recognised technology and standards) - expectation for developed infrastructure to be interoperable with pan-European networks and services
14.	EU4Digital - Phase 1 & 2	Soft: policy harmonisation & market integration	Ukraine, Armenia, Azerbaijan, Georgia, Moldova	EU	22	Approach 5 (Promote active participation of trusted regional and international companies in corridor projects) - creates predictable investment opportunities and engages EU firms in regional (corridor) development opportunities. Approach 6 (Ensure cyber resilience and promote internationally recognised technology and standards) - promotes EU 5G toolbox/GDPR-style alignment and trust services to safeguard corridor operations. Approach 8 (Grow start-up ecosystems and increase cross-regional and international linkages) - supports startups and development of regional innovation ecosystems.
15.	Uzbekistan Digital Inclusion Project	Soft: digital skills, services, policy	Uzbekistan	WB IBRD / IDA	42.8	Approach 8 (Grow start-up ecosystems and increase cross-regional and international linkages) - skills/ITES focus and ecosystem measures seed entrepreneurship and scalable digital services.



4.2.2 Key Planned Digital Initiatives

Table 17. List of Key Planned Initiatives across Eastern Partnership, including South Caucasus, Türkiye, and Central Asia.

#	Project	Connectivity type	Beneficiary countries	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
1.	Black Sea Submarine Cable (BSSC)	Hard: subsea fibre	Georgia, Romania, Azerbaijan, Hungary	EU (TBC)	70-90 for fibre component 2 (energy fibre) + 300	<p>Approach 1 (Secure and diversify strategic digital corridors) - EU-backed Georgia - Romania open-access path for route diversity/resilience.</p> <p>Approach 2 (Integrate digital infrastructure with energy and transport) - energy - digital co-deployment accelerates permitting and hardens corridor operations.</p> <p>Approach 5 (Promote active participation of trusted regional and international companies in corridor projects) - advanced tech requirements and adherence to EU public procurement rules offers opportunity for international firms to participate in level and transparent process.</p> <p>Approach 6 (Ensure cyber resilience and promote internationally recognised technology and standards) - anchors EU-aligned security, interoperability, governance and technology standards.</p>
2.	Amber Dragon Ukraine Infrastructure Fund	Hard: DCs, terrestrial fibre, mobile broadband	Ukraine	EBRD, EIB, WB IFC	350	<p>Approach 3 (Build regional internet exchange points (IXPs) and caching hubs) - restores national compute/backbone capacity to localise traffic and prepares for EU-corridor landings.</p> <p>Approach 5 (Promote active participation of trusted regional and international companies in corridor projects) - presents strategic investment vehicle for channelling EU investments based on trusted, transparent standards and management.</p> <p>Approach 6 (EU tech and standards) - leverage reconstruction to anchor EU aligned security, interoperability and technology standards within the country.</p>
3.	TurkNet-SOCAR Partnership Fibre	Hard: terrestrial fibre	Türkiye Future extensions to Georgia, Greece, Iran	Jointly led by TurkNet and SOCAR Türkiye	Not specified	<p>Approach 1 (Secure and diversify strategic digital corridors) - terrestrial alternative/complement to Black Sea subsea for EU - Asia flows.</p> <p>Approach 2 (Integrate digital infrastructure with energy and transport) - integration leverages TANAP pipeline right-of-way (“dig-once”) fibre-optic cable.</p> <p>Approach 3 (Build regional internet exchange points (IXPs) and caching hubs) - strengthens national fibre-backbone for traffic handling and QoS improvement.</p>



