

Part I

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# SUB-REGIONAL ANALYSIS

## Chapter I

# THE CENTRAL ROLE OF INNOVATION IN THE TRANSITION TOWARDS SUSTAINABLE DEVELOPMENT

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## Introduction

### **Independence brought a rocky transition to a market economy**

To understand the importance of innovation for sustainable development in Eastern Europe and the South Caucasus (EESC), a cursory review of the past three decades is highly informative. Institutions change slowly. This factor was radically underestimated as overly swift and in part misguided liberalization efforts in these countries created a range of structural constraints. If not systematically addressed, these constraints will stymie the next stage of development in the region – especially if innovation, or experimentation with new ideas that create value and jobs for all, is to take centre stage.

After the fall of the Soviet Union, a raft of newly sovereign states passed through a rocky transition from a socialist, centrally planned system to a market-oriented one while creating national identities and constitutions, in some cases from scratch. The process brought dramatic developments, politically, economically and socially. Indeed, there had not been a similar transition in modern history to show the way. The sub-region witnessed the rapid break-up of the long-established economic integration of the region and of its institutional and technological links. This break-up was coupled with a lack of political will and a lack of clear political consensus about what a market economy was, how to transition to it, what the role of Government should be, if and how the public assets that made up the majority of economic assets should be privatized, and how strong and far-reaching the central planning legacy – in many cases bypassing price signals completely – would be. Ethnic and regional conflict, social unrest, political instability and the challenge of nation-building overall compounded these problems in most EESC countries.

The result – in the first half of the 1990s – was one of the most severe depressions in modern history, as entire sectors of the economy, unable to compete effectively, disintegrated and few new ones emerged. Output declined by as much as 80.2 per cent in Georgia (cumulative, 1989–2004), against the average decline of 31.4 per cent across the sub-region (UNECE, 2005). Although Soviet-era data on outputs are not entirely reliable and comparable with later macro-level indicators, the depression was – by any indication – substantial and protracted. Even as the EESC countries gradually found their bearings,

it still took more than two decades to regain the gross domestic product (GDP) levels of 1990. Despite substantial subsequent progress in the transition to a market economy, a number of challenges remain in ensuring sustainable, inclusive development.

The EESC countries, with the partial exception of Belarus, which took a notably more gradual approach to reform, were significantly slower to recover than the new EU member states – despite, as Gevorkyan (2018) argues, benefiting from a critical mass of industrialization and economic diversification with roots in the heavy investment into industry of the 1950s.<sup>1</sup> This recovery stands in stark contrast to that of post-war Europe, whose rapid recovery stemmed, in large part, from broad political consensus on the importance of recovery and need for planning, as well as strong public investment driven initially by the Marshall Plan – all elements that post-Communist countries did not have.

Only in the first decade of the 21st century did GDP in the sub-region start to recover in earnest, as countries benefited from “low-hanging fruit” – long-neglected, potentially profitable parts of the economy that became attractive after a series of macro reforms removed the most serious impediments to investment. Foreign and domestic investors seized attractive opportunities in banking, trade, infrastructure development and construction.

Much of that momentum has stagnated in the past decade, as concerns grew over the long-term consequences of rising joblessness (Richter and Witkowski, 2014), giving rise to the question of potential future sources of growth and sustainable development. The same is true for productivity trends. The growing gap with Central Europe and the Baltics demonstrates that the EESC sub-region must complement its attention to fundamental macro- and micro-level reforms with concerted attention to enabling and promoting experimentation with new ideas and scale up what works – in other words, innovation. Despite institutional and structural progress in the last couple of years, challenges for the future are manifold. Overcoming them will depend on the ability to exploit opportunities emerging from creative ideas, innovations and technology, and to design flexible policies, rules and institutions to enable and promote experimentation.

This consideration is at the heart of the first IPO for the EESC sub-region, which aims to compare, evaluate and guide reform efforts to upgrade innovation policies, institutions and processes. It falls squarely within the role of UNECE in supporting countries with economies in transition, in the context of both Agenda 2030 and the Sustainable Development Goals (SDGs), in a range of policy areas that include economic development and cooperation, trade and innovation.

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## Economic trends and dynamics

### **At the core: consistent difficulty enabling and promoting innovation to improve productivity**

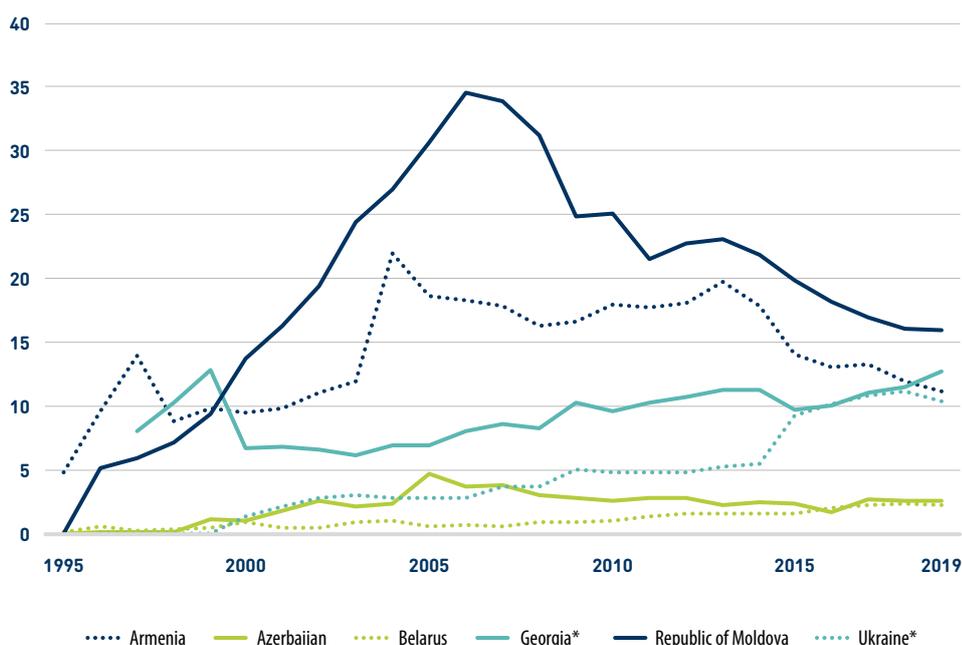
Current trends point to a dynamic in which most growth has come from relatively straightforward means: reallocation of resources – labour, capital, skills, technology – from a planned economy to more efficient uses driven by market prices; market-seeking investment into the economic activities that make economies work, such as finance,

construction, telecommunication and mining; and consumption, driven largely by household debt and remittances – the latter making up over 10 per cent of GDP in many EESC countries, but fluctuating strongly (figure I.1). This path has not, however, been easy – several problems remain, and inequality has risen.

This can be observed clearly by looking at how productivity changes contributed to growth over the past decades. Insufficient gains, and in many cases losses, remain evident across the sub-region – in industry, agriculture and services. As figure I.2 shows, five of the six EESC countries lagged behind Central Europe and the Baltics on industrial labour productivity in the period 2000–2019. Only Azerbaijan performed better, but this stems largely from its reliance on large investment into capital-intensive, employment-poor extractive industries such as oil. The same applies to the services sector, where the lag in productivity is even larger (figure I.3).

This suggests that, following a sharp slump with massive destruction and write-downs, productivity has largely been driven by three forces: the accumulation of capital (physical capital, such as machinery, and to a lesser extent human capital, such as useful and relevant skills in the labour force – including the ones needed to use the physical capital well); investment and reallocation into the manifold immediate opportunities of transition; and exports of commodities and natural resources based on the productive capacities that largely had been built up before independence. Clearly, this dynamic is hitting the point of diminishing returns: once the EESC countries had erected new buildings, set up a banking system and put in place necessary hard infrastructure, they needed to turn their attention to efficiency, diversification and better use of technology.

**Figure I.1 · Remittances received, 1997–2019 (Per cent of GDP)**

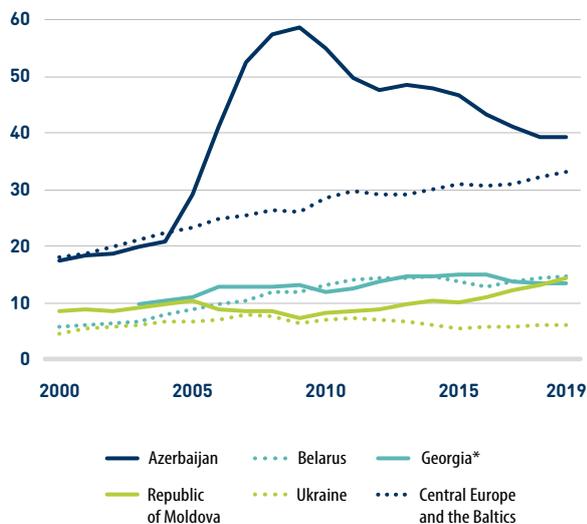


Source: UNECE, based on data from the World Bank (2020a).  
\*Missing values for Georgia (1995–1996) and Ukraine (1995).

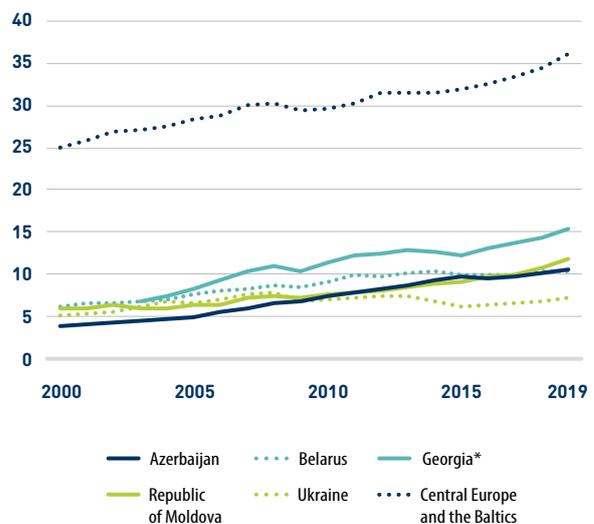
These become especially urgent as wages have risen and opportunities for labour-intensive manufacturing have receded as part of a worldwide trend towards deindustrialization and the ascent of the service economy. The Conference Board calculations of total factor productivity (TFP) echo this trend: the strong TFP growth in the first decade of the century subsided and in some cases turned negative in the 2010s, indicating that economies grew mostly by factor accumulation rather than by using those factors efficiently – a process in which innovation is essential.

The lack of a clear development path based on endowments and opportunities makes well-targeted, efficient State support through innovation and related policies important to support the experimentation with ideas that is necessary to find out what works, especially given that most EESC countries are small and dependent on a limited set of commodity exports in export markets. A clear orientation towards sustainable development should guide these efforts: long-term economic growth relies on good, sustainable use of human and environmental resources.

