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OF CENTRAL ASIA (SPECA)

Science, technology and innovation (STI) gap assessment of SPECA
countries: Paving the way to action under the SPECA Innovation
strategy for sustainable development

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Background paper

PROSPECTS FOR SPECA REGIONAL COOPERATION ON
INNOVATION FOR SUSTAINABLE DEVELOPMENT

(Initial draft for discussion)

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1. Introduction

In the United Nations 2030 Agenda for Sustainable Development (UN Agenda 2030) adopted in 2015, member States committed to 17 goals for sustainable economic, social and environmental development. This commitment has translated into relevant national legislation, policies, and strategies.

Innovation, in the broad sense of experimentation with new ideas both in public and private sectors, is central to these efforts. This applies not only to the private sector, but also to governance: given the multifaceted nature of the SDGs, their pursuit by the member states requires complex multidisciplinary approaches, often in ways that have not been used before.¹ Innovation is also central to creating a system of sustainable production and consumption² and progress towards an increasingly circular economy.

While individual efforts of countries are essential, the ambitious UN Agenda 2030 also calls for stronger transnational and multi-stakeholder cooperation. Targeted cooperation frameworks can facilitate generation of innovative approaches and technological, organisational, governance and regulatory solutions to solve common challenges.

The intrinsic role of innovation and cooperation for achieving sustainable development is highlighted by the UN Agenda 2030 that features the latter under SDG 17 of “Partnerships for the goals” and innovation under SDG 9.³ The close links between partnerships and innovation are made particularly evident under targets 17.6 - 17.8, 17.16 calling for cooperative efforts to ensure innovation-led growth and development.

The countries of the United Nations Special Programme for the Economies of Central Asia (SPECA) have all committed to achieving the ambitious UN Agenda 2030, integrating the SDGs into their national development strategies. As a UNECE survey has shown, both SDG 9 “Industry, innovation and infrastructure” and SDG 17 “Partnerships for the goals” were allocated a high priority in national policies, demonstrating significant gaps in achieving the first goal and low/medium gaps in the second.⁴ The latest available results on SPECA countries’ progress in achieving SDGs 9 and 17, but also the ones that more directly relate to transition to a knowledge-based economy, i.e. SDGs 8 (Decent work and economic growth), SDG 11 (Sustainable cities and communities), SDG 12 (Sustainable consumption and production), and sustainable and inclusive institutions, SDGs 10 (Reduced inequalities) and SDG 16 (Peace, justice and strong institutions), as showcased by the SDG Index and Dashboards Report,⁵ confirms this pattern, as SPECA countries face major or significant challenges on SDG 9 and some or significant challenges remaining for SDG 17 (Table 1).

¹ Rumen Dobrinsky, *Promoting Innovation in Central Asia – Shaping New Markets*, UNECE background paper for the 2017 SPECA Economic Forum, 2017.

² United Nations, *Transforming our world: the 2030 Agenda for Sustainable Development*, 2015

³ In particular, under targets 9.5, 9.a., 9.b., 9.c.

⁴ Rumen Dobrinsky, *Promoting Innovation in Central Asia – Shaping New Markets*, UNECE background paper for the 2017 SPECA Economic Forum, 2017.

⁵ Prepared by the non-governmental bodies, i.e. Bertelsmann Stiftung and Sustainable Development Solutions Network; not an official UN SDG monitoring tool.

Table 1. SPECA countries performance on achieving selected SDGs

	SDGs	Afghanistan	Azerbaijan	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
8	Decent work and economic growth							
9	Industry, innovation and infrastructure							
10	Reduced inequalities							
11	Sustainable cities and communities							
12	Sustainable consumption and production							
16	Peace, justice and strong institutions							
17	Partnership for the goals							

Note:

	Challenges remain
	Significant challenges
	Major challenges
	Not available

Performance on indicators depends on the availability of data per country and therefore does not systematically cover the same periods for all countries. The information is not an official SDG tracking tool and should be taken with caution.

Source: SDG Index and Dashboards Report 2020, Bertelsmann Stiftung and Sustainable Development Solutions Network

Overall, SPECA countries face significant challenges, although to varying degrees, to reach these targets by 2030, despite significant progress made on the mentioned SDGs over the period of 2000-2016. To move forward, SPECA countries should embrace the role of innovation and regional cooperation as accelerators of SDG implementation. Recognising the need for greater cooperation with the purpose of sharing knowledge and practices, adopting novel approaches, and ensuring joint implementation of projects of common interest to support innovation across the sub-region could be effective approaches towards advancing on the UN 2030 Agenda for Sustainable Development. The COVID-19 crisis and economic and social consequences clearly illustrate the importance of this approach.

2. COVID-19 crisis implications for recovery and sustainable development of SPECA countries

The COVID-19 pandemic and its socio-economic impact on the way our economies and societies function has highlighted the importance of cooperation and innovation (in a broad sense) to effectively face challenges brought by the crisis. Increasing resilience to and

preparedness for such disruptions required adopting innovative approaches to managing it at all levels (governments, businesses, civil society, etc.) and among neighbouring countries.

As the economic downturn caused by the pandemic is expected to hit the global economy hard, resource-dependent SPECA countries are particularly vulnerable to the rapid decline of oil prices and similar trends in many commodity markets⁶. The GDP growth forecasts for 2020 predict growth from one to minus 12% in SPECA countries.⁷

Table 2 GDP per capita, constant prices, 2019-2023

Country	2019	2020	2021	2022	2023
Afghanistan	3.9	-5	4	4.5	4.5
Azerbaijan	2.2	-4	1.9	1.6	1.7
Kazakhstan	4.5	-2.7	3	4.3	5.7
Kyrgyzstan	4.5	-12	9.8	7.9	6.4
Tajikistan	7.5	1	6	4.5	4
Turkmenistan	6.3	1.7	4.6	4.7	4.8
Uzbekistan	5.6	0.7	5	6	5.5

Source: IMF, World Economic Outlook, October 2020

Trade and travel restrictions and rapid decline in demand have upended many commodity markets, including in the SPECA sub-region which is heavily dependent on foreign trade and is characterised by highly concentrated exports both in terms of products and trade partners (i.e. China, Iran and Russia that have closed their borders during the pandemic). The crisis caused by the pandemic has also accentuated risks associated with heavy reliance on remittances, large informal sector in the economy, and low levels of economic diversification.

SPECA countries witnessed a sharp decline in remittances, as recession in the key markets attracting labour outmigration from SPECA countries, such as Russia, has had a negative impact on labour demand, with many migrants losing jobs and returning to their home countries. Comprising around 30% of GDP in Tajikistan and Kyrgyzstan, this fall will further stretch scarce fiscal resource and hinder long-term investment. The large share of the informal sector in the sub-region (e.g. in Afghanistan it constitutes around 80% of economic activity),⁸ complicates the administering of support measures by governments resulting in severe implications for social and economic stability. Lack of accurate data on the informal sector also undermines governments' ability to design and implement efficient policy responses to mitigate the negative socio-economic impact of the pandemic. Moreover, high concentration of labour in low-productivity sectors poses challenges for long-term sustainable and inclusive growth. The high-productivity capital-intensive extractive industries in the SPECA sub-region employ few people, with the service sector employing much fewer workers than in other countries (on average 45.5% are employed in services in Central Asia vs. 73% in OECD countries).⁹ While SPECA governments have put efforts into strengthening the development of the private sector to ensure quality jobs for an increasing labour force, these undertakings have not yet resulted in substantive changes in sectoral employment and economy structure overall. The economic

⁶ For example, with the global demand for primary commodities affected by COVID-19, SPECA exports of petrochemicals to the largest trade partners, such as China, reduced significantly.

⁷ IMF, World Economic Outlook, October 2020.

⁸ OECD, *OECD Policy responses to Coronavirus (Covid 19): Covid 19 crisis response in Central Asia, 2020*

⁹ *Idem*

downturn is expected to exacerbate consequences of the existing labour allocation across sectors and reduce the contribution of high-productivity sectors into the economy. This increases the urgency of facilitating and strengthening private sector development as an engine of growth.