#	Project	Connectivity type	Beneficiary countries	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
4.	Crossroads of Peace	Hard: terrestrial fibre (with roads/rail/pipelines/power)	Armenia, Azerbaijan, Georgia, Türkiye, Iran	Government of Armenia	Not specified	<p>Approach 1 (Secure and diversify strategic digital corridors) - unblocks EU facing routes across the South Caucasus with modular, staged interconnects.</p> <p>Approach 2 (Integrate digital infrastructure with energy and transport) - multi-sector corridor blueprint where fibre rides transport/energy upgrades.</p> <p>Approach 3 (Build regional internet exchange points (IXPs) and caching hubs) - enhances national fibre-optic backbone within Armenia creating redundancy within regional corridors.</p>
5.	Türkiye: TSKB Sustainable Energy and Infrastructure Facility, Phase 3	Hard: 5G, fibre, green DCs	Türkiye	AIB	171	<p>Approach 2 (Integrate digital infrastructure with energy and transport) - integrated funding for digital + energy infrastructure accelerates national backbone & compute</p> <p>Approach 3 (Build regional internet exchange points (IXPs) and caching hubs) - creates compute/data gravity and attracts IXPs/caching. Strengthens Türkiye's role as an EU - Asia transit hub.</p>
6.	Digital CAREC Corridor	Hard: terrestrial fibre	Afghanistan, Azerbaijan, China, Georgia, Kazakhstan, Kyrgyz Republic, Mongolia, Pakistan, Tajikistan, Turkmenistan, Uzbekistan	ADB	Not specified	<p>Approach 1 (Secure and diversify strategic digital corridors) - proposes a new regional backbone that can attach to EU aligned routes via Caucasus.</p> <p>Approach 3 (Build regional internet exchange points (IXPs) and caching hubs) - would create compute/data gravity and attract IXPs/caching regionally.</p>
7.	Data Transit Centre (Freedom Telecom)	Hard: DCs, terrestrial fibre	Kazakhstan	Freedom Telecom	202	<p>Approach 3 (Build regional internet exchange points (IXPs) and caching hubs) - creates compute/data gravity, attracts IXPs/caching and increases service continuity via national backbone and computational capabilities upgrades. Positions Kazakhstan as a stronger anchor for Trans-Caspian traffic toward EU gateways.</p> <p>Approach 5 (Promote active participation of trusted regional and international companies in corridor projects) - creates demand for technology and expertise to build a trusted, high-performance digital bridge. Developed local traffic processing increases investment attractiveness.</p>
8.	Uzbekistan: "Uzbekistan Telecom"	Hard: terrestrial mobile & fibre	Uzbekistan	AIB	85.7	<p>Approach 3 (Build regional internet exchange points (IXPs) and caching hubs) - stronger national backbone/access helps keep more traffic local and readies the network to attach to EU-bound corridors via the Caucasus.</p>



#	Project	Connectivity type	Beneficiary countries	Funding partners	Approx. total budget, M EUR	Contribution to connectivity approaches
9.	Development of a Cloud for AI processing - AI CLOUD	Hard: DCs Soft: cloud software	Romania, Moldova	Three Seas Initiative Investment Fund (3SIIF)	120	Approach 3 (Build regional internet exchange points (IXPs) and caching hubs) - regional compute/storage nodes increase "data gravity", attracting peering/caching and improving QoS for east-west flows. Approach 7 (Support emerging and enabling technologies, with a focus on AI) - builds AI/compute capacity at the EU edge of Black Sea/TCTC routes, enabling R&I and trusted AI services.
10.	The Caspian Sea Green Energy Corridor Project	Hard: subsea/terrestrial fibre co-planned with a green energy corridor	Azerbaijan, Kazakhstan, Uzbekistan	AIIB, ADB	1.9	Approach 1 (Secure and diversify strategic digital corridors) - envisages a new digital path linking Central Asia & South Caucasus to EU gateways, boosting route diversity and resilience. Approach 2 (Integrate digital infrastructure with energy and transport) - explicitly couples fibre with a trans-Caspian green-energy build ("dig-once"), cutting capex and permitting time.