**Figure I.2 · Value added per worker in industry (including construction), 2000–2019 (Constant 2010 \$1,000)**



**Figure I.3 · Value added per worker in the services sector, 2000–2019 (Constant 2010 \$1,000)**



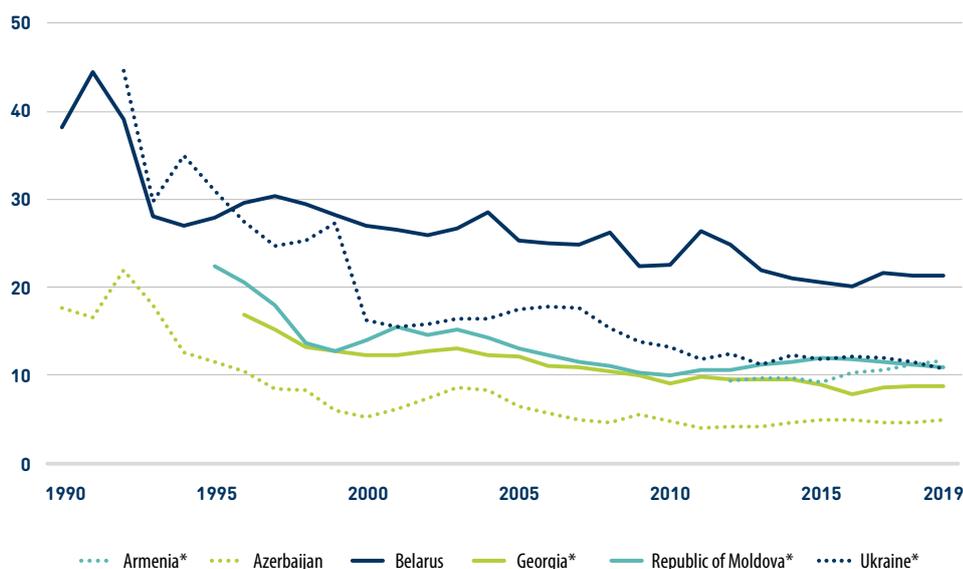
Source: UNECE, based on data from the World Bank (2020a).  
Note: Values not available for Armenia.  
\*Missing values for Georgia (2000–2002).

## Deindustrialization contributes to negative sectoral reallocation: many resources move from more to less productive activities

Part of the reason for these trends is deindustrialization, both worldwide and in the EESC sub-region in particular, which in turn has released resources that have moved to less productive activities. Four factors – low efficiency; the lack of competitiveness in terms of quality and market prices; lingering uncertainty about asset valuation and ownership; and the sudden disappearance of Soviet supply chains, fixed prices and quotas – triggered a rapid contraction in manufacturing, as companies suddenly faced exposure to market competition in the first decade of independence. To some extent, these effects still hamper sustainable growth. As figure I.4 shows, Ukraine lost two-thirds of its manufacturing share in GDP since 1990, while Belarus – whose transition was deliberately gradual – lost about half. Only since 2014 has this trend slowed or slightly reversed.

In 2019, the manufacturing sector of the EESC countries – with the exception of Belarus – contributed 12 per cent or less to GDP, a significant decline compared with the early 1990s, when in countries such as Ukraine and Belarus the sector contributed 45 per cent to GDP (each in 1993) (see figure I.4). In Azerbaijan the value added of the manufacturing sector since 2010 amounts to a constant 5 per cent. At the firm level, Mitra (2008) points out that productivity gains in manufacturing during the transition period were largely achieved within the sector, rather than from sectoral reallocation. In other words, gains came from companies becoming more productive, rather than from a systemic shift of resources, labour and capital from less to more profitable activities (figure I.3). These elements are the main drivers of the productivity gains of individual companies, but less so for the EESC countries as a whole.

**Figure I.4 · Value added of manufacturing as a share of GDP, 1990–2019**



Source: UNECE, based on data from the World Bank (2020a).

\*Missing values for Armenia (1990–2011), Georgia (1990–1995), the Republic of Moldova (1990–1994) and Ukraine (1990–1991).

This effect, termed negative intersectoral resource reallocation, has indeed been negative on average: capital and labour have shifted from capital-intensive manufacturing to less capital-intensive services and, to some extent, small-scale agriculture. Most of the labour force is employed in activities whose output per worker is below the overall average and far below that of manufacturing, ICT and utilities. We can measure this by noting productivity gaps among sectors, which are far higher than in Central Europe and the EU – a symptom of systemic constraints on a dynamic where resources flow to where they can be best put to use.

Compared with Central Europe and the Baltics, productivity in the services sector is significantly lower in all six EESC countries. Sectoral services-led growth in the EESC countries is driven mainly by the financial sector, trade and public services rather than by high value added, knowledge-intensive (technology-based) services, as in Western European countries. In 2017, however, ICT services exports accounted for a larger share of total services exports in Ukraine (19.5 per cent), the Republic of Moldova (13.9 per cent) and Belarus (18.4 per cent) compared with Central Europe and the Baltics (11.3 per cent), which indicates a comparative advantage (World Bank, 2020a).

The driver for this is, of course, innovation – broad, systematic experimentation with ideas to find out what works and what does not, and how resources can be put to best use – which will be central to build the underpinnings for long-term sustainable development. Research shows that several factors can play an inordinate role in constraining innovation, including rigid labour market regulations that constrain labour movement and risky investment, the prevailing system of State ownership of productive assets that not only may not operate efficiently but also crowd out competition, and insufficient or poorly enforced investor protection and property rights. Equally important – as a range of externalities and market failures, even in an efficient business climate, continue to constrain the societally optimal level of innovation – will be targeted, cost-effective measures and a productive, flexible role for government. This concern is at the core of the IPO.

### **Reallocation stems from limited innovation in upgrading, expanding and diversifying activities**

These trends coincided with an equally steep decline and subsequent stagnation in the already modest levels of technology and applied research and development (R&D), an area of strength in the Soviet economy. No EESC country plays a significant role in the international markets for knowledge-intensive products and services. As chapter II explains, the overall technological competitiveness or performance in the region is weak: The Global Innovation Index shows moderate and stagnating performance on knowledge diffusion, an aggregate score covering intellectual property receipts, high-tech net exports, ICT service exports and net outflows of foreign direct investment (FDI).

As this report will illustrate, this weakness stems in part from an overly narrow view of innovation, especially from a public policy perspective, as restricted to research, technology and high-tech start-ups rather than as a vehicle for sustainable development overall. This perception misses most of the potential of innovation. Reflecting broad consensus, Radosevic (2017) notes that most innovation potential in the sub-region lies outside this narrow focus, in elements such as improving production capabilities, process engineering, business models or the potential of platforms. Platforms create demand and

supply for new activities that previously were not possible, such as resource sharing – essential in order to be able to consume more while using scarce resources sustainably, as SDG 12 calls for. Indeed, most innovation stems from drawing on existing ideas, business models and technologies that are only new to the context – the country, sector, region – and adapted and modified as needed. In fact, among the fastest-growing small and medium enterprises (SMEs), relatively few are research-focused or technology-oriented. They include childcare providers using online platforms and applying brand development and modern customer-relationship management techniques; and construction companies experimenting with different building materials to lower heating costs in countries where energy subsidies are phased out.

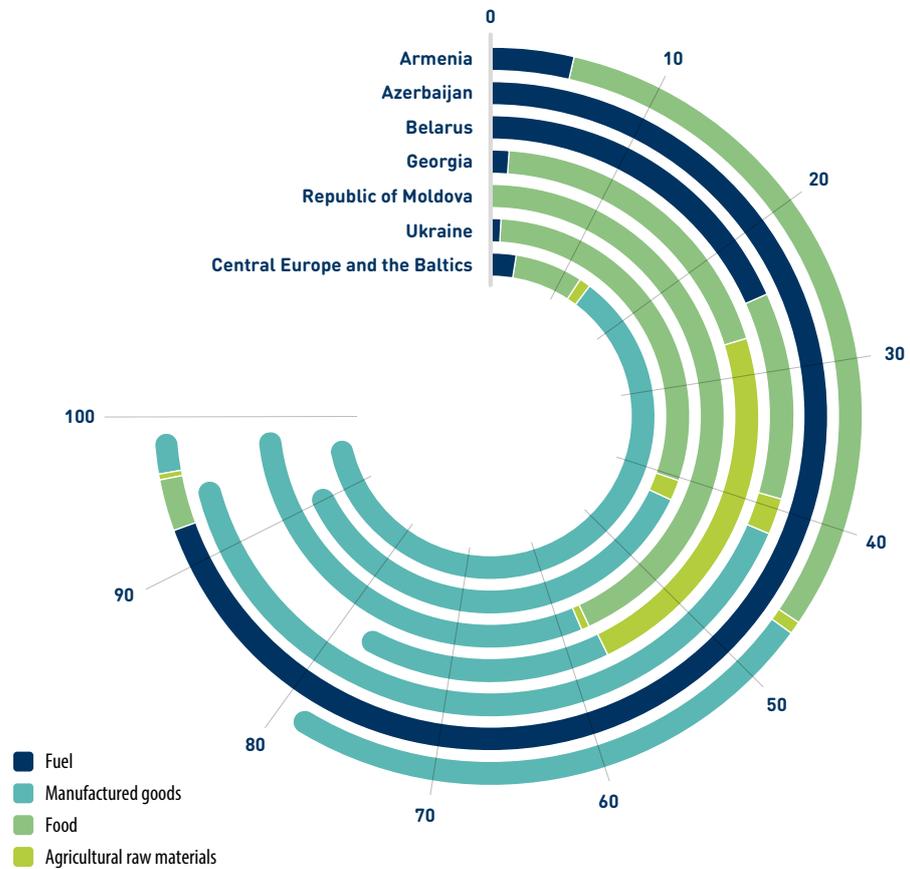
Despite several success stories, overall success does not happen systematically. The reasons, of course, are manifold, some of them discussed in this report: regulatory constraints, insufficient or no market competition in many sectors, modest but insufficient levels of organizational and managerial capacities among SMEs, the continued large role of State-owned enterprises (SOEs), strong and at times ineffective restrictions on FDI and poorly developed systems and markets for financial intermediation – especially the kind of equity mechanisms that are best able to finance the substantial risk that innovation entails.

### **Overreliance on commodities and domestic services hampers innovation for diversification and sustainable development**

Dependence on a narrow set of commodities and trading partners not only limits growth prospects, but also amplifies vulnerability to economic and political shocks that will further deter investment into experimentation. These shocks include political instability, external crises, global sectoral trends and rapid price fluctuations, especially for natural resources and agricultural commodities. But the problem goes far beyond the risk of not sustaining solid export revenues. Such a production structure also limits abilities to build the broad productive capacities that are essential for innovation and diversification: expertise in harvesting grains or extracting oil is too specific to put to use in many other sectors, as a significant body of work on productive capacities and the product space shows (Hausmann and Klinger, 2007; Hidalgo et al., 2007).

The 2020 edition of the SME Policy Index for Eastern Partnership Countries (OECD and others, 2020) noted that EESC countries rely on a limited set of products and export markets and exhibit a low degree of export sophistication, a measure of the uniqueness and skill intensity of products exported. Compared with Central European countries, the product diversification index for EESC countries is higher (the higher the index value, the lower the degree of product diversification) – indicating a greater divergence from the world pattern. In Belarus and Georgia, the index even increased since 2008 (UNCTADstat, 2020). The lack of diversification and sophistication in merchandise exports (figure I.5 on the following page) is confirmed by data published in Harvard Growth Lab's Atlas of Economic Complexity database. The average sub-regional score on the 2018 Economic Complexity Index was  $-0.12$  (with higher values indicating greater complexity in the products of the country's export basket). The average rank in the sub-region was 69th, out of 133 countries; Azerbaijan ranked lowest (124th) with a score of  $-1.37$  and Belarus highest (29th) with a score of  $0.89$  (CID, 2020).