In addition, poor connectivity, and physical and digital infrastructure in the SPECA sub-region have exacerbated interruptions in supply chains and international trade, endangering food security and economic opportunities. The pandemic has also widened the digital divide, i.e. the gaps in access to information and communication technology (ICT),¹⁰ in particular access to broadband Internet. The migration of many essential services online has magnified the impact on groups lacking access to ICT, which are often already vulnerable groups. This has highlighted an urgent social and economic need to invest in digital infrastructure, as a fundamental element of the *new normal* built on all digital technologies and vital applications, including telemedicine, e-government services, distance work and learning¹¹.

The national healthcare response to coronavirus has put the burden of implementation of the mitigation measures on to the already under-funded and constrained by larger-than-normal populations (due to limited labour mobility) local health care services. Highly centralised governance systems in the SPECA sub-region have stymied the ability of local governments to deal with the crisis effectively.¹²

Measures to respond to the COVID-19-induced crisis included sanitary and fiscal packages to reduce infection rates and to cushion the socio-economic impact of the coronavirus. However, in the context of declining exports and remittances, shrinking tax base and decreasing domestic consumption, the policy responses to the pandemic have put considerable strain on public finances in the already highly indebted SPECA economies.

Against this backdrop and with the aim to ensure sustainable and inclusive economic growth, SPECA countries should accelerate the transition from a low productivity and resource-intensive model of economic development to knowledge-based and more sustainable and resilient economic models in line with the SDGs. In this regard, regional cooperation on innovation could be effectively leveraged to help overcome challenges in achieving the SDGs and “build back better” into more sustainable and resilient economies and societies in the aftermath of COVID-19.

3. Regional cooperation on innovation for sustainable development

Innovation processes in transition economies like the SPECA sub-region are characterised by imitation, adaption, and the introduction of new products, services, marketing, and organisational models to local markets, rather than technological frontier innovation. This type of innovation holds a catch-up potential for the emerging economies with positive social, economic and environmental spill over effects. Thus, if used wisely, innovation in this context can not only address the issues related to innovation per se, but also challenges associated with development more broadly. Innovation, therefore, has the potential to be the driver of

¹⁰ <https://www.oecd.org/site/schoolingfortomorrowknowledgebase/themes/ict/bridgingthedigitaldivide.htm>

¹¹ Meeting Report, E-resilience for Pandemic Recovery: Inter-country Consultations in Preparations for CICTSTI, ESCAP. Webinar held on 3 July 2020.

¹² Ibid

sustainable development while meeting societal and environmental challenges in line with the SDGs.

However, for innovation to address challenges in the areas critical for sustainable development, significant government efforts are required to identify the existing bottlenecks impeding such innovation, as well as to design and implement targeted policy interventions. Given the fact that innovation is deeply rooted in stakeholder interactions enabling circulation and materialisation of new ideas, cooperation among various stakeholders and the access to new knowledge through collaborative networks is of critical importance.

Cooperation between stakeholders at national, as well as regional levels can help reduce costs and share risks of innovation activity (e.g. barriers caused by project scale and cost, dispersed expertise, technical and commercial risk), and ultimately generate incremental social welfare effects.¹³ Thus, regional cooperation activities and frameworks aimed at boosting innovation can accelerate the introduction of new product, services, organisational and other methods in several markets with subsequent positive economic, social and environmental spill overs for several economies. They can also help unleashing the innovation potential for increased competitiveness of economic sectors across SPECA countries that are of common interest. In addition, cooperation at the sub-regional level can facilitate the investment in innovation activities otherwise too costly and too risky for one country to carry out. Furthermore, interaction within the cooperation frameworks ensures transfer of knowledge and practices and provides for experimentation to find solutions to common challenges hindering sustainable development.

Therefore, stakeholder cooperation between SPECA countries could help fast-track the sub-region towards achieving the SDGs. In particular, it could help tackling common issues the SPECA sub-region faces in innovation ecosystem, industry and trade diversification, connectivity and infrastructures, digitalisation, private sector development, implementation of principles of green, circular economy and sustainable urbanisation, to name a few.

Such cooperation is all the more important in the context of COVID-19's socio-economic impact on global economy and on the economies of SPECA countries. In the highly connected and interdependent world of today, efforts of individual countries prove to be increasingly insufficient to deal with complex challenges caused by the pandemic. In this regard, cooperation on innovation is essential to ensure a sustainable post-pandemic recovery while addressing common challenges for sustainable development in line with UN Agenda 2030.

4. Potential areas for establishing SPECA cooperation on innovation for sustainable development

As described in section 2, the COVID-19 pandemic exacerbated several challenges SPECA economies are facing on their way to sustainable development. These include: need for economic diversification, heavy reliance on commodity exports, poor connectivity and infrastructure, lacking private sector development, and the overall challenge of building an increasingly knowledge-based economy and vibrant innovation ecosystems. The overview of the existing cooperation frameworks among SPECA countries (Annex I) somewhat echoes the

¹³ Rumen Dobrinsky, *Promoting Innovation in Central Asia – Shaping New Markets*, UNECE background paper for the 2017 SPECA Economic Forum, 2017.

abovementioned elements as it points to the high importance the countries attach to trade, connectivity and infrastructure, including ICT, and innovation in reaching economic growth and sustainable development of the region and of every country individually. In addition, as part of the global community striving to ensure environmentally conscious and sustainable production and consumption in line with UN Agenda 2030, some SPECA countries aim to put into practice basic principles of a green and circular economy¹⁴ in sector policies.

Through cooperation around common sustainable development challenges, SPECA countries can i) reduce costs and share risks of innovation activity; ii) accelerate the introduction of innovation in several markets with positive social, economic and environmental spill overs for several economies; and iii) facilitate investment in innovation activities and the transfer of knowledge and best practices in addressing challenges hindering SDGs achievement. These cooperative actions will bring together relevant public and private stakeholders from SPECA countries around specific objectives or initiatives that could be implemented under the forthcoming Action Plan of the SPECA Innovation Strategy for Sustainable Development.

The following sections present potential areas for SPECA cooperation.

4.1. Strengthening innovation ecosystems and policies

Uneven socio-economic development and structural policy challenges, such as reforms in industrial policy, reform of state-owned enterprises, financial sector development, limited market competition in many sectors, and the rule of law, constrains innovation. Macroeconomic instability, regulatory obstacles, and an insufficiently developed business climate deters innovative entrepreneurship and, in particular, foreign investment with potential for substantial social return, such as knowledge and technology transfer. The weakening R&D base, low level of industry-science and other linkages, lack of robust innovation infrastructure (e.g. techno parks, incubators, accelerators), low demand for innovation in local markets, hinder innovation development of the sub-region despite countries' efforts in this direction in recent years (including the work within national programmes to achieve sustainable development under the UN Agenda 2030).

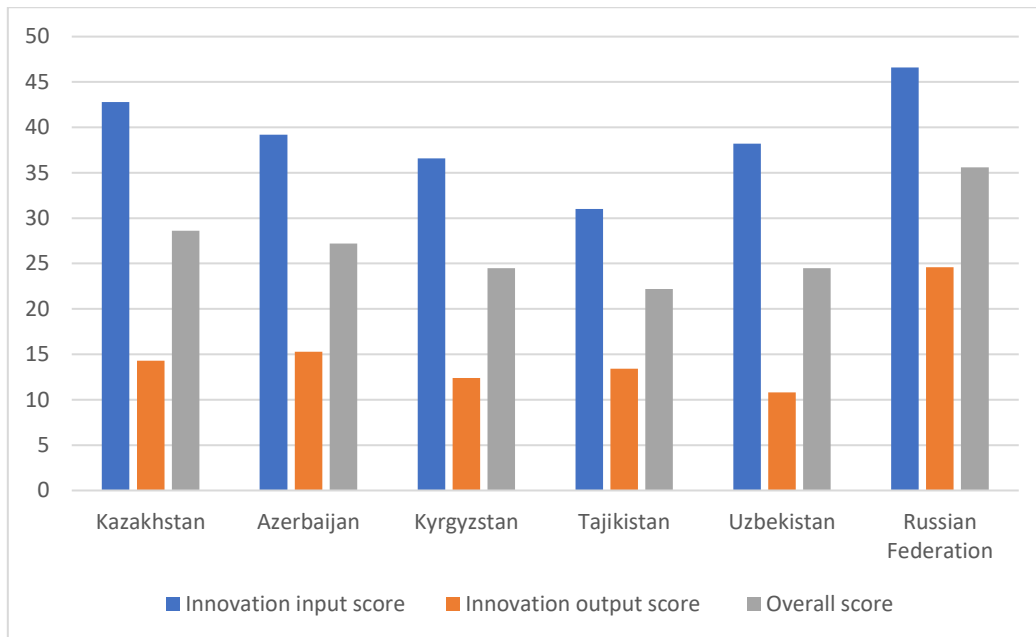
This situation is reflected in the results of the Global Innovation Index, which show that SPECA countries systematically struggle to translate innovation inputs, such as educational attainment and R&D investment, into innovation outputs, such as patents, utility models, creative goods and services, and medium- and high-technology exports (Figure 1).