5 Conclusions and Key Takeaways

5.1 Regional Approaches in the Transport and Trade sector

The European Union's strategic approach to the Black Sea region¹³² recognises the Black Sea and its neighbouring countries as a pivotal gateway linking Europe to Türkiye, the South Caucasus, Central Asia, and beyond. Stronger transport links within and between Türkiye, the South Caucasus, and Central Asia can speed up intraregional trade flows, thus unlocking the growth potential of the region. Following the significant increase of traffic in the region and the 8 August agreement between Armenia and Azerbaijan, the Trans-Caspian Transport Corridor stands out as the most viable route for sustainable, diversified, and resilient regional connectivity. In this context, the meta-study confirms priorities identified by the European Bank for Reconstruction and Development (EBRD) as well as the World Bank (WB) and emphasises the following priorities further complementing actions already implemented in the region.

In this context, the meta-study confirms priorities identified by the European Bank for Reconstruction and Development (EBRD) as well as the World Bank (WB) and emphasises **the following priorities** further complementing actions already implemented in the region.

1 Invest in impactful infrastructure developments

Despite recent progress, the Trans-Caspian Transport Corridor faces **operational constraints**: fragmented logistics, multiple border crossings, and limited digitalisation. For the EU, **enhanced corridor performance** would enable faster and more reliable imports of goods and raw materials, while also opening new export markets across Eurasia, resulting in advancement of mutually beneficial, **both cross-regional and intraregional trade**. It will also be providing significant advantages to landlocked countries as they gain better access to seaports, thus catalysing a growth in trade opportunities.

By supporting **impactful infrastructure developments in the region**, the EU can help unlock the corridor's full potential, and **promote open, coordinated governance** of the corridor and solutions protecting the long-term interest of the countries and their citizens along the Trans-Caspian Transport Corridor. To realise this potential, priority steps include co-investing in the development of critical hubs (e.g., logistics terminals, border crossing points (BCPs), intermodal centres, key routes, ports, as well as rolling stock and sea vessels), and boosting diversification of connectivity among partner countries, promote coordinated and joint governance of corridor investments. The extension of the Trans-European Transport Network (TEN-T) agreed to in 2021 provides the basis for transport investment planning in the South Caucasus.

In Central Asia, an EU-funded study by the **EBRD** identified several priorities for hard infrastructure investments essential for improving capacity and efficiency along the Trans-Caspian Transport Corridor, while the **World Bank in joint efforts with the EU and partners** is currently looking also on the western side of the Caspian Sea into the most immediate bottlenecks and investment needs, including on the TENT, to ensure the corridor's long-term viability. These stretch from the Third Bosphorus Bridge in Istanbul to the Port of Baku and will need to be prioritised as critical by the partner countries and IFIs.

2 Opportunities to improve connectivity in the South-Caucasus

As peace negotiations between Armenia and Azerbaijan advance, opportunities are emerging to re-establish **transport links connecting Armenia, Azerbaijan, and Türkiye**. Developing additional connections has the potential to strengthen overall corridor performance and diversity as well as increasing projected trade volumes. Regional stakeholders are actively pursuing initiatives to reopen and develop transport links between these countries.

Armenia's Crossroads of Peace Initiative (2023) seeks to strengthen regional connectivity through reciprocal access. It proposes seven new road checkpoints on borders with Azerbaijan and Türkiye, alongside the rehabilitation of key rail segments. The U.S.-backed TRIPP initiative (2025) envisions a similar corridor developed under a long-term U.S. lease, linking more broadly to ongoing railway infrastructure projects in Azerbaijan, including in Nakhchivan, and in Türkiye.



In light of these developments, the European Commission and the countries in the region could consider initiating technical discussions on how to ensure that the reopening of these transport links is aligned with the TEN-T extension.

3 Promote soft connectivity and compatibility with common standards

The EBRD, World Bank, OECD, Asian Development Bank, and other international organisations repeatedly stress the importance of **soft measures** to improve **trade facilitation, border management, and service delivery**. It is pointed out that the absence or incompatibility of these measures can severely impede potential benefits of the hard infrastructure improvements.

These studies underline the potential of advancing digitisation and interoperability across the corridor through adoption of common standards, enabling paperless trade, harmonised technical standards, and streamlined border procedures. They also stress the need to support transparent and predictable frameworks for tariff-setting, market access, and infrastructure maintenance, which would foster **fair competition and long-term reliability** of transport links.