**Figure I.5 · Merchandise exports by type, 2018**  
(Per cent of total merchandise exports)



Source: UNECE, based on data from the World Bank (2020a).

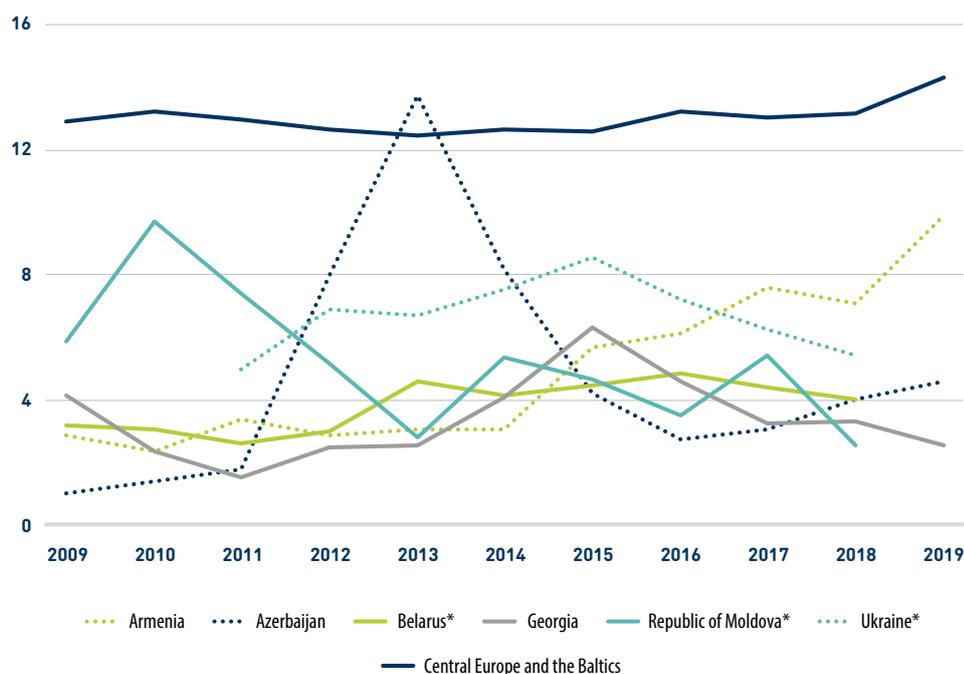
### The structure, trends and target markets of EESC exports also reflect limited innovation – albeit with several promising exceptions

Merchandise exports from the EESC sub-region grew swiftly in the first decades after the fall of the Soviet Union but slumped and remained volatile following the global financial crisis and the 2014 Russian crisis, struggling to regain previous levels, let alone the export-to-GDP ratio of the EU and Central European countries. With overall export of goods and services accounting for 70.2 per cent of GDP in 2018, the highest ratio since 1993, Belarus is the only EESC country outperforming the average for Central Europe and the Baltics. With the exception of Azerbaijan and the Republic of Moldova, all other EESC countries see exports lingering below the level preceding the global financial crisis.

The composition of exports reflects the overall reliance on commodities with low levels of sophistication, such as cereals, natural resources and low-tech manufactured goods. High-technology exports account for less than 8 per cent of all manufactured exports for all six EESC countries, except Armenia (9.9 per cent in 2019). For Belarus, Georgia and the Republic of Moldova, the share is even lower (4 per cent and below).

Central Europe and the Baltics, which began the transition with similar characteristics to the EESC countries, see high-technology exports of 13 per cent – so the gap and future potential is significant and underscores the importance of innovation (figure I.6).

**Figure I.6 · High-technology exports, 2009–2019**  
(Per cent of manufactured exports)



Source: UNECE, based on data from the World Bank (2020a).

Note: In 2013, the "Year of ICT" in Azerbaijan, the Government increased spending in the ICT sector with the establishment of the High-Tech Park, designed to foster the increased production and export of ICT (EC, 2014).

\*Missing values for Ukraine (2009–2010; 2019), Belarus and the Republic of Moldova (2019).

## FDI inflows create limited potential for innovation and other spillovers; exceptions point to substantial underused potential

Levels of FDI inflows are low, highly volatile and procyclical. After several peaks in the first decade of the century – hitting 19 per cent of GDP in Georgia following radical reforms in 2007, and a whopping 56 per cent in Azerbaijan as that country opened up to investors in oil extraction in 2003–2004, when world oil prices were high – FDI has stagnated (UNCTAD, 2020). Although Georgia attracted FDI worth 7.2 per cent of GDP in 2019, other countries are far behind, with the Republic of Moldova at 5 per cent, Belarus at 2 per cent and Armenia at 1.9 per cent (World Bank, 2020a). The underlying stories vary considerably: most FDI inflows are limited to a small set of source countries with which the country already had strong trade ties, with the notable exception of Georgia, which has a more diverse set (Gevorkyan, 2015). More than 60 per cent of Armenian FDI inflows were driven by diaspora connections between 1994 and 2004 (UNCTAD, 2019). The strong role of existing relationships and the relatively modest amount of market-seeking investment indicate a lack of dynamic, systematic exploration of market and investment opportunities.

Perhaps more important from an innovation perspective are the targets of FDI flows: to develop productive capacities, EESC countries need economic activities that create spillover effects, build skills and carry the potential for diversifying exports – broadly, these tend to be efficiency-seeking FDI (box I.1). The EESC sub-region falls short in this regard: with the notable exception of Azerbaijan which attracts resource-seeking investment in its extractive sector, FDI flows mainly into market-seeking opportunities, such as finance, construction, trade and to a lesser extent manufacturing for the domestic market, such as building materials. Narula and Guimon (2009) note that Eastern European countries are unlikely to attract significant investment into supply-driven R&D, manufacturing and capital-intensive technology. There are notable exceptions: an initial investment by a German automotive supplier into limited production in the Republic of Moldova, driven mainly by diaspora contacts, low wages, proximity to the EU and attractive conditions in dedicated economic zones, subsequently led to diversification and spin-offs into related products. Perhaps most prominently, most EESC countries, led by Armenia and Belarus, have seen the rapid rise of export-oriented ICT and business process outsourcing services (box I.2). Overall, however, these are the exceptions that prove the rule: FDI that gives rise to competitive, new sectors remains rare and often driven by circumstances and chance rather than by a broader dynamic of systematic experimentation with new ideas across the economy. As the current returns of foreign investment inevitably diminish, FDI and innovation policies must target, enable and promote the right kind of FDI and investment overall. A wide range of frameworks exist for shaping investment policies and incentives and developing bespoke investment promotion services, while monitoring impact carefully and continuously. An example is the UNCTAD Investment Policy Framework for Sustainable Development.

### Box I.1 Not all FDI is created equal

Different kinds of FDI can vary radically in their potential contribution to innovation, diversification and sustainable development. The distinctions in the UNCTAD *World Investment Report* and in Dunning's framework are useful in this regard:

- Natural resource-seeking investment is driven by the potential to find and exploit resources in the country, such as oil in Azerbaijan. Such investment is capital intensive and can furnish substantial public revenue, but it creates few jobs and capacities that can be used to innovate and diversify, and often leads to countries falling prey to overreliance on mining exports as other sectors fail to compete and export revenue drives up the value of the local currency.
- Market-seeking investment seeks to fill gaps in supply in response to local consumer demand. It makes up most FDI in the EESC sub-region, filling sudden demand for construction, financial services, telecommunication and consumer goods. Although filling these gaps is important, such investment is unlikely to contribute to export diversification and may depend on unstable, debt- and remittance-fuelled consumer demand.
- Strategic asset-seeking investment is driven by interest in assets, such as brands, skills, linkages and customer bases. This is rare in transition economies.
- Efficiency-seeking investment aims to gain efficiency by producing, often in tradeable sectors and with export orientation. This kind of FDI has the largest potential to build capacities and skills, enable global value chain integration, generate positive spillover effects and, in some cases, develop entirely new sectors.

Broadly, encouraging efficiency-seeking FDI is important, and it has been the main driver in the development path of fast-growing countries over the past decades.<sup>a</sup>

Sources: Dunning (1980), UNCTAD (1998).

<sup>a</sup> Fruman, Cecile, *Why does efficiency-seeking FDI matter?*, World Bank Blogs, World Bank, 5 February 2016, <https://blogs.worldbank.org/psd/why-does-efficiency-seeking-fdi-matter>.

## Box I.2 ICT success stories in the EESC sub-region

Whereas the digital prowess of countries such as China is recognized, that of the EESC countries is, with few exceptions, overlooked. As Gevorkyan<sup>a</sup> (author of *Transition Economies*) notes in a new study, ICT and the Fourth Industrial Revolution may provide new opportunities and a new development phase, as several initial successes show.

Armenia stands out. A high-tech and industrial centre of the Soviet Union, its ICT sector has grown at double-digit rates since the mid-2000s with over 800 ICT companies in software and fintech (such as the Enterprise Incubator Foundation); PicsArt, an Armenian photo-editing app, making the top five of the 2015 Forbes list of the year's hottest start-ups; and a range of global tech companies in the country, including the Microsoft Innovation Centre since 2011.

The ICT sector in Belarus has also grown exponentially over the past decade, employing over 85,000 people directly and an additional 30,000 IT specialists in other sectors, and seeing exports of IT goods and services grow from 0.16 per cent (2005) to 3.25 per cent of the total. Investment into services exports has been the main driver. In 2019, Gartner named Belarus among the nine most attractive locations for outsourcing and shared services in Europe, the Middle East and Africa.

Several challenges remain if the EESC countries are to bridge the gap with other transition economies such as Estonia (often called the world's most digital country and the birthplace of household names like Skype). The benefits remain relatively small and unevenly distributed: constrained supply has driven up salaries for programmers to levels that undermine the initial wage advantage, and the technology gap with the rest of the economy looms large. Financing and large customer bases are hard to come by, and many companies with potential tend to remain small. Outdated regulations affect the smooth use of technology for cross-border transactions.

Source: EY (2017).

<sup>a</sup> Gevorkyan, Aleksandr V., and Norean R. Sharpe, How the digital economy is transforming Eastern Europe and the former Soviet Union, NextBillion.net, 20 September 2019, <https://nextbillion.net/digital-economy-transforming-eastern-europe>.

## Stagnating momentum in governance, institutional and structural reform continues to restrain innovation and undermine sustainable development

In countries sharing similar economic, political and social challenges, opportunities, histories, and cultural and institutional characteristics whose legacy remains apparent, the transition towards market-oriented economies is well under way but far from complete and uneven, as the paths countries have taken often diverge. According to North (1990, p. 3), institutions are “the humanly devised constraints that structure human interaction”, including formal institutions (laws and regulations) and informal ones (conventions). The new institutional economics perspective put special emphasis on creating and preserving market-supporting institutions (such as property rights, commercial law and regulation of licensing, credit and the setting up of business enterprises), which are regarded as essential conditions for transition economies as well (Zeghni and Fabry, 2008).