Figure 1. Selected SPECA countries¹⁵ performance on innovation

Global Innovation Index, 2020

¹⁴ UN Voluntary national reviews of Azerbaijan, Kazakhstan and Turkmenistan.

¹⁵ Data for Afghanistan and Turkmenistan are missing.



Source: (WIPO, 2020)

At the same time, the potential for innovation activity and progress made so far differs across SPECA countries. The results of the Executive Opinion Survey of the Global Competitiveness Index¹⁶ for Azerbaijan, Kazakhstan, Kyrgyzstan and Tajikistan demonstrate the countries have much under-used potential in the areas of cluster development, company spending on R&D, quality of research institutions, university-industry collaboration and patenting. Among SPECA countries, Azerbaijan and Kazakhstan seem to demonstrate the best performance¹⁷ in technological readiness, i.e. the level of technology adoption and Global Value Chain (GVC) integration.

The results of the international indices show that while there is a need for a broad reform to jump-start innovation activity at adequate levels in the SPECA sub-region, especially through adopting and adapting existing ideas, models and technologies, SPECA countries could effectively contribute to the strengthening of regional innovation linkages through joint efforts in addressing existing national science, technology and innovation (STI) gaps.

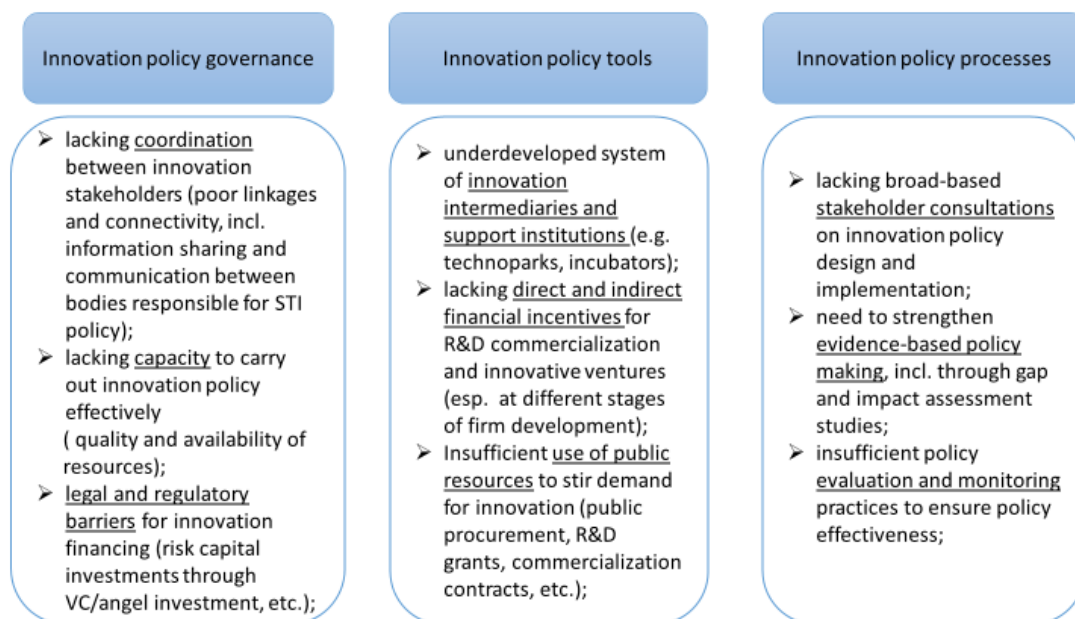
The STI assessment of SPECA countries¹⁸ points to a series of common challenges in innovation policy governance, tools and processes (Figure 1).

¹⁶ Global Competitiveness Index 2017-2018, World Economic Forum 2019.

¹⁷ Azerbaijan and Kazakhstan score 4.6/7 each on this indicator.

¹⁸ Rumen Dobrinsky, *Science, Technology and Innovation (STI) Gap Assessment of the SPECA countries, 2020*

Figure 1 Main STI gaps of the SPECA countries



Source: Based on the findings of Rumen Dobrinsky, Science, Technology and Innovation (STI) Gap Assessment of the SPECA Countries, 2020 and the methodology of the UNECE Innovation Policy Outlook: Eastern Europe and the South Caucasus countries (2020).

The assessment outlines initiatives for mission-oriented partnerships to build the capacity of the national STI stakeholders to carry out innovation policy, strengthen governance, diffuse innovations across the sub-region, transfer innovative ideas and technologies, and strengthen sub-regional cooperation on innovation for sustainable development, including for building back better after COVID-19. A detailed proposal is in Annex II.

Addressing challenges in innovation governance by building the capacity and capabilities of policymakers for STI policy implementation is essential, but so is putting the policy processes right, enabling inclusive policy design and rigorous monitoring and evaluation. When it comes to innovation policy tools, putting in place the right incentives and expanding the portfolio of mechanisms to support innovation, in particular, through building robust network of innovation support institutions, could have significant positive effects on the promotion of innovative entrepreneurship and culture and strengthen industry-science linkages.

The innovation support institutions (e.g. incubators, techno- and science-parks, etc.) could be places for experimentation with new ideas, R&D commercialisation, and cultivation of an innovative entrepreneurship culture. The latter importantly includes social entrepreneurship, where entrepreneurs may play a key role in addressing important societal challenges, including those referred to in the SDGs.

These efforts could take place under the aegis of the SPECA Working Group (WG) on Innovation and Technology for Sustainable Development and the dedicated SPECA Innovation Strategy for Sustainable Development, adopted by the SPECA Governing Council on 5 November 2019 in

Ashgabat, Turkmenistan. A key aspect of support will be the continued programme of demand-driven UNECE Innovation for Sustainable Development Reviews, already completed for Kazakhstan, Kyrgyzstan and Tajikistan and with the next review currently planned for Uzbekistan. As well as providing country-specific policy recommendations to boost innovation for sustainable development at the national level, peer review of policy recommendations also provides a valuable policy learning opportunity for other countries. The countries could also benefit from mutual policy learning on selected topics of innovation policy. In addition, to support the development of innovative entrepreneurship and to assist in building effective innovation support institutions, a series of training activities on efficient incubation programmes could take place based on the UNECE Handbook *Incubators to promote innovation for sustainable development in the SPECA sub-region*.