4 Promote partnerships with the private sector

Partnerships with the private sector and local business in the implementation of corridor projects across engineering, construction, logistics, and digital systems can be fostered, with a focus on **interoperability and high-quality, trusted solutions**. This would promote global standards and technologies and enhance sharing of best practices. In this context, specific infrastructure development proposals could be tailor-made in cooperation with the private sector to address hard infrastructure challenges along the Trans-Caspian Transport Corridor.

5 Integrating Ukraine and Moldova into European network

The Trans-Caspian Transport Corridor serves as a key East-West artery, and Ukraine and Moldova represent an important complementary dimension in the connectivity landscape. Their strategic orientation is primarily defined by EU integration, but they still connect to the Trans-Caspian Transport Corridor through the Black Sea and Danube ports and link to key European Transport Corridors of the TEN-T network.

Major investments in hard infrastructure are planned through the TEN-T network extension, however, achieving full integration requires **faster progress on soft connectivity measures**, aligned with EU and international standards.

5.2 Regional Approaches in the Energy Sector

Both the EU and the partnering countries face energy **availability and accessibility challenges** due to dependencies on imported oil and gas and structural weaknesses in electricity networks, from national transmission and distribution grids to cross-border interconnections. Leaving some of the countries in the region exposed to supply disruptions or price peaks, while infrastructure limitations demand urgent investments. The varying degrees of regulatory alignment of the partnering countries with EU standards also pose a challenge. In the EU, the Repower EU plan addresses these vulnerabilities, by accelerating clean energy deployment, boosting energy efficiency, and diversifying energy supplies. For the regional cooperation in the Black Sea region and Central Asia, the following strategic directions stand out: to accelerate the deployment of renewables and take up of energy efficiency measures; build the cross-border interconnections that enhance regional connectivity and energy security; support diversified and future-proof energy routes for mutual economic benefit; and ensure energy infrastructure is resilient. The strategic directions are further broken down into six priority areas as outlined below, showing where the EU and partner countries can most effectively align their efforts to build a resilient, competitive and climate-aligned regional energy system. These priorities reflect insights from literature review and publicly available studies. They do not constitute a cost-optimal assessment of energy system needs in the EU or in partner countries.



The EU's new global climate and energy vision guides its external energy policy, promoting strengthened partnerships, driving sustainable change, while supporting industrial and technological strengths. To achieve this, the EU already supports its partners in investing in renewables and enhancing infrastructure (such as electricity grids, and intra-regional and inter-regional cross-border interconnections through the Global Gateway and TEN-E framework) to create a resilient, integrated energy system and ensure long-term security. To achieve this, the EU will also support its partners - when relevant and desirable - in advancing regulatory alignment with EU best practices, including the development of policy frameworks and regulations that promote the transition to a low-carbon energy system, to facilitate a more integrated and sustainable energy market.

1 Connecting the electricity markets

Investments in domestic grid upgrades and energy storage is crucial to unlock the vast renewables potential in the region. At the same time, cross-border interconnections can provide additional potential for the balancing of renewable energy sources in a cost-effective manner and potential electricity exports over time. Priority should therefore be given first and foremost to reinforcing national transmission and distribution grids, and integrating storage capacities, as essential preconditions for enabling cross-border electricity trade. As domestic infrastructure and regulatory bottlenecks are effectively addressed, key interconnection projects, such as the new Black Sea Submarine Cable between Romania and Georgia or the Armenia-Georgia interconnector as part of the Caucasus Transmission Network project will enable cross-border electricity flows enhancing system stability and flexibility. Central Asia is developing large-scale renewables and green hydrogen projects, with plans for a trans-Caspian electricity link and a green energy corridor to Europe.