The difficulty is apparent when looking at governance, institutions and structural reforms. In particular, building new institutions and reforming existing ones to meet the needs and dynamics of a market economy has been much more challenging than many initially assumed: the majority of existing institutions had to be remodelled and new ones established to fill gaps in areas such as macroprudential supervision and competition policy and in ensuring the rule of law and adequate protection for commercial transactions and investors. This took time: Berglöf and Bolton (2002) note that in the 1990s few countries managed to push through broad macroeconomic reforms and build effective market institutions. Many were wracked by conflict and political turmoil, and most either failed to restructure and privatize public assets and SOEs or made serious mistakes in doing so.

### Box 1.3

## Institutional legacy and path dependency as barriers to institutional reforms

Several authors point to weak and ill-fitting institutions in the EESC countries – often reflecting the Communist legacy of central planning and control of the economy – as barriers to development (Bevan and Estrin, 2004; Tidrico, 2006). Reluctance, lack of consensus and a range of entrenched interests make these barriers difficult to overcome in the sub-region. Globerman and Shapiro (2002) link economic success to the willingness and ability of local governments in particular. The speed of change also matters: Kyriazis and Zouboulakis (2005) point to the importance of the interaction between old and new values as an essential determinant.

Against this background, the notion of path dependency has come to the fore: “A path-dependent process is one possessing an asymptotic distribution that evolves as a function of the process’s own history” (David, 2007). Once a process (or outcome) settles in, it becomes progressively locked to external actors (of a group, network or system), resulting in a suboptimal development path. Spatial elements of path dependency explain the competitive advantages of different countries over time. An initial advantage of a country in one technology area, for instance, may strengthen this position through an “accumulation of experience”, while other countries without that advantage may be left behind.

Only in the 2000s did momentum pick up in earnest: EBRD transition indicators show significant improvement among the EESC countries in the period 2000–2014, albeit significantly behind those for Central Europe and the Baltics.

Over the past decade, however, this reform momentum has stagnated – indicative of a range of lingering impediments to economic diversification and innovation. To take a few examples: Low resilience adds layers of risk to all investment, especially into already risky, innovative projects. This is especially the case in Azerbaijan because of its overwhelming dependence on hydrocarbon exports, especially as prices dropped to record lows in the wake of recent price wars and the drop in demand following pandemic-related restrictions and income losses. Inadequate rule of law, insufficient investor protection and persistent corruption – all prevalent to varying degrees across the EESC sub-region – deter investors from risking substantial amounts of capital – one of the reasons why many have opted for the ICT sector, where large capital commitments are often not necessary. The large presence of SOEs inhibits productivity growth and incentives for private investment into those sectors. The absence of market competition inhibits new entrants and competition-induced pressure to increase productivity and diversify among incumbents.

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## Conclusion

### **To play an effective role in sustainable development, innovation policies must address constraints systematically and target support to encourage experimentation and risk-taking**

The potential for innovation in the EESC countries is, in fact, very large – larger in some respects than in other countries at similar levels of development. Start, for instance, with education and research: Ukraine long boasted the highest levels of educational attainment in the labour force, with several other EESC countries not far behind – and a large portion of enrolment in scientific and technological fields of study. Despite gradual budget cuts, all countries have maintained the Soviet legacy of cutting-edge research

and a network of both basic and applied research institutions – many generating, but not systematically exploiting, findings that have commercial potential. With the stark exception of Belarus, many EESC countries started out with diversified production structures that they subsequently lost, though some of the productive capacities remain. Given the long time since independence, this potential is atrophying as skills are increasingly outdated or not used at all. Wage levels have risen but remain far below those of the EU, which should be attractive for efficiency-seeking FDI. Perhaps most importantly, all countries share strong societal and political commitment to innovation.

Looking ahead, opportunities abound. There is substantial potential in simply doing things better – streamlining organizations, using technology better, automating and upgrading. The past decades have opened up a range of opportunities for trade to meet demand in the EU, the Commonwealth of Independent States and Turkey, or for efficiency-seeking investment. Rapid technological advances, digitization, the platform economy and the broader implications that some call the Fourth Industrial Revolution open up the world for trade in services – often enabling entrepreneurs to circumvent some of the regulatory constraints or innovation system deficiencies that hitherto hampered innovation in the sub-region.

Overall, the volatility and stagnation of growth since 2009, exacerbated by a series of crises including the ongoing economic effects of pandemic-containment measures, clearly calls for action – especially regarding productivity-enhancing sectoral reallocation and respective policies. Innovation- and technology-based national development and policies play essential roles within this context, as they are the main drivers for a gradual move from less to more productive activities: technological upgrading (of the remaining production capacities), the generation of innovations and the support of knowledge-intensive (high value added) services.

This, of course, is not easy. It is not only a matter of reforming policies, institutions and processes – a notoriously difficult, long-term process that even star performers such as Georgia have managed only partially. More fundamentally, it requires a rethinking of the role of government altogether, as innovation is uncertain, risky and impossible to plan and foresee with any certainty. The 2006 report of the World Summit on the Information Society assembled leading experts from around the world but failed to mention mobile internet, big data, cloud computing and the platform economy – all of which rose to prominence just a few years later and now are essential to the world economy.

The fundamental question for innovation and related policies is then: how do we know what to do, and what do we put in our long- and medium-term strategic plans? What do we prioritize? And perhaps most importantly: How do we know what is working and what is not, and how do we make sure we have the data, incentives, and processes to systematically make sure we stop what is not working and scale up what does? In a sense, then, innovation is as important to policy and institutional design and reform as it is to the economy overall.

This recognition, shared by all EESC countries, lies at the heart of this report and its focus on how EESC countries design policies, institutions, processes and incentives rather than on their innovation inputs and innovation performance. This is especially true in the context of impending stagnation and rapid technological change, which remove some of the traditional development models that drove countries such as the Republic of Korea from post-war destitution to developed-country status in just a few decades (Amsden, 2001).

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## Note

- <sup>1</sup> Gevorkyan, Aleksandr V., Roots of CEE economic success were planted in postwar industrialisation, *Financial Times* (North American edition), 14 June 2019.

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## Chapter II

# INNOVATION PERFORMANCE OVERVIEW: SUB-REGIONAL TRENDS AND FINDINGS

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## Innovation climate across the EESC sub-region

Since their independence, the EESC countries have embarked on a journey of economic liberalization and growth amid their transition from planned to market economies. The challenge now is to sustain and accelerate growth in productivity, while reducing the economic inequality and vulnerability to external shocks that came in the wake of market-oriented reforms (chapter I). Innovation plays a crucial role in addressing this challenge and enabling a resilient and sustainable post-COVID-19 recovery while also promoting the transition to circular economy.

This chapter gives an overview of the innovation performance of the EESC sub-region. It first discusses innovation outcomes – the amount and quality of innovation that is being generated. It then discusses the scope and quality of the underlying innovation activities that led to these outcomes. The innovation performance of the EESC countries corresponds broadly to their levels of economic development. In part because of rising ICT exports, some have even been classified as innovation achievers relative to their income group level in the Global Innovation Index (GII; box II.1). However, to take the next step and to fully develop innovation capacities, the EESC sub-region needs to mitigate skills mismatches on the labour market, strengthen technological competitiveness, expand absorptive capacities, attract more FDI, and deepen university and business linkages.

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## Innovation outcomes

Innovation outcomes can be assessed along a number of dimensions, reflecting the different types of innovation and ways of generating value from them. This section discusses a range of quantitative indicators that shed light on these dimensions and that are publicly available and comparable across countries.<sup>1</sup>

Technological and non-technological innovation can be proxied by the share of medium- and high-technology outputs in the manufacturing sector and the creative outputs indicator of the GI (Cornell University, INSEAD and WIPO, 2019), respectively.

Process and organizational innovation and the ability to move up in value chains can be proxied by the number of ISO 9001 quality certificates. The extent to which domestic innovation is internationally competitive – that is the quality of innovation, can be proxied through indicators such as net exports of high-technology manufactured goods, ICT services exports and revenues generated from licensing intellectual property abroad.

Between 2013 and 2019, the EESC sub-region made progress on ICT services exports and international quality certification (figure II.1). By contrast, there was a decline in creative outputs across the sub-region, and medium-and high-technology manufacturing outputs, high-technology exports and intellectual property revenues from abroad all remained stable.

Despite progress in some areas, the sub-region ranks in the top half of the countries covered by the GII only for ICT services exports. For the other five indicators considered here, innovation outcomes remain moderate on a global scale (table II.1). Overall, these indicators suggest that the region has been relatively successful at carving out a niche in the international market for ICT services, with Ukraine, Armenia, the Republic of Moldova and Belarus (in that order) ranking in the top 20 in the 2019 GII, but that it still struggles to produce internationally competitive innovation in other sectors.

## Box II.1 The Global Innovation Index

For more than 10 years, the Global Innovation Index (GII) report – co-published by Cornell University, INSEAD and the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations – has identified global innovation trends and measured the innovation performance of about 130 economies. It has been influential on three fronts.

First, as part of their economic policy strategies, policymakers now refer regularly to innovation and their innovation rankings. Officially, the GII is considered a yardstick for measuring innovation, as noted by the UN General Assembly in its resolution on the importance of science, technology and innovation for achieving the Sustainable Development Goals (SDGs) at its 74th session in 2019.

Second, the GII allows policymakers to assess the innovation performance of economies. They invest resources to analyze their GII results in cross-ministerial task forces and use the GII to design appropriate innovation and intellectual property policies. This assists them in evaluating the innovation performance of the economy and in making informed decisions on innovation policy.

Third, the GII gives strong impetus for governments to prioritize and collect innovation metrics.

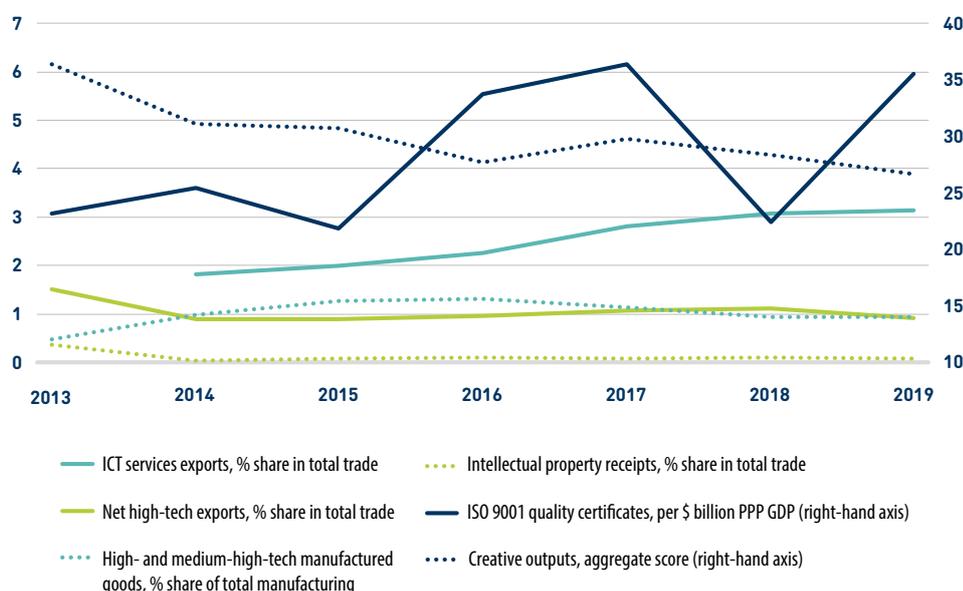
The report shows the positive relationship between economic development (as measured by GDP per capita adjusted for purchasing power parity (PPP)) and innovation performance (as measured by the GII). It identifies innovation achievers whose innovation performance exceeds their level of economic development.