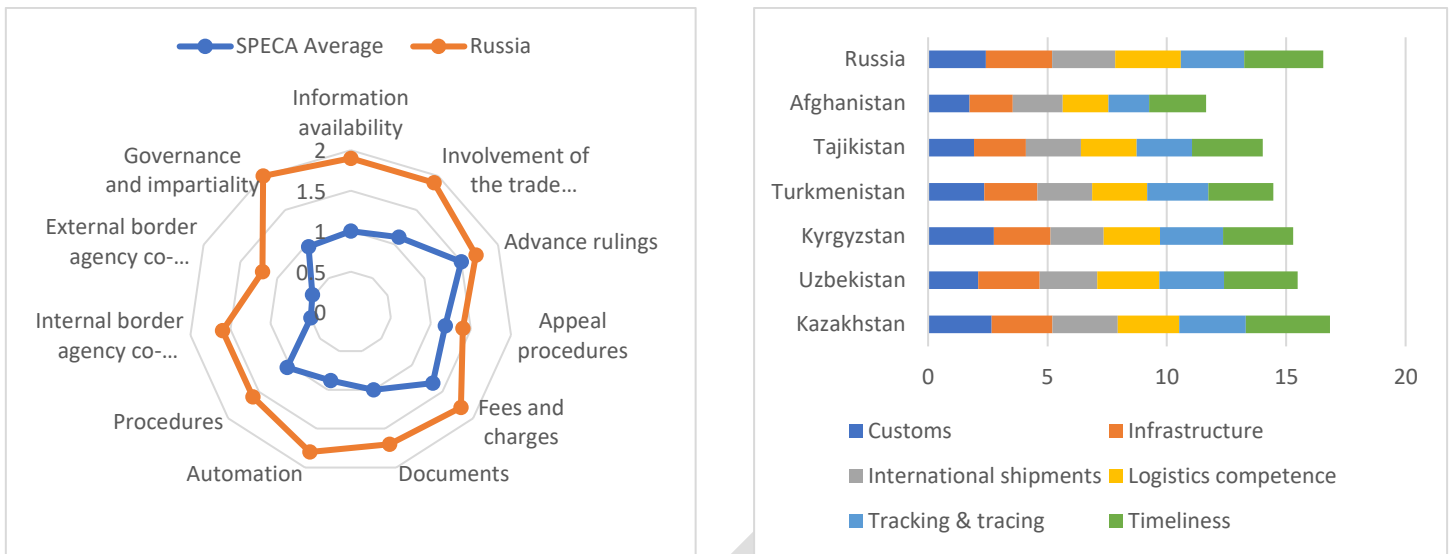
4.2. Boosting trade flows

SPECA countries are heavily dependent on exports of raw materials (extractive industries and agriculture) more than half of the countries' total exports and highlighting a low level of export sophistication. At the same time, SPECA countries have relatively weak bilateral trade flows, Kazakhstan and Uzbekistan being the two trading partners of the other SPECA countries. Reasons include the low levels of economic diversification as SPECA countries have concentrated production and export profiles in raw extractive goods and compete as exporters of certain goods with each other in international markets,¹⁹ but also poor connectivity, including physical and ICT infrastructure, and lack of coordination and harmonisation of policy regimes to ease and facilitate trade. While the first two reasons are of a more overarching character requiring structural reforms, the latter one, i.e. lack of harmonisation of trade policy regimes, could be addressed through trade facilitation mechanisms that ensure simplification, standardisation and harmonisation of trade procedures and associated information flows. Moreover, evidence shows that trade facilitation agreements could reduce worldwide trade costs significantly between 10% and 18%), with the largest gains accruing to countries in the lower middle-income group.²⁰

¹⁹ According to the Atlas of Economic Complexity (2018), Turkmenistan imported mostly from Turkey and China; Tajikistan, Kyrgyzstan - from China and Russia, and Afghanistan – from Pakistan and India, bilateral trade flows within the SPECA region, despite geographic proximity, remain very weak.

²⁰ OECD, Trade Facilitation <http://www.oecd.org/trade/topics/trade-facilitation/>

Figure 2 Selected SPECA countries and comparator country performance on OECD Trade Facilitation Indicators (2019) and World Bank Logistic Performance Index (2018)



Note: Data for Afghanistan and Turkmenistan are missing. The eleven trade facilitation indicators (TFIs) take values from 0 to 2, where 2 designates the best performance that can be achieved.
 Source: OECD Trade Facilitation Indicators, 2019, <https://www1.compareyourcountry.org/trade-facilitation?cr=oeecd&lg=en>

Note: Data for Azerbaijan are missing
 Source: World Bank Logistics Performance Index, 2018
<https://lpi.worldbank.org/international/global>

Trade facilitation implies significant modernisation of trade procedures, processes, and frameworks and is impossible without innovation at all stages (e.g. organisation and management of trade flows, including the use of technology-enabled tools). Innovative approaches and technologies that trade facilitation puts forward help cut transaction costs and ensure a more transparent and predictable trading environment. Such an environment has the potential to increase trading volumes, attract investments and facilitate regional and GVC integration. This is of particular interest for the SPECA sub-region that is looking to increase FDI and to better integrate into GVCs going beyond resource exports. In addition, transparent, predictable, rules-based and inclusive international trade is seen as a powerful engine of sustainable growth and development in line with the UN Agenda 2030.²¹ In this regard, ensuring that national trade policies are based on the principles of sustainable development, could help SPECA countries to make progress towards SDGs achievement.

SPECA countries have increased their efforts on trade facilitation over the recent years and cooperate to increase and facilitate international and intra-regional trade flows under various frameworks as the Eurasian Economic Union (only Kazakhstan and Kyrgyzstan participating), Economic Cooperation Organisation (ECO Trade Agreement), World Trade Organisation (TFA, Afghanistan, Kazakhstan, Kyrgyzstan and Tajikistan); CAREC programme (CAREC Integrated

²¹ The Sustainable Development Goals (SDG 17.10) of the 2030 Agenda for Sustainable Development (Sept. 2015) and the Addis Ababa Action Agenda of the Third International Conference on Financing for Development (July 2015).

trade UN Agenda 2030, establishment of economic corridors),²² to name a few. SPECA countries also cooperate in the area of trade facilitation through the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) and the SPECA Working Group on Trade (SPECA Trade Facilitation Strategy). However, so far, the performance of the SPECA sub-region on trade facilitation leaves much room for improvement (Annex III).

In the framework of the SPECA WG on Trade, UNECE and ESCAP have been supporting SPECA countries in implementing trade facilitation and trade policy for sustainable and inclusive economic growth in line with UN Agenda 2030. Thus, a Regional SPECA Trade facilitation Strategy was adopted by the member states in November 2019 and the Principles of Sustainable Trade in the SPECA sub-region were endorsed, demonstrating the countries' resolve in pursuing trade development goals while moving towards SDGs achievement.

In particular, innovation could be instrumental in attaining a number of SDGs through trade, such as i) aligning production and trade with the requirements of sustainable development; ii) fostering environmentally friendly trade; iii) ensuring the transition to the green economy and enabling the development of the financing mechanisms to support the shift to green trade; iv) promoting integration of the circular economy principles into trade; and v) promoting advancement of e-commerce as a force of inclusion.²³ Co-operation between SPECA countries on leveraging innovation to facilitate the implementation of the Principles of Sustainable Trade, as well as of the SPECA Trade Facilitation Strategy holds great potential for the sub-region in transitioning from a land-locked periphery to a trade hub in line with the SDGs.

Against this backdrop, SPECA countries could consider undertaking the following²⁴ actions under the auspices of the SPECA WG on Trade and with engagement of the SPECA WG on Innovation and Technology for Sustainable Development:

- Hold discussions on the available innovation tools to support trade facilitation in the SPECA sub-region and to assist in the implementation of the SPECA Trade Facilitation Strategy (e.g. paperless technologies to accelerate trade operations and border crossings);
- With support of the UNECE and ESCAP, organise capacity-building activities on the implementation of the sustainable trade principles based on regional and international practices and experiences to support SPECA countries in the implementation of the Principles of Sustainable Trade in the SPECA sub-region (2019);
- Co-operate with international partners (WTO, UNECE, ESCAP, OECD, etc.) under the framework of technical assistance (incl. capacity building) or other formats to exploit the opportunities for and the potential of the implementation of the existing international trade facilitation instruments still not applied in SPECA countries;

4.3. Enhancing regional connectivity through transport and ICT infrastructure

In order to support an increase in trade flows within the SPECA sub-region and economic diversification based on adapting innovations, as well as developing smart and sustainable cities and the transition to circular economy, the SPECA sub-region has to work towards improving

²² See Annex I

²³ Based on Principles of Sustainable Trade for the SPECA sub-region, 2019

²⁴ Based on the recommendation and policy options in the area of trade as proposed in UNECE Background Paper, *How to Propel Inclusive and Sustainable Growth in the SPECA Sub-region?* 2019.

connectivity in the sub-region, i.e. quality, costs and intensity of interactions within and between different infrastructure (energy, telecommunications, transport, etc.) and/or networks (incl. communities, cities, firms, regions, etc.). Connectivity is an important enabler of economic growth and integration, supply chain efficiency, and resilience of economies (World Bank, 2019). It is also among key elements defining the potential of innovation (e.g. inability to deploy complex e-government solutions in the absence of required ICT and other infrastructures).

Connectivity is one of the greatest challenges the SPECA sub-region faces. Improving transport and ICT infrastructures is of high importance in the view of potential benefits ranging from reduced costs for trade, doing business, ensuring government services to increased job creation, better access to and provision of government services, incl. education, and ultimately inclusive economic and social development in line with the UN Agenda 2030.