2 Transitioning towards a resilient energy mix

Ensuring the **security of supply** is a critical concern. The development of **renewable energy sources** is the top priority, as they offer a long-term solution to reducing dependence on fossil fuels and promoting energy security. Sizeable renewable projects are under way in Romania, Bulgaria, Türkiye, Azerbaijan, Georgia and Uzbekistan. However, in the short term, the diversification of existing gas supply remains an essential pillar of energy security. Moreover, it is also crucial to ensure that fossil fuels, are not dependent on a single supplier, and to start reflecting on the future of current fossil fuel infrastructure, including the potential for repurposing for alternatives such as hydrogen, to minimize stranded assets and facilitate a smooth transition to a low-carbon energy system. To successfully transition towards a resilient energy mix, it is furthermore essential to prioritise the increasing electrification of all sectors, including heating, which is of particular importance in most parts of the region.

3 Soft connectivity measures to support market integration

Domestic market-driven energy policy reforms and constitutes the foundation for any regional market integration. Developing domestic power markets should be prioritised to ensure competitive energy pricing transparent tariffs and predictable investment conditions for the private sector. Underpinning domestic energy markets and facilitating market integration will require stepping up reform momentum and regional co-operation and building capacities enhance regional balancing, harmonisation of grid codes and Guarantees of Origin (GOs). Addressing regulatory gaps and enhancing capacity of the relevant institutions alongside upgrades in grid infrastructure will create truly interconnected and competitive domestic electricity markets enabling cross-border electricity.

4 Strengthening infrastructure security

Ensuring that energy **infrastructure is reliable, resilient, and protected against disruptions**, whether from technical failures, cyberattacks, or sabotage, shall stand as major cross-cutting principles in prioritising potential investments. Protecting critical energy infrastructure, including electric and smart grids, gas pipeline sensors, and wind and solar technologies is vital as it enables stable energy flows between countries, prevents supply shortages, and supports the goal of an integrated, secure energy market. Actions should include conducting regular risk assessments, implementing robust cybersecurity measures, and developing emergency response plans.



5 Public private partnerships for regional energy infrastructure development

The region offers potential for the development of clean tech value chains such as for renewable energy technologies grids, energy storage, electrification of heat and industries, and hydrogen. By channelling public investment and policy support towards these areas, the region can unlock its potential for sustainable energy development. This can be achieved by strengthening transmission networks, promoting grid modernisation, and encouraging the adoption of innovative technologies and knowledge-sharing with international partners.

6 Ensuring energy decarbonisation in sectors affected by CBAM

Studies note that starting in 2026, the European Union will apply a carbon charge (CBAM) on the embedded emissions in a select group of imported goods: steel and iron, aluminium, cement, fertilisers, electricity, and hydrogen.

For sellers in the partner countries, this means the carbon footprint of how these goods are produced will directly affect their final price at the EU border.

To maintain smooth trade flows between the EU and regional partners, energy transition projects in sectors representing significant and strategic imports should be supported and implemented to reduce the carbon footprint of these goods and partner countries.

5.3 Regional Approaches in the Digital Sector

Countries in the Black Sea region, including Türkiye, in the South Caucasus, and Central Asia still face challenges in accessing **high-capacity, secure, and affordable digital infrastructure** – which is limiting their ability to fully leverage the potential of the digital economy.

The **shared cross-regional strategic interests** may be twofold:

1. Keep **digital corridors open, secure, and reliable**, with fair access and internationally aligned security standards across fibre networks, internet exchange points (IXPs), and data centres.
2. **Improve interoperability with global digital markets**, including the EU Digital Single Market, enabling partner countries to connect more easily, expand digital services, and support digital trade and innovation.

For instance, installing fibre cables at the same time as building energy and transport routes and setting up carrier-neutral IXPs in Türkiye, the Caucasus and Central Asia, are among the most effective ways to increase capacity, reduce costs, and keep data traffic local. These priorities are fully aligned with the EU's Global Gateway, which aims to boost smart, clean, and secure links in digital, energy, and transport sectors, and with the Digital Decade Policy Programme 2030, which sets ambitious targets for secure and sustainable digital infrastructure, digital skills, and digitalisation of public services.