The IPO assessment, conducted in 2019 and 2020, draws on the 12th edition, *Creating Healthy Lives – The Future of Medical Innovation*, which focuses on the medical innovation landscape, examining how (non-)technological medical innovation will change the delivery of health care around the world. In 2020 the GII presented its 13th edition, titled *Who Will Finance Innovation?* This edition sheds light on the state of innovation financing by investigating the evolution of financing mechanisms for innovators and by pointing to progress and challenges—including in the context of the COVID-19 crisis.

The report can be downloaded at <https://globalinnovationindex.org>.

Source: WIPO.

**Figure II.1 • Innovation performance by selected GII indicators, 2013–2019 (average values)**



Source: UNECE, based on data from Cornell University, INSEAD and WIPO for 2013–2019.

Note: The decrease in the sub-regional average for ISO 9001 quality certificates is due to a drop in value for Belarus from 21.7 certificates per \$1 billion PPP GDP in 2017 to 1 certificate per \$1 billion PPP GDP in 2018. As reported in the 2018 GII, the values for Belarus in 2018 are methodologically constrained owing to the estimation of missing data and changes in the weights and aggregation of the formulas used.

**Table II.1**

**Innovation outcomes by selected GII indicators in the EESC sub-region, scores and ranks, 2019**

Country	Creative outputs		High- and medium-high-tech manufacturing		ICT services exports		Intellectual property receipts		ISO 9001 quality certificates		Net high-tech exports	
	GII aggregate score	GII rank	Per cent of total manufacturing output	GII rank	Per cent of total trade	GII rank	Per cent of total trade	GII rank	Per \$1 billion PPP GDP	GII rank	Per cent of total trade	GII rank
<b>Armenia</b>	32.2	48	4	96	4.3	15	0	109	1	107	0.6	77
<b>Azerbaijan</b>	22.8	84	10	79	0.4	107	0	108	1.2	104	0.1	115
<b>Belarus</b>	10.8	126	30	45	4	19	0.1	59	22.2	14	1.8	57
<b>Georgia</b>	29.1	58	10	91	1.1	80	0	90	3.3	74	0.3	90
<b>Republic of Moldova</b>	31.8	49	10	71	4.2	18	0.1	45	4.6	60	0.7	74
<b>Ukraine</b>	33.5	42	20	56	4.8	11	0.2	43	3.5	70	2	53

Source: UNECE, based on data from Cornell University, INSEAD and WIPO (2019).

In Armenia the improved regulatory environment for enterprises has spurred the growth of ICT, although access to ICT remains comparably limited. The contribution of the ICT sector to GDP in Belarus has increased significantly, mainly because of its strong ICT infrastructure. A substantial amount of Georgia's high-technology output also originates from the ICT sector. As one of the main drivers of economic growth in Ukraine, the sector shows great potential for further development. In contrast, in the Republic of Moldova growth in the sector has stagnated since 2014, and in Azerbaijan the ICT sector contributes comparably little to GDP as the oil sector dominates the economy. Within countries, the benefits of the growing ICT sectors remain unequally distributed, as connectivity remains low due to persistent technology gaps.

In part thanks to ICT-enabled content, creative outputs are an area of relative strength for most of the EESC countries (see table II.1). In some, such as the Republic of Moldova and Ukraine, exports of creative outputs may also have contributed to relatively strong revenues from intellectual property licensing abroad. By contrast, technological innovation outside the ICT sector is not a strength of the sub-region, as only approximately 13 per cent of manufacturing output in the EESC countries are high-tech and medium-high-tech (with an average GII rank of 73). The only two countries that have relatively high technology content in their manufacturing output are Belarus and Ukraine. Particularly in Belarus, this results from a relatively strong capacity for process innovation, as indicated by ISO 9001 quality certificates in 2019. But even in these two countries, the share of high-tech exports in total trade remains modest, indicating that technological innovation is often not internationally competitive.

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## **Innovation activity – channels, strengths and weaknesses**

Innovation outputs result from the innovation-related activities of enterprises, supported by the innovation ecosystem. On average, only about 15 per cent of the firms in the EESC sub-region report undertaking innovations of any kind, whether product, service, process or organizational innovations, and irrespective of whether these innovations are new to the world, new to the economy, new to a particular sector or only new to the firm introducing them.<sup>2</sup> In contrast, an average of over 50 per cent of firms are innovation-active firms in the 28 member States of the European Union (EU), with an average of over one-third in 13 of the member States that joined the Union in and after 2004.

Among the key factors that determine innovation outcomes are the degree of knowledge absorption – particularly from abroad, the creation of knowledge domestically, and the managerial and technical skills needed to transform knowledge into innovative products and services. This section sheds light on these factors by presenting a range of relevant quantitative indicators that are publicly available and comparable across countries. Foreign knowledge transfer operates through three main conduits: transferring knowledge in the course of FDI, importing more advanced machinery and equipment, and licensing foreign intellectual property for domestic application. Domestic knowledge creation in turn depends on investment in R&D and on academic research, and on the links between industry and science that make it possible to commercialize this research, whereas skills development requires spending on education and vocational training.<sup>3</sup>

## International knowledge absorption

Openness to trade, FDI and knowledge flows translates into greater capacity to absorb and adapt foreign technologies and improve their economic competitiveness. On the global scale, the EESC countries rank relatively low with regard to international knowledge absorption (table II.2). In the 2019 GII, the best performer in the sub-region was Ukraine, followed by Georgia and the Republic of Moldova. In terms of channels of knowledge transfer, Georgia and Azerbaijan have been particularly successful at attracting FDI, and this channel seems to be somewhat more important overall than imports of machinery and equipment. Imports of foreign knowledge through the licensing of intellectual property do not play a prominent role in any of the six countries so far.

**Table II.2** Knowledge absorption indicators in the EESC sub-region, GII scores and ranks, 2019

Country	Knowledge absorption		High-technology imports		Inward FDI	
	GII aggregate score	GII rank	Per cent of foreign trade	GII rank	Per cent of GDP	GII rank
<b>Armenia</b>	22.4	114	4.8	109	2.4	74
<b>Azerbaijan</b>	22.9	113	2.8	124	8.8	15
<b>Belarus</b>	25.1	101	5.1	104	2.6	63
<b>Georgia</b>	31.4	78	7.5	63	11.6	11
<b>Republic of Moldova</b>	30	82	7.4	66	2.2	77
<b>Ukraine</b>	31.7	73	8.8	46	3.2	52

Source: UNECE, based on data from Cornell University, INSEAD and WIPO (2019).

## Investment in R&D

Both public and private investments in R&D are necessary to create innovative products and processes and spur sustainable economic growth. Overall investment in R&D in the sub-region is low (table II.3 on the following page). Although the expenditure of the public sector is well documented in all countries, significant data gaps exist with respect to private sector R&D spending in Armenia and Georgia, which may lead to overall spending being underestimated. Business sector R&D spending is relatively high in Belarus, a finding that dovetails with the relatively big contribution of medium- and high-tech goods to manufacturing output there. A relatively large share of R&D is financed from abroad in Ukraine, Georgia and Belarus. This reflects the participation of research institutions in EU framework programmes, but also to some extent contract research for foreign companies, particularly in the ICT sector, and the activities of subsidiaries of foreign parent companies.

Despite some efforts, university-business linkages and networks in the EESC sub-region remain underdeveloped (chapter IV). According to the indicator for university and industry collaboration in the 2019 GII, collaboration is strongest in Azerbaijan, followed

by Ukraine, Armenia, Georgia and the Republic of Moldova. The number of international co-publications is highest in Armenia, Georgia and the Republic of Moldova (EC, 2019). For the EESC countries to capitalize on their research heritage, stronger linkages are needed between academia and the private sector, to further support knowledge sharing and more efficient commercialization of new products and processes.

**Table II.3**

**Investment in R&D and university-industry collaboration in the EESC sub-region, GII scores and ranks, 2019**

Country	Gross expenditure on R&D		Gross expenditure on R&D financed from abroad		Gross expenditure on R&D financed by business		University and industry collaboration	
	Per cent of GDP	GII rank	Per cent of gross	GII rank	Per cent of gross	GII rank	GII score	GII rank
<b>Armenia</b>	0.2	86	1.7	82	..	..	36.3	89
<b>Azerbaijan</b>	0.2	90	0.1	100	32	56	54.2	32
<b>Belarus</b>	0.6	54	14.1	29	43	41	..	..
<b>Georgia</b>	0.3	79	14.7	28	..	..	32	98
<b>Republic of Moldova</b>	0.3	78	3.7	67	17.9	70	29.1	109
<b>Ukraine</b>	0.4	67	24.2	15	30.1	59	41.3	64

Source: UNECE, based on data from Cornell University, INSEAD and WIPO (2019).

## Skills development

Despite significant cross-country variation, human capital remains a strength of the EESC sub-region overall relative to its level of economic development. However, more needs to be done to maintain and update existing human capital as skills do not always match labour market requirements and innovation-specific skills both at the managerial and the production level are often insufficient – a major reason why many enterprises in these countries struggle to absorb knowledge, to cooperate with scientific institutions, and to innovate successfully.

The level of expenditure on education in the sub-region ranges from less than 3 per cent to over 6 per cent of GDP, such as in the Republic of Moldova, a very high level even by global standards (table II.4). There are significant differences in the allocation of this spending. The Republic of Moldova for instance has a relatively low tertiary enrolment rate, suggesting that its spending is focused on primary and secondary education. Tertiary enrolment rates are particularly high in Belarus and Ukraine. These two countries also rank highest among the EESC countries in the Quacquarelli Symonds ranking of university quality.

However, underdevelopment of managerial skills impede innovation, particularly in State-owned enterprises (EBRD, 2020), and few firms, with the exception of Belarus, offer formal training to employees in 2019.

**Table II.4 Skills development in the EESC sub-region, GII scores and ranks 2019**

Country	Expenditure on education		Quacquarelli Symonds		Gross share of tertiary enrolment		Firms offering formal training to employees	
	Per cent of GDP	GI rank	GI score	GI rank	Per cent of tertiary-education-age population	GI rank	Per cent of all firms	GI rank
<b>Armenia</b>	2.8	111	0	78	52.2	54	16.2	82
<b>Azerbaijan</b>	2.9	103	3.7	72	27.1	87	20.2	74
<b>Belarus</b>	4.8	53	14.8	57	86.7	11	51.1	19
<b>Georgia</b>	3.8	85	0	78	57.5	50	10.5	88
<b>Republic of Moldova</b>	6.7	11	0	78	41.1	70	32.4	46
<b>Ukraine</b>	5	48	22	46	83.4	14	22.6	69

Source: UNECE, based on data from Cornell University, INSEAD and WIPO (2019).

## Synthesis

This table summarizes the main achievements of and challenges to R&D and innovation (RDI) across the EESC sub-region, based on the findings described in this chapter.

### Progress made so far

- Good overall innovation performance relative to the level of economic development.
- Fast growth of the ICT sector as a significant contributor to economic growth and growth in ICT services exports.
- Relatively strong performance on creative outputs.
- Improvements in business skills, as evidenced by more enterprises receiving international quality certification.