Despite the fact that SPECA countries have a strategic location between Europe and Asia, at present, they fall short from being an international transit hub and this, among other things, is due to poor infrastructures, characterised by underfunding, poor maintenance, and degradation of physical infrastructure (e.g. roads and transit corridors). When it comes to digital connectivity, the SPECA sub-region is one of the least connected regions in the Asia-Pacific region with much of the current ICT infrastructure being limited and, in many cases, outdated and obsolete. Despite an increase of ICT penetration across SPECA countries in recent years, access to affordable and reliable high-speed Internet remains a challenge in the sub-region. Few trans-border fibre links are available, increasing costs of Internet connection for local users and creating digital divide (esp. rural vs. urban areas), as the number of fixed broadband subscriptions in SPECA remains low compared to European countries.²⁵ Thus, the cost of Internet in the SPECA sub-region can reach up to 10-20% of the average monthly salary, which, if translated into absolute terms, can reach triple digits for 1 Mbps.²⁶

Figure 4 Affordability of fixed broadband services in SPECA countries

	Monthly Subscription (USD)	Cost (% of GNI per capita)	Cost (% of GNI per capita PPP)	Evaluation
Afghanistan	69.00	123.6	42.2	Unaffordable
Azerbaijan	9.50	1.5	0.7	Affordable
Kazakhstan	20.60	2.1	1.1	Affordable
Kyrgyzstan	5.83	5.6	2.2	Moderate
Tajikistan	58.44	64.9	26.4	Unaffordable
Turkmenistan	171.40	25.6	14.2	Expensive
Uzbekistan	37.5	21.5	7.7	Expensive

²⁵ OECD, Enhancing competitiveness in Central Asia, 2018.

²⁶ Talan Sultanov for Internet Society, Building the Digital Silk Road Together: Kyrgyz Chapter Proposes Ideas for Internet Development in Central Asia at Cambridge University Forum, 2018 at <https://www.internetsociety.org/blog/2018/05/building-the-digital-silk-road-together-isoc-kyrgyz-chapter-proposes-ideas-for-internet-development-in-central-asia-at-a-cambridge-university-forum/>

SPECA countries have had a longstanding cooperation in the area of transport and digital connectivity. Thus, efforts to enhance transport linkages in the subregion are undertaken through various frameworks (e.g. ECO Transit Transport Framework Agreement (TTFA), Lapis Lazuli Trade and Transit Agreement, MLA TRACECA, Belt and Road Initiative, UNECE's Inland Transport Committee, ESCAP's Committee on Transport, Transport Strategy for CAREC 2030²⁷ and CAREC corridors, etc.).²⁸ In the area of digital connectivity, important efforts have been undertaken by SPECA governments under the national digitalisation agendas and the urgent need to step up efforts in bridging digital divide has been highlighted in the context of the COVID-19 crisis. Dialogue on regional digitalisation efforts was held in the framework of the Annual Central Asian Internet Governance Forums and Digital dialogue for Asia Forum under the initiative of Cambridge University. UN ESCAP has been carrying out important work in the SPECA sub-region in this regard under the Asia-Pacific Information Superhighway Initiative²⁹ and the Regional Economic Cooperation and Integration in Asia and Pacific (RECI) project implemented in three pilot countries: Kazakhstan, Kyrgyzstan and Mongolia. In addition, SPECA economies have tackled the issue through the construction of new ICT infrastructures, such as the cable between Tajikistan and Kyrgyzstan installed in 2009, and the ongoing Trans-Eurasian Information Super Highway (TASIM), aiming to connect Frankfurt to Hong Kong passing through the SPECA sub-region.

In this context and given the new challenges posed by COVID-19, SPECA countries could envisage the following³⁰ new-to-the region activities to be carried out under the SPECA WG on Sustainable Transport, Transit and Connectivity and the WG on Innovation and Technology for Sustainable Development:

To boost transport and digital connectivity in the sub-region:

- ensure systematic engagement of innovative expertise and mechanisms from the region and from abroad when carrying out trans-border upgrading of physical infrastructure to ensure its durability, safety and effectiveness.
- continue enhancing seamless digital connectivity and assessing e-resilience under the 2019-2022 Master Plan of the Asia-Pacific Information Superhighway (AP-IS) initiative and step-up efforts on infrastructure co-deployment (ICT, road transport and energy) and smart corridors development with pilot projects in several countries (with support from ESCAP).
- ensure that the digitalisation process is rolled out carefully and consistently across the SPECA sub-region by sharing best practices to avoid potential risks of i) crowding out traditional businesses and practices; ii) deepening the rural-urban divide and alienating sections of society unfamiliar with the use of digital technology; and iii) risks associated with privacy.

²⁷ The list presents some measures. For additional information, visit <https://www.carecprogram.org/?publication=carec-transport-strategy-2030> on CAREC Transport Strategy 2030

²⁸ For details, please see Annex I.

²⁹ The programme that aims to increase the availability and affordability of broadband Internet in Asia and the Pacific.

³⁰ Adapted from UNECE Background Paper, How to Propel Inclusive and Sustainable Growth in the SPECA Sub-region? 2019

4.4. Transitioning to the circular economy

The concept of the circular economy is based on the acknowledgement of the finite nature of natural resources and the imperative that the current take-make-waste extractive industrial model should be re-considered to provide for sustainable production and consumption. In particular, the circular economy approach redefines growth and presents new way of creating value and ultimately, shared prosperity. It works by extending product lifespan through improved design and servicing and relocating waste from the end of the supply chain to the beginning,³¹ thus ensuring waste-out and pollution-out principles and keeping products and materials in use for as long as possible,³² (Figure 3).

Even though the transition from a linear to a circular model is still nascent, the potential of such a transition is high with an estimated \$1 trillion per year of materials cost savings, globally by 2025 alone, generated by circular business models.³³ At present, only less than 10% of the global economy is circular³⁴ with the global community gradually recognising the importance of transitioning to a circular model to ensure sustainable and inclusive growth and development (e.g. EU Circular Economy Action Plan). A few SPECA countries have already expressed their intention to integrate the circular economy principles into their policy agendas,³⁵ while others are invited to consider these principles in light of rapid changes in the world economy and the imperative of sustainable development.

Figure 3 Circular economy model vs linear economy model



Source: Adapted from UNIDO website (<https://www.unido.org/our-focus-cross-cutting-services/circular-economy>).

Innovation plays a key role in ensuring the transition to the circular economy which requires experimentation with new ideas to bring about changes in production and consumption patterns. Integrating innovative business processes and organisational models such as i)

³¹ UNIDO, Circular Economy <https://www.unido.org/our-focus-cross-cutting-services/circular-economy>

³² Ellen MacArthur Foundation at <https://www.ellenmacarthurfoundation.org/>.

³³ Ibid

³⁴ The Circularity Gap Report Initiative at <https://www.circularity-gap.world/>

³⁵ UN Voluntary national reviews of Azerbaijan, Kazakhstan and Turkmenistan.

circular suppliers,³⁶ ii) resource recovery³⁷, iii) product life cycle extension,³⁸ iv) product as a service,³⁹ v) sharing economy⁴⁰ (OECD, 2018), and vi) industrial symbiosis⁴¹ are among means used across developed and developing countries to ensure the circular economy transition. However, the uptake of the circular economy principles on a larger scale requires removing regulatory barriers (e.g. fuel and electricity subsidies), as well as raising awareness on the benefits of such a transition among businesses and societies. Inclusive stakeholder dialogue on mechanisms for the transition to the circular economy at local, regional and international levels, with the participation of governments, the private sector, civil society, and science and technology actors is important to enable broad stakeholder buy-in and cooperation.

For the resource-rich and resource-dependent SPECA sub-region, transitioning to the circular economy model could be instrumental in reaching several policy objectives:

- Ensure compliance with international agreements on climate, environment, energy, such as Kyoto Protocol, Paris Agreement, Energy Charter Treaty, and the UN 2030 Agenda for Sustainable Development more broadly, as the implementation of such agreements requires efforts by SPECA countries in the area of “greening” the economy, i.e. ensuring efficient use of resources, reduction of carbon emissions and pollution, prevention of the loss of biodiversity, etc.;
- Enhance competitiveness of industries by decreasing costs and making production less resource intensive through the integration of innovations;
- Accelerate diversification of the economy through increased innovation activity in various sectors and the development of new products and services along with the establishment of new markets and/or entering international markets on a competitive basis;
- Ensure wellbeing and prosperity of populations in the sub-region through increased economic and employment growth, enhanced living standards, more affordable access to products and services, and the impact of a reduced environmental footprint.
- Increase resilience of economies in the face of potential shocks, such as the COVID-19 pandemic, and ensure a sustainable post-COVID-19 recovery.