Accordingly, the following priorities provide **an investment-oriented pathway** to develop alternative, resilient and secure digital networks while also boosting innovation and competitiveness.

1 Secure and diversify strategic digital corridors

Building resilient, multi-route terrestrial and subsea corridors reduce dependency on single paths and enhance security, enabling trusted connectivity between Central Asia, the South Caucasus, Türkiye, Ukraine, and the EU. **Co-invest in high-capacity systems**, ensuring open-access governance and quantum-safe designs, and **integrate** Ukraine, Türkiye and Armenia as key nodes to strengthen inter-regional connectivity.



2 Integrate digital infrastructure with energy and transport

Deploying **fibre alongside energy and transport routes** using “dig-once” principles would leverage existing rights-of-way and infrastructure to accelerate rollout, reduce permitting complexity, and increase resilience of multi-sectorial assets. It would ensure that digital connectivity grows in tandem with strategic energy and transport corridors, creating **operational synergies and economies of scale**, while also harmonising governance processes across sectors.

3 Build regional internet exchange points (IXPs) and caching hubs

To convert transit corridors into reliable, affordable services, **local capabilities to handle traffic** should be developed. Co-investments in national fibre backbone development, IXPs and caching hubs (local servers storing frequently accessed online content) in regional cities keeps data closer to users, strengthens redundancy, and reduces reliance on distant IXPs, thus also improving quality of service. By harmonising peering rules and using carrier-neutral facilities, countries can create better interconnection conditions, boost market visibility, and accelerate traffic growth.

4 Use satellite connectivity as interim solution for resilience and coverage gaps

Satellite connectivity provides a practical bridge during the development of terrestrial and subsea corridors. It ensures continuity in geographically challenging areas, preventing service gaps that could stall economic and social development.

As new routes/corridors come online and national backbones are extended, connectivity should follow hybrid satellite-terrestrial systems, where the main traffic migrates to ground connections and satellites act as backup, providing reliable fallback options and long-term resilience. Strong, internationally aligned security standards should be applied, so that universal-service funds can support backhaul development (links between local access networks and the operators’ core networks) without distorting wholesale markets.

5 Use satellite connectivity as interim solution for resilience and coverage gaps

Trusted digital suppliers bring technologies and standards that underpin secure, interoperable corridors. The facilitation of trusted technology offers relying on public-private cooperation would provide regional and international companies the opportunity to contribute and lead the development of corridors’ projects through coherent, standards-based and security-aligned solutions. Such coordinated offers can accelerate deployment and embed trusted architectures in the design of connectivity cables, while fostering collaboration with local partners and developing in-country operational skills/capabilities.

6 Ensure cyber resilience and promote internationally recognised technology and standards

As corridors expand towards inter-regional reach, trust and interoperability become critical for scale and security. By promoting the adoption of internationally recognised and EU standards such as the EU’s 5G cybersecurity toolbox, including data privacy standards, partner countries can build secure, future-proof networks that are compatible with European and global markets, further reducing vendor and supply chain risks, facilitating interconnection and unlocking concessional finance. Partners could also explore options for



developing regional Computer Emergency Response teams and Computer Security Incident Response Teams to enhance resilience against cyber threats.

7 Support emerging and enabling technologies, with a focus on AI

Beyond connectivity, advanced technologies like AI and high-performance computing drive innovation and competitiveness. Cross-regional collaboration through research partnerships, joint labs, and pilot projects would ensure responsible deployment and interoperability with international trust frameworks and would better position countries to translate scientific collaboration into growth and competitiveness gains.

8 Grow start-up ecosystems and increase cross-regional and international linkages

Start-up ecosystems drive sustainable digital transformation and technological synergies. In that regard, connecting local entrepreneurial ecosystems to more established international and European business networks would increase opportunities for mutually beneficial partnerships, including increased funding, mentorship, and market access. Such efforts would create a dynamic innovation landscape that would perfectly complement the Trans-Caspian Transport corridor development.



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