### Challenges ahead

- Linkages between universities and the business sector remain underdeveloped.
- Investment in R&D in both the public and private sector remain low, hindering the exploration of innovative products and processes.
- Human capital is not fully exploited because of a lack of investment in skills training for the labour force.
- Knowledge transfer has room for further improvement by attracting higher levels of inward FDI.

## Notes

- <sup>1</sup> For more in-depth assessments of the innovation performance of individual countries, see the UNECE's national innovation performance reviews of Armenia, Belarus and Ukraine and the Innovation for Sustainable Development Review of Georgia (forthcoming): <http://www.unece.org/innovationforsustainabledevelopmentreviews.html>.
- <sup>2</sup> See the discussion of survey evidence in the country chapters. The data are drawn from national and international surveys, which differ somewhat in their methodologies and cover different years between 2017 and 2019. Belarus shows the highest share of innovation active firms among the six EESC countries, at 24.5 per cent.
- <sup>3</sup> UNECE (2007), *Creating a Conducive Environment for Higher Competitiveness and Effective Innovation Systems – Lessons Learned from the Experiences of UNECE Countries*. United Nations. New York and Geneva. <http://www.unece.org/fileadmin/DAM/ceci/publications/icp.pdf>.

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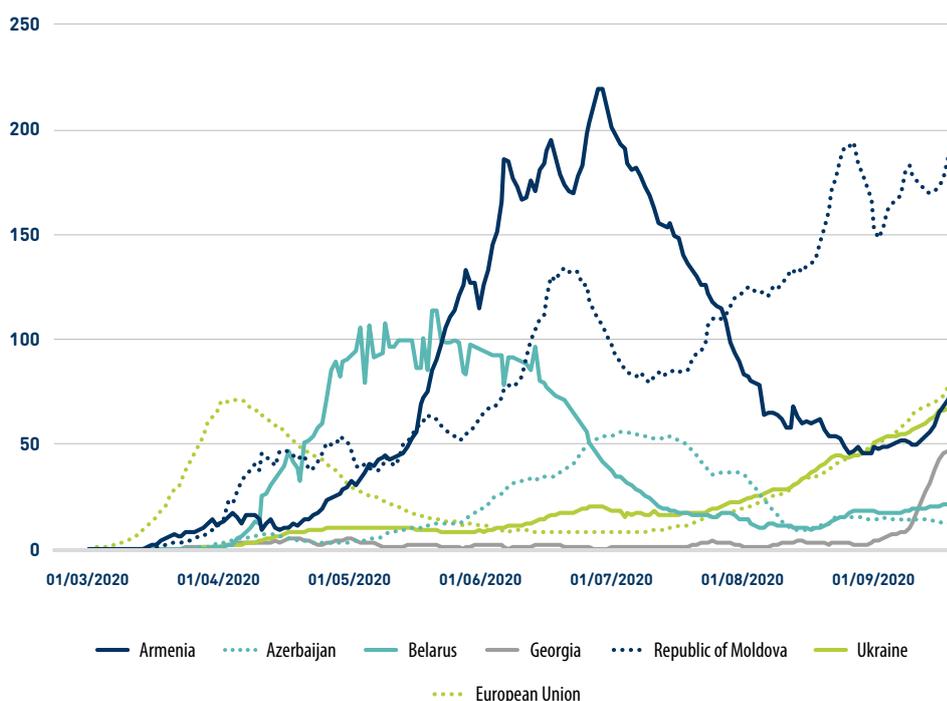
## Chapter III

# EESC ECONOMIES IN THE FACE OF THE COVID-19 PANDEMIC

## Socioeconomic impact on the sub-region

The COVID-19 pandemic and the associated lockdown measures have significantly affected the economies and societies of the six countries of the EESC. Infections started to occur in March 2020 and rose quite rapidly in the following months. From June to August 2020, new cases tended to decline; however, as of the end of September, all except Azerbaijan were experiencing an increase again. This included the two countries that did not have large caseloads initially: Georgia and Ukraine (figure III.1).

**Figure III.1 · COVID-19 cases, EESC sub-region and EU,  
March–September 2020**  
(Per million population, seven-day moving average)



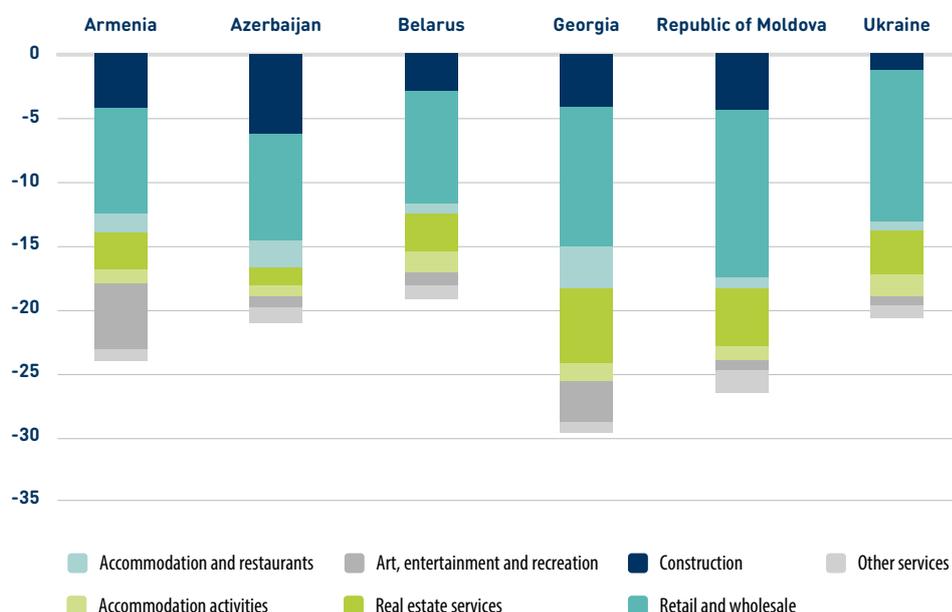
Source: UNECE, based on data from WHO (2020b) and the World Bank (2020).

Governments responded to the pandemic by introducing a variety of containment measures, including closures of educational establishments, shutting down of restaurants and stores of non-vital significance, restrictions on public gatherings, social distancing measures and restrictions on intraregional and international mobility. Containment strategies have varied across countries, with Georgia introducing relatively far-reaching restrictions early on and Belarus taking the least restrictive approach. Some restrictions were lifted subsequently, in part in response to declining infection rates and in part in an effort to limit the negative impact of restrictions on economic activity. As cases were rising again at the time of writing, it had become clear that a return to normal would not be possible for quite some time.

Although global growth has been projected at –4.9 per cent in 2020 because of the pandemic (IMF, 2020c), the economic impact of COVID-19 on the EESC countries has been estimated as a range from –1.5 per cent (Armenia) to –7.7 per cent (Ukraine) in real GDP growth in 2020 (IMF, 2020b). According to estimates by the Organization for Economic Cooperation and Development (OECD) of the potential immediate impact of containment measures on the EESC economies, the sectors most affected by the pandemic – tourism and proximity services – accounted for 30–40 per cent of total output. Retail and wholesale trade, construction and real estate services bore the highest costs. The slowdown of global economic activity, and in particular trade with major partners such as the EU and the Russian Federation, as well as the decrease in remittances, which account for up to 10 per cent of GDP in Armenia, Georgia, the Republic of Moldova and Ukraine, have all contributed to economic decline. Increased government spending in response to the pandemic and declining tax revenues because of it have led to widening budget deficits and greater pressure on public finances, against a backdrop of shrinking reserves and foreign currency assets across the sub-region (OECD, 2020).

The pandemic has also had an important negative social impact on EESC economies that are characterized by high levels of informality<sup>1</sup> and unemployment, as well as low household savings and high reliance on remittances. This has left a significant proportion of the population highly vulnerable to the crisis induced by the pandemic.<sup>2</sup> For example, the share of vulnerable workers who have limited access to traditional forms of income support is particularly high in Azerbaijan, Georgia, the Republic of Moldova and Armenia (OECD, 2020). In addition, those employed in the informal sector cannot count on teleworking arrangements and State support, and they often have no or low personal savings. They are therefore often obliged to continue working on-site even where social distancing measures are inadequate, thus increasing their risk of infection. If in normal times the informal economy acts as a hedge against economic downturns, the unprecedented nature of the pandemic-induced crisis, resulting in lockdowns and border closures, hit hard the sectors in which informality is prevalent, such as proximity services, cross-border trade and transport. In this regard, EESC governments are confronted with a double challenge when designing health measures and administering support policies to households and businesses: supporting not only the formal economy but also the informal sector, and developing, to the extent possible and given the scarce data, targeted support for those employed informally and most likely being disproportionately affected by the pandemic. More generally, the digital divide – the fact that in many countries a significant part of the population does not have adequate access to

**Figure III.2 · Potential impact of containment measures on activity in EESC countries (Per cent of GDP)**



Source: OECD (2020).

Note: These estimates are based on the methodology for estimating the impact of the containment measures on output in OECD countries.

the internet – has become an even more pressing issue during the pandemic than it was before, as workers who lack connectivity are more likely to be exposed to health risks because they cannot telework and are more likely to lose their jobs entirely, and students who lack connectivity risk falling behind in their education.

## Economic and social policy responses in the EESC sub-region

EESC governments have put in place policy measures to cushion the immediate socioeconomic impact of the pandemic. By helping businesses avoid bankruptcy and mass layoffs, some of these measures may also support the recovery of economic activity once the pandemic is under control. By contrast, there is little evidence so far of policies aiming to lay the groundwork for building a more sustainable economy in the medium and longer term. Along with health measures, governments have provided financial support to businesses, including through tax relief packages targeting small and medium enterprises (SMEs) and support for selected sectors (for example, tourism in Georgia, agro-food in Armenia), subsidizing salary payments and increased social assistance to households and vulnerable groups of population (for example, for obtaining necessary supplies). Some countries, such as Armenia and Georgia, passed legislative amendments to increase employee protection and promote remote work. EESC countries have adapted their monetary policy to respond to the pandemic and have benefited from large amounts

of donor support (such as loans from the EU, the European Bank for Reconstruction and Development (EBRD) and the World Bank). The governments have also established dedicated platforms to provide citizens with current information on the situation (table III.1 offers more detail on economic and social policy responses).

**Table III.1 COVID-19 policy responses of EESC countries**

Country	Fiscal support	Salary policy	Social policy	Business support policy
<b>Armenia</b>	\$3 billion	Partial wage subsidies	Increased benefits, one-off transfers to specific population groups, utility payment support	Subsidised two- to three-year loans to affected businesses and SMEs, direct subsidies to SMEs and businesses to help maintain employees, grants to entrepreneurs and firms
<b>Azerbaijan</b>	\$1.5 billion	Partial salary subsidies	Increased benefits, one-off additional social payments to certain individuals	Tax exemptions and tax payment deferrals, loan guarantees
<b>Belarus</b>	\$2–2.5 billion announced <sup>a</sup>	Partial wage subsidies, salary bonus for health care workers	Increase in other benefits, <sup>b</sup> price controls for medical masks and disinfectants	Certain loan payment holidays, rent payment deferrals, tax relief measures
<b>Georgia</b>	\$1.1 billion	Partial wage subsidies, financial assistance to those who lost their jobs	Increased benefits, one-off and recurring payments for certain population groups, utility payment support	Credit guarantee scheme of GEL 330 million, interest rate subsidies, tax exemptions and deferrals, grants, accelerated value added tax refunds and exemptions (medical goods), targeted support (e.g. co-financing mechanism for small and medium family hotel industry)
<b>Republic of Moldova</b>	\$2.7 billion	Partial wage subsidies, unemployment benefits increased (by 55 per cent)	Increased benefits (e.g. minimum amount of “guaranteed monthly income” for low-income families increased by almost 20 per cent)	Tax relief for affected sectors, tax payment deferrals, suspension of tax audits and controls, VAT refund programme (1 May–31 December 2020) of LEU 1 billion (\$56 million), grants and co-financing of interest rates, exemptions from patent payments
<b>Ukraine</b>	\$2.4 billion	Increased salaries for medical personnel, partial wage subsidies	Increased benefits, one-off payments to certain groups of population, utility payment support, price regulation for certain goods	Cancellation of tax payment penalties, moratorium on tax audits and inspections, tax exemptions and deferrals, expansion of 5-7-9 subsidized loans programme for SMEs

Sources: IMF (2020a); OECD (2020); Gevorkyan (2020); UNECE (forthcoming a and b).