While the benefits of transitioning to the circular economy for the SPECA sub-region are not limited by the above list, the implementation of circular economy principles is a difficult task that requires broad consensus among large number of stakeholders, strategic vision of policy goals, good governance, including sufficient capacity for effective reform implementation, etc.. However, in order to jump-start this transition, SPECA countries do not have to undertake large-scale and complex reform. Instead they could focus on introducing innovation-driven

³⁶ This model suggests replacing traditional material inputs derived from virgin resources with bio-based, renewable, or recovered materials, in order to reduce demand for virgin resource extraction in the long run.

³⁷ Resource recovery suggests recycling waste into secondary raw materials, thereby diverting waste from final disposal and displacing the extraction and processing of virgin natural resources.

³⁸ Product life extension models extend the use period of existing products, slow the flow of constituent materials through the economy and reduce the rate of resource extraction and waste generation.

³⁹ Model marketing services rather than products (e.g. instead of buying a car, one buys a number of kilometres driven), which improve incentives for green product design and more efficient product use.

⁴⁰ Sharing models facilitate the sharing of under-utilised products, and can therefore reduce demand for new products and their embedded raw materials.

⁴¹ Industrial symbiosis is a form of brokering to bring companies together in innovative collaborations, finding ways to use the waste from one as raw material for another.

incremental changes such as i) carrying out technology upgrading of key industries for enhanced resource use and energy efficiency; ii) introducing/enforcing green public procurement mechanisms; iii) exploring venues for eco-design in selected sectors of the economy; and iv) raising awareness of and promoting the benefits of the circular economy transition for businesses and society more broadly, etc.

In the light of the above, SPECA governments could consider the following options to promote the transition to the circular economy within the framework of the SPECA WG on Innovation and Technology for Sustainable Development and, potentially, the SPECA WG on Water, Energy and Environment:

- Consider establishing a SPECA-wide public-private platform to ensure dialogue on possible solutions for the sub-region's transition to the circular economy, building on regional and international expertise. The platform would provide knowledge-sharing and idea-generation with the aim of elaborating concrete recommendations to guide SPECA countries in carrying out the circular economy transition.
 - For instance, there could be an important role for incubators in supporting the technology transfer and diffusion that will be required for the transition to the circular economy.
- Identify and address existing regulatory barriers for implementing circular economy principles in the SPECA sub-region with broad stakeholder engagement involving SPECA governments, civil society, business community, international experts and partners. Adoption of appropriate quality standards may support the transition to the circular economy, while being a trigger for private sector innovation and helping SPECA countries move up the value chain.
- Conduct a set of capacity building and awareness raising activities at the level of the SPECA sub-region with the engagement of international experts and based on good practices to provide better understanding of and tools for the circular economy transition taking into consideration the socio-economic context of the sub-region and countries' specificities.

4.5. Sustainable cities in the SPECA sub-region

Cities are powerful engines of economic growth, generating more than 80% of global GDP and serving as dynamic hubs for innovation, trade, connectivity, learning and exchange, fuelled by intensive interpersonal communication and high concentrations of specialized skills. Cities also contribute substantially to structural economic transformation, having the potential to become key hubs for the transition to the circular economy. With an estimated 70% of the world population living in cities by 2050, and half of the SPECA sub-region population already being urban, sustainable urbanisation has become an important element on governments' policy agendas across the world and in SPECA. The growth of cities puts important pressure on existing infrastructure for energy, water, transport, housing, energy, with implications for waste management and pollution levels. Today, cities are responsible for over 70% of global greenhouse gas (GHG) emissions and 60-80% of global energy consumption.⁴² In addition, if poorly managed, urbanisation can make cities concentrations of extreme poverty.

⁴² Data from ITU webpage on Focus Group on Smart Sustainable Cities, <https://www.itu.int/en/ITU-T/focusgroups/ssc/Pages/default.aspx>

To address economic, social and environmental challenges associated with rapid urbanisation in line with SDG 11, governments are working to transform urban centres into resilient and sustainable communities that benefit residents by reducing energy costs, improving quality of service, reducing waste, providing better urban environments, and creating economic opportunities for improved level and quality of life.⁴³ In these undertakings, technological innovation based on ICT has a crucial role to play due to its potential to provide new solutions (e.g. intelligent transport systems (ITS), smart water, energy and waste management). Cities around the world are becoming increasingly more connected and reaping the benefits of innovative digital technologies, such as big data, AI, cloud computing, etc. to meet different policy goals and make informed policy decisions.⁴⁴

As SPECA governments witness half of their populations living in cities with expected continued growth of the urban population in the sub-region,⁴⁵ dealing with current urbanisation challenges to mitigate their impact in the future, is an important element to ensure sustainable and inclusive growth in SPECA in line with UN Agenda 2030. Thus, areas that will increasingly demand policy actions include the environmental impact of cities, urban transport, energy efficiency, water and waste management, social inclusion, provision of e-business and e-government services, all of which entail innovative solutions.

The SPECA sub-region has common urban development characteristics that translate into common challenges (not an exhaustive list):

- Need to connect few major cities that account for most of the economic growth generation (up to 80% in the sub-region) to medium and small-sized towns, e.g. through agglomerations, ensuring interconnection and innovation to meet the needs of growing population in these areas (access to public services and their quality, employment, etc.), to ease pressure on capitals and major cities (incl. in terms of physical and social infrastructure) and ensure more uniform spatial development, while creating new opportunities for economic growth (e.g. launching new businesses in small and medium-sized towns having access to innovation and markets of the large cities).
- Addressing the hanging risk of “false urbanisation”, i.e. rapid urban population growth not accompanied by a similar rate of job creation, imposing excessive pressure on the urban infrastructure, employment and social capital, as well the environment. Innovation could act as driver of jobs creation and increasing social inclusion to counter this phenomenon.
- Gaps in investment and development of basic infrastructure, i.e. gas, water, electricity, and sewage, inherited from the Soviet era, with deployment of innovative approaches to ensure resource and energy-efficiency and re-considering the infrastructure management system.

⁴³ World Bank, Sustainable Cities Initiative, <https://www.worldbank.org/en/region/eca/brief/sustainable-cities-initiative>

⁴⁴ For example, in Seoul, public transportation is optimised based on its residents’ mobility patterns; in Los Angeles, big data-driven approach is adopted to reduce cycling accidents on its roads; in Dijon, helps to effectively manage public spaces (regulation of traffic lights, indication of construction works, cleaning of public spaces, etc.).

⁴⁵ ESCAP, The Future of Asian and Pacific Cities, Transformative pathways towards sustainable urban development, 2019.

SPECA governments could leverage innovation potential in and for cities and find adequate tools to tackle the issues urban areas face. Given the complexity of the challenge and limited implementation capacity at the level of singular SPECA states, governments could join their efforts and ensure synergies in regional urban development to maximise the potential benefits for regional competitiveness and economic growth.

In this regard, the UNECE Toolbox to support the transition to smart sustainable cities⁴⁶ could be particularly helpful to ensure sustainable urbanisation. Going forward and with the aim to increase cooperation of SPECA countries to bring innovative solutions to common urbanisation challenges and to ensure the transition towards the circular economy, SPECA governments could envisage the following:

- Consider discussing options for connecting sustainability policies and urban planning practices through ICT using UNECE guidance⁴⁷ in the context of master plans dominating spatial planning in the SPECA sub-region and to maximise sustainability outcomes of urban planning. Upon discussing, the countries could develop a feasibility study and a pilot for bordering regions/municipalities of several countries to test the innovative approach.
- Initiate and hold consultations with a wide range of interested stakeholders (municipalities, academic and research institutes, non-governmental organizations (NGOs), ICT organizations, businesses) to exchange knowledge on the regional SPECA experience and innovative practices on building sustainable cities, including engaging expertise from abroad (e.g. implementation of wastewater infrastructure upgrading or solid waste management; provision of e-government services, etc.).
- Consider promoting creative economy (e.g. cinema, video games, craft enterprises, publishing, etc.) as a driver of innovation and youth employment in growing urban settlements, and as a means to tackle social-inclusion and economic challenges the cities face. This could be done through organising roundtables, study trips and capacity building, and dedicated incubation training activities based on the UNECE Handbook on *Incubators to promote innovation for sustainable development in the SPECA sub-region*.