<sup>a</sup> This amount includes \$0.7 billion allocated under Presidential Decree No. 178, “On temporary state support measures of employers and certain categories of population” (Belarus, President, 2020).

<sup>b</sup> For example, delivery of food and medicines to elderly and persons with disabilities, and care leave to workers with children under 14.

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## Innovation policy responses to the pandemic

Innovation can play a crucial role in addressing the unprecedented challenges caused by COVID-19.<sup>3</sup> It is essential for finding solutions to cope with the pandemic itself and with the immediate impact of the associated lockdown measures. It is also essential to ensure longer-term recovery, to build back better, in line with United Nations Agenda for Sustainable Development 2030.

In fact, one of the lessons of past crises is that successful innovators are the ones who thrive, not only once the crisis has been overcome, but often already during the crisis. Beyond the general decline in economic activity and the pattern of different sectors being affected to differing degrees, a closer look reveals a differentiated picture where even within the same sector, some companies succeed in creating or scaling innovative products, services and business models that respond to the new economic realities created by the pandemic and the lockdown measures. At the same time, many companies respond to crises by scaling back investment, including in RDI, in part because they shun the risk, but also often because of liquidity constraints.

Experience suggests that governments have a key role to play in sustaining innovative activity during crises. Governments, including in the six countries under review here, continue to mobilize considerable fiscal resources to cushion the short-term blow from the pandemic. By allocating some of these resources to innovation support measures, rather than to measures preserving existing businesses only, and in particular by supporting innovation in fields that enhance sustainability, governments can in principle counteract the immediate negative effects of the pandemic while supporting a more sustainable future.

The EESC countries have put in place innovation policy responses to cope with the crisis, mobilizing the innovation ecosystems to find solutions to pandemic-induced challenges. Thus, consultations were held within the framework of the national science, technology and innovation (STI) institutions, such as the State Committee on Science and Technology (SCST) (Belarus), the National Academy of Sciences (Ukraine) and the Ministry of Education (Republic of Moldova), with initiatives to create viable solutions by increasing COVID-related medical research, including through grants. At the same time, a lack of State funding and heavy reliance on donors for the implementation of these undertakings can put their sustainability in question.

With State support, a number of initiatives for innovative companies have been launched, seeking to use their potential in addressing health care and other challenges caused by the pandemic. Dedicated hackathons called “coronathons” were held by Georgia’s Innovation and Technology Agency, and in Ukraine with the support of the Ministry of Digital Transformation. In Armenia, the Ministry of High-Tech Industry announced a grant programme for innovative solutions for combatting and preventing the spread of COVID-19. As a result, new masks, respiratory devices, public e-services and IT solutions have appeared across the EESC countries. In the Republic of Moldova, a national COVID-19 platform gathering about 50 R&D solutions was established and several IT companies have developed a monitoring tool for quarantined people.

The pandemic has also prompted investment in fintech in Azerbaijan, as a few banks announced the establishment of dedicated tools (for example, the Innovation Centre of the International Bank of Azerbaijan), and the Government has expressed its resolve to accelerate efforts to bridge the digital divide through innovative solutions and greater engagement of the private sector in this regard.

When it comes to general enterprise dynamics in the context of the pandemic, the EESC countries have witnessed companies introducing innovations in marketing and organization methods and increasing their investment in digitalization to allow for remote operations and sales. The IT sector, which has been relatively strong in the sub-region, has not seemed to suffer from the crisis, with some companies experiencing growth in sales and revenues, as well as in the number of employees.

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## Going forward

As the recovery prospects for the EESC countries vary from more optimistic predictions of V-shaped recovery by the International Monetary Fund (IMF) and the EBRD to more pessimistic expectations of a possible L-shaped scenario by national stakeholders,<sup>4</sup> one thing is sure: governments should step up their efforts to support and promote innovation activity in the sub-region to ensure an efficient and sustainable long-term recovery. As first steps, EESC policymakers could consider the following:

- Enhancing efforts to bridge the digital divide across the sub-region and establishing an inclusive digital economy would help to cushion the effects of this and potential future crises.
- Moving forward with the implementation of structural reform to regain declining investor confidence and attract investment that drives technology and knowledge transfer should be high up on the COVID-19 policy agenda for EESC governments.
- Providing new opportunities for industry-science collaboration in various areas, including regional initiatives, could also help develop solutions for and better anticipate future shocks, while collective efforts hold great potential for addressing common regional challenges in innovation.
- A dedicated platform that builds on the national and international practices in innovation policy responses would help EESC governments to exchange experiences and share knowledge, as well as to establish regional mechanisms and tools for sustainable post-pandemic recovery. The IPO has an important role to play in this regard in gathering important expertise and knowledge of the EESC sub-region and providing a platform for discussions for innovation policymakers from the sub-region and beyond.

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## Notes

- <sup>1</sup> According to IMF estimates, the size of the informal sector varies from 30 per cent of GDP in Belarus to 50 per cent in Georgia.
- <sup>2</sup> Vulnerable workers are self-employed individuals without employees or contributing family workers.
- <sup>3</sup> The information for this section is based on desk research and a series of dedicated interviews conducted in June–July 2020 with national experts from the six EESC countries.
- <sup>4</sup> Based on the interviews conducted by UNECE in June 2020 with public and private stakeholders from the EESC sub-region.

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## Chapter IV

# INNOVATION POLICY GOVERNANCE: SUB-REGIONAL TRENDS AND FINDINGS

This chapter describes recent developments in the EESC countries in innovation policy and governance. All EESC countries have established ambitious goals for enabling innovation-led sustainable development. Considerable progress has been achieved in establishing new institutions with responsibilities for science and innovation and improving legal frameworks for entrepreneurship and innovation activities. Yet, in most EESC countries legal gaps still hinder the growth of innovation-led sustainable development. Special areas of concern include venture capital investment, insolvency and FDI. National institutional frameworks are still nascent. Therefore, institutions often lack clear mandates and coordination mechanisms. Innovation policymaking remains fragmented, decreasing the efficiency and effectiveness of policy interventions. Over the last five years, the EESC countries have launched new national strategies oriented to supporting innovation, education and industrial development. To maximize the impact of policy initiatives, these countries need to foster synergies among different policy domains and strengthen positive socioeconomic externalities.

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## The importance of sound innovation policy governance for EESC countries

Innovation-led sustainable growth requires a system that allows, encourages and rewards experimentation with new ideas. Such innovation results from interaction among governments, businesses, research institutes and individuals within a national innovation system that systematically enables and promotes experimentation with new ideas. Central to innovation policy is to develop and enhance such systems, supporting not only the generation but also the implementation, scale-up and proliferation of innovative ideas across the economy and government (Borrás and Edler, 2020). This makes it imperative for policies and institutions to enable and encourage networking among innovation stakeholders and to remove regulatory bottlenecks that inhibit knowledge-sharing and the co-creation of value.

Such systems, as chapter I notes, require substantial development in the sub-region. Such development includes but extends far beyond the remit of innovation policies on research, technology and start-ups. This extension, in turn, relies on careful and systematic alignment, coordination and synergies among policies and institutions across domains from education to infrastructure and procurement to the private sector (addressing SMEs, industry, regional development and entrepreneurship).

Full-fledged national innovation systems require strong yet flexible and transparent institutions with clear mandates. Rule of law, sufficient legal protection and clear rules of the game are the foundation of such efforts, but countries also need a layer of innovation intermediaries to enable and encourage experimentation and interaction. Much potential will lie in unexpected sectors and policy areas – given, for instance, the significant demand inherent in public procurement (more than 10 per cent of GDP in the sub-region), the opportunity to use it as a driver of innovation is substantial (OECD, 2015). This opportunity remains unexploited in the sub-region, barely featuring in the innovation or procurement strategies and action plans of any of the six countries.

Sound governance of innovation is essential for sustainable development. Such governance rests on the ability to efficiently allocate available resources with maximum impact and to systematically align support with long-term priorities, such as the SDGs. National governments need to systematically enable and encourage innovation as the leading means to create and scale up the elements that will underpin long-term, sustainable development.

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## The pillar I assessment framework

Pillar I, innovation policy governance, assesses the quality of innovation policies and institutions across the six countries in the EESC. It covers the overarching institutional and legal framework, policy coordination and institutional capacities. The first sub-pillar, which pertains to the innovation policy framework, assesses the nature, objectives and complementarities of the system, showing its links with overarching and related strategies and objectives; the nature, consistency and robustness of targets, links and mechanisms for implementation; and the overall legal and institutional frameworks. The second sub-pillar, on innovation policy coordination, looks at the structure and mechanisms for aligning and coordinating policies relevant to the broader innovation system – across ministries, levels of government, levels of implementation and internationally.

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## Sub-regional findings

### National innovation strategies

All EESC countries espouse strong political and societal commitments to innovation and education as being central to sustainable development. This can be clearly seen through the flourishing of initiatives to put in place comprehensive innovation policies and strategies, to improve and streamline the regulatory environment, and to set up new institutions. Among recent or ongoing initiatives:

- Armenia is developing a national innovation strategy that will prioritize research areas and industrial sectors and unite national stakeholders.
- As part of its broad drive for economic diversification, Azerbaijan is planning to adopt a national innovation strategy in 2020, seeing it as central to achieving the SDGs.

- The Belarusian National Science and Technology Strategy 2018–2040 seeks to strengthen the research base in the country and lay the foundations for innovation-led economic growth, while regular technology foresight exercises inform programming (with support from UNECE).
- The national innovation strategy for Georgia, slated for adoption in 2020, aims to boost innovation by building on strengths and potential – encompassing policy areas beyond research and technology start-ups in a single document for the first time.
- The Republic of Moldova’s National Programme for Research and Innovation, adopted in August 2019, unifies previously fragmented elements of innovation policy, fostering synergies among them.
- The Ukrainian National Innovation Strategy 2030 aims to close legal gaps, strengthen entrepreneurship and improve the national innovation infrastructure.