5. Going forward

Countries are invited to provide their feedback on the proposed areas for cooperation, including by informing on the areas that are considered as a priority by the respective government authorities in light of the state's policy agenda. This background paper will be circulated in preparation for the SPECA workshop on *Science, Technology and Innovation (STI) gap assessment of SPECA countries: Paving the way to action under the SPECA Innovation Strategy for Sustainable Development* to take place on 26 November 2020. Views and suggestions submitted by SPECA countries as part of this process will be addressed and will inform the development of the draft Action Plan of SPECA Innovation Strategy for Sustainable Development (scheduled for 2021) as part of the project on Strengthening innovation policies

⁴⁶ UNECE, Toolbox of the Economic Commission for Europe: Instruments to support the transition to smart sustainable cities, Note by the secretariat for the Roundtable on Regional and national solutions towards smart sustainable cities and the impact of the instruments of the Economic Commission for Europe, Geneva, 23 January 2019.

⁴⁷ UN Initiative United for Smart Sustainable Cities series, Implementing Sustainable Development Goal 11 by connecting sustainability policies and urban planning practices through ICTs, 2017

for SPECA countries in support of the UN 2030 Agenda for Sustainable Development financed by the United Nations Development Account (UNDA) and jointly implemented by UNECE and ESCAP Secretariats under the SPECA Working Group on Innovation and Technology for Sustainable Development.

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Annex I

Brief overview of the current cooperation frameworks of SPECA countries on trade, transport, connectivity, involving innovation components

Cooperation frameworks	Selected areas of cooperation	Details	SPECA countries participating	Other participating countries
Major intergovernmental formations				
EAEU (Eurasian Economic Union)	Trade Energy and infrastructure ICT and digitalisation Competition and antimonopoly regulation Customs and Technical regulations	<ul style="list-style-type: none"> ➤ Integrated information system of the EAEU envisaging common processes, creation of common information resources and inter-state exchange of data/information. ➤ Register of structures of electronic documents and information in electronic form. ➤ Digitalisation agenda: Office for digital initiatives that prioritises digital traceability of goods, services, and e-shares; e-commerce, e-transport corridors, industrial e-cooperation, etc. ➤ Realisation of project on <i>Eurasian network of industrial cooperation, subcontracting and technology transfer</i> that allows for: <ul style="list-style-type: none"> ○ Creation of automatic matching system for finding partners for cooperation and subcontractors; ○ Involvement of SMEs in the value chains of large firms; ○ Creation of favourable conditions for realisation of cross-country projects and digital services; ○ Promotion of innovation through technology transfer; ○ Granting access to a geographically distributed set of services of member states for promotion of the products/services. 	Kazakhstan, Kyrgyzstan	Armenia, Belarus, Russia
ECO (Economic Cooperation Organisation)	Trade Transport and connectivity	<ul style="list-style-type: none"> ➤ Implementation framework until 2025 envisages cooperation in: <ul style="list-style-type: none"> ○ <u>Trade</u>: ECO Trade Agreement (ECOTA) 	All	Iran, Pakistan, Turkey

	<p>Economic growth and productivity Social welfare and environment</p>	<ul style="list-style-type: none"> ○ <u>Transport</u>: Transit Transport Framework Agreement (TTFA); ○ <u>Energy</u>: harmonisation towards a regional integrated market; use of env. friendly technologies, promotion of innovative incentives, energy efficiency ○ <u>Economic growth and productivity</u>: increasing productivity in industry and agriculture through transfer of technologies and innovation; increasing the share of high-tech industries, and investments in R&D; promotion of private investments and FDI; elaboration of new industrial solutions, incl. those of 4IR; promoting women entrepreneurship, etc. ○ <u>Social welfare and environment</u>: mechanisms to improve education, environment, friendly economic and social cooperation, regional integrated disaster risk reduction programme, achieving food security and safety, regional projects in climate and biodiversity. <p>➤ Clean Energy Centre for ECO (est. with support of UNIDO and Austrian Development Agency) and Belt and Road (B&R) – Education, Science, Technology and Innovation Cooperation (BRESTIC)</p>		
<p>Cooperation Council of the Turkic-Speaking States</p>	<p>ICT Transport Customs Diaspora</p>	<p>➤ Ministerial and Working Group meetings on TASIM project, Cyber security, Satellite services and E-government.</p>	<p>Azerbaijan, Kazakhstan, Kyrgyzstan, Uzbekistan</p>	<p>Turkey and Hungary as observer state</p>
<p>SAARC (South Asian Association for Regional Cooperation)</p>	<p>Environment, Natural Disasters and Biotechnology Economic, trade and finance Energy, transport, science and technology</p>	<p>➤ Dedicated WGs and cooperation in the framework of:</p> <ul style="list-style-type: none"> ○ Programme for Cooperation in the field of Biotechnology ○ SAARC Disaster Management Centre (SDMC) ○ SAARC Environment and Energy Centre ○ Expert groups on oil and gas, electricity, renewable energy, technology and knowledge sharing 	<p>Afghanistan</p>	<p>Bangladesh, Bhutan, India, Maldives Nepal, Pakistan, Sri Lanka (EU, China, Iran, Japan, US - observer states; Russian and Turkey</p>

				applied to be observer states)
Regional programmes of cooperation				
CAREC (Central Asia Regional Economic Cooperation) programme	Transport Trade Energy	<ul style="list-style-type: none"> ➤ The programme has allowed for creation of six transport corridors CAREC countries with each other and connecting them to Eurasian and global markets. ➤ CAREC Transport Strategy 2030: focus on increased sustainability and quality of the CAREC transport network; construction and rehabilitation of new transport links; multimodal connectivity; road safety. ➤ CAREC Integrated Trade Agenda 2030 promoting trade expansion from increased market access, greater diversification, stronger institutions for trade, and modernisation of sanitary and phytosanitary measures for trade. ➤ Regional cooperation on energy under 2030 CAREC Energy Strategy foreseeing, among others, enhancing sustainability by greening the regional energy system (energy efficiency, clean energy, innovative financing). 	All	China, Georgia, Mongolia, Pakistan
Major infrastructure/trade projects/agreements				
Cross Border Transport Agreement (CBTA) under CAREC and with support from ADB	Transport	<ul style="list-style-type: none"> ➤ The agreement aims at facilitating the cross-border transport, simplifying border crossing procedures for goods and people, improve road and ensure better infrastructure, vehicle standardisation etc. 	Afghanistan, Kyrgyzstan and Tajikistan	n/a
Lapis Lazuli Trade and Transit Agreement	Transport and ICT	<ul style="list-style-type: none"> ➤ Envisages creation of a multimodal corridor in the area of transport and ICT. Several suggestions under discussion: <ul style="list-style-type: none"> ○ On creation of a single logistical centre to coordinate logistics between Afghanistan, Turkmenistan, Azerbaijan. ○ On possibility to establish single price policy for transportation of goods AFG-TKM-AZE and the other way around via establishment of a single customs window to simplify customs regulations. 	Afghanistan-Turkmenistan- Azerbaijan-Georgia -Turkey	n/a

Trans-Eurasian Information Super Highway (TASIM)	ICT	<ul style="list-style-type: none"> ➤ Creation of a transnational fibre-optic connecting Frankfurt and Hong-Kong (Telecom services). <ul style="list-style-type: none"> ○ Integrated proprietary IP/MPLS networks⁴⁸ for route diversification ○ Improved disaster resiliency ○ Bridging digital divide ○ Contributing to the SDGs and regional innovation and integration 	Kazakhstan, Azerbaijan,	China, Georgia, Turkey, Germany Potential alternative route may include Russia, Ukraine and Poland.
MLA TRACECA (Transport Corridor Europe-Caucasus-Asia)	Transport	<ul style="list-style-type: none"> ➤ Links the regions of the Black Sea basin, South Caucasus and Central Asia through transport route for increased economic relations and trade. <ul style="list-style-type: none"> ○ Transport Route Attractiveness Index (TRAX) was elaborated to measure the attractiveness of the TRACECA routes through the Caucasus, through Turkey / Iran and the alternative route through the Russian Federation 	All except Afghanistan	EU, Ukraine, Turkey, Iran, Moldova, Georgia, Armenia
WTO	Trade Facilitation Agreement	<ul style="list-style-type: none"> ➤ Progress in implementation by countries (as of 2019): <ul style="list-style-type: none"> ○ Category A - immediately implemented: Afghanistan- 11,3%, Kazakhstan - 44.5%; Kyrgyzstan - 16.0%, and Tajikistan – 55,9%. ○ Category B - need additional time for implementation: Afghanistan - 31.1%, Kazakhstan 47.9%, Kyrgyzstan 17.6%, Tajikistan 21,8% ○ Category C -need additional time and capacity building support: Afghanistan 57.6%, Kazakhstan 7,6%, Kyrgyzstan 66.4%, Tajikistan 22,3% 	Afghanistan (2016), Kazakhstan (2015), Kyrgyzstan (1998), Tajikistan (2013)	Russia (2012) Azerbaijan and Uzbekistan - observers
Belt and Road Initiative	Transport	<ul style="list-style-type: none"> ➤ Connecting Asia with Africa and Europe via land and maritime networks along six corridors with the aim of improving regional integration, increasing trade and stimulating economic growth (USD 1 trillion investments in infrastructure development). 	All	Other 65 countries

⁴⁸ Multi-protocol Label Switching (MPLS) is a protocol-agnostic routing technique designed to speed up and shape traffic flows across wide area- and service provider- networks

Annex II

Proposed cooperative actions to be considered for the Action Plan for implementing the SPECA Innovation Strategy for Sustainable Development

Objectives	Description of actions	Scope (R = regional; N= national)	UN instru- ments	Timeline
	Part 1. Recommendations on possible actions of general character, aimed at strengthening the national innovation systems in SPECA countries			
<i>1.A Upgrading human capital for STI-driven development</i>	1.A Actions aimed at national capacity development in STI management			
	Capacity development seminars, with leading international experts, on innovation policies for sustainable development for SPECA STI policy-makers and stakeholders	N, R	UNECE, ESCAP	2021
	Hands-on skill-building workshops, with leading international experts, for SPECA innovation practitioners and stakeholders on practical policy implementation issues	N, R	UNECE, ESCAP	2022
	Develop and disseminate training materials on good practices on STI policies for sustainable development, including technology transfer and innovation support institutions	R	UNECE, ESCAP	2020-2021
	“Train-the-trainers” capacity building courses for local coaches on STI management to ensure sustainability of capacity development activities	N	UNECE, ESCAP	2022
	Promotional campaigns for the broad public in SPECA countries to enhance the awareness on technology and innovation in society and breed a culture of innovation	N		2021
	Promotional operations for awareness raising among the broad public on the objectives and activities of the SPECA Innovation Strategy for Sustainable Development	N		2021
<i>1.B Closing existing gaps in the innovation ecosystems</i>	1.B Actions aimed at strengthening the innovation systems and improving STI governance			
	Roundtables with policy makers and STI stakeholders to reveal and discuss existing gaps and failures in the national innovation systems	N, R	UNECE, ESCAP	2021
	Roundtables with policy makers and STI stakeholders to discuss existing problems in STI governance	R	UNECE	2021
	Roundtables with SPECA policy makers and STI stakeholders and international experts on policy measures addressing weaknesses in the innovation systems and aiming to improve STI governance	N, R	UNECE, ESCAP	2021
	Development of practical guidelines and hands-on skill-building workshops, for SPECA innovation practitioners and stakeholders on the management of innovation support institutions (incubators, tech parks, tech transfer offices, etc.)	N, R	UNECE, ESCAP	2022
Development of practical guidelines and technical assistance missions by international experts to assist SPECA policy makers and stakeholders in implementing new policy measures addressing weaknesses in the innovation systems and aiming to improve STI governance	N, R		2023	

1.C Designing and implementing efficient STI policy instruments	1.C Actions aimed at improving national STI policy making			
	Capacity building activities (training seminars and hands-on skill-building workshops) on good practices on policy design and coordination for STI policies for sustainable development	R	UNECE, ESCAP	2021
	Training seminars with leading international experts, on selected STI policy instruments addressing key gaps and failures in the innovations systems (early stage financing, systemic failures, etc.)	R	UNECE, ESCAP	2021
	Hands-on skill-building workshops for SPECA innovation practitioners and stakeholders on promoting leading edge technologies for SD (industry 4.0, transition to the circular economy, etc.)	N	UNECE, ESCAP	2022
	Development of practical guidelines and technical assistance missions by international experts to assist SPECA policy makers in designing and implementing programmes for policy evaluation	N		2023
1.D Speeding up post-C-19 recovery	1.D Actions aimed at overcoming the implications of the COVID-19 pandemic			
	Knowledge sharing roundtables for SPECA policy makers and international experts on good practices for post-COVID-19 recovery and the role of STI	R		2021
	Taking stock roundtable for SPECA policy makers on actual experiences in overcoming the implications of the COVID-19 pandemic	R		2023
	Part 2. Recommendations on possible actions aimed at boosting innovation for sustainable development in SPECA countries			
2.A Establishing a common space conducive to STI and sustainable development	2.A Actions facilitating the cross-border diffusion of innovations for sustainable development			
	Consultations on sustainable development challenges of high priority to SPECA countries and call for trans-border/regional cooperation and approaches	R	UNECE, ESCAP	2021
	Identification of obstacles for cross-border cooperation in implementing STI policies for sustainable development and consultations on measures for eliminating or reducing these obstacles	R	UNECE, ESCAP	2021
	Cooperation with existing global initiatives such as the UN Technology Facilitation Mechanism, the UN Forum on STI for the SDGs and the Inter-Agency Task Team for STI for SDG	R	UNECE, ESCAP	2021-2022
	Liaison with relevant international donors for mobilising additional expertise and resources in support of innovation for sustainable development undertakings	R		2022-2023
2.B Speeding up the technology transfer for sustainable development	2.B Actions supporting the transfer of innovative technologies addressing SD challenges			
	Policy dialogue on coordinated policy measures supporting international linkages of SPECA countries with global technological value chains, including coordinated strategic approaches to FDI	R	UNECE, ESCAP	2021
	Consultations on the establishment a joint regional technology transfer office to support the synergetic transfer of innovative technologies in the region	R	ESCAP	2022
	Consultations on possible joint STI projects for sustainable development, where international cooperation can generate regional synergies and economies of scale	R	UNECE, ESCAP	2022

	Identification of leading-edge technologies (industry 4.0, transition to the circular economy, etc.) of common interest for SPECA countries and dialogue on measures supporting their transfer	R	UNECE, ESCAP	2022
	Dialogue with the broader international community on best practices of technology transfer, including with the UN Technology Facilitation Mechanism.	R	UNECE, ESCAP	2021-2023
	Consultations on the establishment of a joint SD Innovation Fund for early stage support to innovative entrepreneurs in sustainable development undertakings in SPECA countries	R	UNECE, ESCAP	2022-2023
<i>2.C Innovating together towards the SDGs</i>	2.C Actions aimed at strengthening sub-regional cooperation in STI for sustainable development			
	Policy dialogue on innovation policy issues of common interest and priority to SPECA countries	R		2021
	Consultations on the establishment of a dedicated stakeholder network and mechanisms for regular consultations among SPECA countries on innovation policies of common interest	R		2021
	Consultations on the establishment of a network of research institutions dealing with STI for sustainable development and a SPECA network of innovation support institutions	R		2022
	Consultations on the possibility to set up a joint SPECA competition for innovation projects targeting sustainable development.	R		2021-2022
	Identification of possible joint measures to support regional supply chains based on innovative technologies and innovative organizational methods of production and trade	R		2022
	Consultations on the possible launch of a joint regional online support service for innovative entrepreneurs, start-ups and SMEs (consulting, mentoring, match-making, etc.)	R		2022-2023

Source: Rumen Dobrinsky, *Science, Technology and Innovation (STI) Gap Assessment of the SPECA Countries, 2020*

Annex III

Comparative analysis of average score development for 2015-2019 based on UN Global Surveys on Digital and Sustainable Trade Facilitation for SPECA; Asia-Pacific; European Union, Norway and Switzerland; and ASEAN.