Clear signs of progress are visible, but the IPO analysis noted several recurring shortcomings. Overall, innovation strategies reflect two systematic prejudices: the first towards a narrow definition of innovation as limited to research, frontier technologies and start-ups; the second towards the needs of existing economic activities and interests. There is an overwhelming focus on frontier technologies and high-tech industries and start-ups, neglecting the potential for innovation in most of the economy and in the public sector. The same goes for the consistent emphasis on product innovation, to the detriment of innovations in processes and marketing and experimentation with new business models. These shortcomings are important to address systematically, given the long-term problems with improving productivity noted in chapter I and the potential for improving corporate governance and firm productivity, as well as the large but underserved potential for innovation in agriculture, services and the public sector.

Despite a long-standing culture of research excellence and commitment to education, the research systems in EESC countries remain fragmented. As a result of the Soviet legacy, basic research is performed mainly by the academies of sciences, and applied research is done by research groups under line ministries, mostly separately from teaching in HEIs. Separation of teaching and research as well as the lack of academia-industry collaboration reduces productivity and undermines the research potential in the EESC countries. Recent reforms of academies of sciences and research systems have taken steps in the direction of improving the effectiveness and efficiency of national research systems, but they remain incomplete. In Georgia, recent reforms downgraded the Academy of Sciences to an association of scholars and a source of science policy. The research capabilities and availability of funding for the Academy are insufficient to enable it to be a driving force for scientific development in the country.

The scarce and gradually decreasing public funding for research goes mainly to public research institutions, while neglecting non-public R&D potential. Public funding is used mainly for basic research. Most of it goes to pay the salaries of research staff, with little left over for research projects, facilities and equipment. Applied and experimental research receive a fraction of public funds in the EESC sub-region, except in Belarus and Ukraine. Support mostly takes the form of institutional grants. Project funding is getting more traction, but it is not widespread yet. Available resources are not sufficient for maintaining

operations, leaving little opportunity to support R&D activities – and the capabilities, capacities and skills of public research organizations are not sufficient for them to use those resources efficiently.

### Complementarities with other policy areas

In line with a broader tendency among EESC countries for line ministries to have few effective coordination mechanisms on specific topics, there are also few avenues for systematic coordination and for generation of synergies, not only within the remit of innovation strategies, but also among innovation strategies and a broad range of relevant policy areas. Nevertheless, innovation features as an important enabler and a cross-cutting theme in several strategies on education, SMEs and sustainable development. In the Republic of Moldova, the ICT Industry Competitiveness Road Map 2023 supports digital innovation in both the public and private sectors. By improving the supply of IT specialists, strengthening ICT infrastructure and creating favourable conditions for doing business, as outlined in the road map, the country seeks to accelerate digital transformation. Similarly, the national industrial strategy of Armenia seeks to promote leapfrogging to more advanced industrial stages through innovation. Broadly, few systematic mechanisms exist in the EESC countries for translating long-term strategies into short- and medium-term programming. Not all national strategies link clearly to sufficient funding commitments from the national budget, and many are downscaled and even abandoned for this reason.

#### Box IV.1

#### International best practices: research excellence initiatives

Sweden's innovation agency, Vinnova, launched the VINN Excellence Centres to improve the quality of research, contribute to socioeconomic development and foster closer collaboration between academia and industry. Participation in this research excellence initiative helps Swedish research groups to design long-term development strategies and create effective mechanisms for rolling out best practices in governance and research.

Research excellence initiatives like these reinvigorate national research systems by introducing international best practices in the governance of research institutions, robust assessments and evaluations, and improvements in the competitive environment of national research. Research excellence initiatives push research groups and organizations to develop long-term visions for self-sustained development and to collaborate more with international and domestic partners. Another positive effect is stronger links among research, teaching and business through joint graduate programmes and commercialization projects.

The EESC countries can consider launching research excellence initiatives as part of larger reforms of national research enterprises. Excellence centres can serve as driving forces for higher research productivity and greater alignment of research with the needs of socioeconomic development.

*Source:* OECD (2016), Hellström (2013).

## Institutional frameworks

Institutions in charge of innovation policy in EESC countries are changing rapidly, with several reforms of existing bodies and the creation of new ones. Institutional changes occur against the backdrop of broader, overarching reform programmes. Some efforts are also under way to promote public sector innovation: In 2017, Ukraine introduced policy directorates across the Government to build capacities for and streamline the process of designing policies. At this writing, Ukraine is shifting the role of State departments from public service providers to “policy hubs”, to build capacities in designing and formulating policies.

In 2019, Azerbaijan set up a dedicated innovation agency to support research commercialization, knowledge transfer and business innovation, as well as a new Department of Innovative Development and E-government in the presidential administration, responsible both for the support of public and private sector innovation and for digital government. A clear division of roles and functions among the innovation policy actors in Azerbaijan is still emerging. Other EESC countries have established government units to introduce innovative approaches and share best practices in policymaking.

Setting up institutions is not enough: policy design, practice and results-based management have to be effective, flexible – and themselves innovative. Public innovation labs, for instance, may also collect and spread expertise and ideas. Two such EESC initiatives have received international recognition:<sup>1</sup> The Armenian SDG Innovation Lab aims to generate and test ideas based on behavioural science and data analysis, in support of SDGs across the public sector. The Azerbaijani Service and Assessment Network promotes innovation for improving public services and interventions through digital government.

## Legal frameworks

Despite substantial progress over the past decades, the legal frameworks in EESC countries, as noted in chapter I, still contain gaps, overlaps and unintended incentives that impede the systematic experimentation with new ideas that will underpin sustainable development. The lack of clear legal definitions of start-ups, spin-offs and even innovation, for instance, hinders development of legal instruments for effective and targeted support initiatives. Special areas of concern are regulations on business insolvency, taxation and FDI, especially in terms of targeting positive, innovation-related spillovers and attracting venture capital. Although the EESC sub-region has made progress in aligning intellectual property rights (IPRs) with international standards, IPR protection is not fully and systematically enforced. Limited abilities in the judicial system to adjudicate IPR-related cases also result in lower IPR protection (OECD et al., 2020).

A significant barrier to achieving innovation policy objectives in the EESC countries are overlapping, inefficient and outdated laws and regulations, many of which protect incumbents and impede competition and innovation. Research and innovation are regulated so tightly that there is little room for business experimentation, and compliance alone is often burdensome. This makes it imperative that policymakers continuously reduce complexity, review and remove or mitigate legal barriers to experimentation (a vibrant innovation system includes substantial elements of what Munger (2018) terms “permissionless innovation”), and ensure market competition rather than protection of entrenched interests and rent-seeking.

## International cooperation

Apart from Ukraine, the EESC countries are constrained by the limited size of their domestic markets, which impedes both innovation and the scale-up of things that work. Sustainable development requires further economic integration with the outside world, through trade, investment and networking. Most EESC enterprises fail to benefit from the potential of economic integration and global value chains. Many industrial standards and certification services remain incompatible with the norms of the EU and the Eurasian Economic Union (EAEU), and the organizational and managerial capacities of SMEs pose binding constraints on more systematic exploration of opportunities for them.

The EESC countries need to maximize the potential innovation spillovers from export diversification and from efficiency-seeking and strategic FDI in particular (see chapter I). Some have set up export promotion functions over the past decades (at times through dedicated agencies, such as AZPROMO in Azerbaijan, BELEXIA in Belarus and the Ukrainian Export Promotion Office). In addition to financial support, Enterprise Georgia offers SMEs training, grants for exhibitions and support for international certificates. In Azerbaijan, both the Small and Medium Business Development Agency and the new Innovation Agency support internationalization, and in Ukraine the Investment Promotion Office (UkraineInvest) also fosters business linkages with international partners.

## Innovation policy coordination

Many EESC innovation agencies are still nascent, and cooperation between them and incumbent institutions is poorly structured. Although many policy domains include innovation as an instrument for solving specific challenges, overarching coordination of innovation policy in EESC countries is missing or patchy. That can lead to fragmented policy initiatives and consequently to lower effectiveness. Innovation support should be carried out through a mix of policies and from the perspective of the national innovation system.

Recognizing this issue, several EESC countries have set up high-level councils to coordinate innovation policy, with representation from relevant line ministries, academia and the business community. Commonly, however, these initiatives are ineffective, have unclear mandates, do not meet regularly or are not even operational. The State Committee for Science and Technology of the Republic of Belarus is operational, but its mandate is limited to research and technology – not innovation defined broadly. Neither the Georgian Research and Innovation Council nor the Ukrainian National Science and Technology Council is fully functional. Armenia, Azerbaijan and the Republic of Moldova do not have high-level institutionalized bodies to coordinate innovation policy.

Yet high-level councils can solve only part of the problem. Similar structures – with clear links to the overarching body – are necessary at the working level, such as to oversee interministerial work on specific thematic areas. Coordination working groups can make it possible for government authorities to communicate more frequently about issues that arise in coordinating innovation policy. At the same time, effective coordination requires a shift in the culture of the public sector towards a more open and collaborative network.

## Box IV.2

### International best practices: research and innovation councils in OECD member countries

Many OECD member countries have created research and innovation councils outside of line ministries to advise on the design of research and innovation policy, and in some cases to coordinate across government (Borowiecki and Paunov, 2018). The Finnish Research and Innovation Council, set up in 2016 and chaired by the Prime Minister, serves as an important platform for informing and monitoring different strands of innovation policy. It also involves non-government stakeholders. The Spanish Council for Scientific, Technological and Innovation Policy, founded in 2016, is the major coordinating body informing the Spanish Strategy of Science, Technology and Innovation and the State plans for research and innovation. It secures interministerial and interregional coordination, and systematically strengthens coordination efforts that generate synergies. Both show that strong, clear mandates as well as broad engagement and high-level support are important elements if such bodies are to operate efficiently.

Source: EC and OECD (2020).

## Conclusion

The EESC countries need to create and continuously adapt the policies, institutions and rules that best enable and promote experimentation with new ideas. This effort should include comprehensive policies and strategies, transparent public institutions and governance, effective rules of the game, and continuous dialogue and policy coordination. It should encompass the business and regulatory climate, ranging from competition policies to property rights, and fundamentals, such as hard and soft infrastructure. It should cover innovation in the public sector as well as in all existing and potential private sector activities, including traditional industries, services and agriculture.

## Pillar I IPO evaluation and recommendations

### Achievements

- ✓ Innovation policy is at the centre of the political agenda.
- ✓ New national innovation strategies have been developed and new institutions in charge of innovation policy established during the last two years.
  - ✓ Reforms of legal frameworks are ongoing.

Area for improvement	Recommendation
<ul style="list-style-type: none"> <li>• Government agencies have insufficient capabilities to support innovation policy.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Improve the capabilities and skills of the public sector to design, formulate and implement innovation policy initiatives effectively.</li> <li>✓ Give special attention to improving communication and cooperation between sectoral ministries.</li> </ul>
<ul style="list-style-type: none"> <li>• The efficiency and effectiveness of public funding of R&amp;D are low.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Improve the capabilities of government authorities in charge of innovation policy to manage human and financial resources more efficiently and systematically enable, pilot and encourage alignment and linkages with private sector demand as well as the commercialization of results.</li> </ul>

Pillar I IPO evaluation and recommendations (Concluded)	
Area for improvement	Recommendation
<ul style="list-style-type: none"> <li>Funding of R&amp;D and strategic initiatives in innovation is low.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Improve the governance quality, accountability and transparency of public institutions.</li> </ul>
	<ul style="list-style-type: none"> <li>✓ Ensure sufficient public funding of research and innovation and move from suboptimal financing mechanisms to new arrangements for allocating funding.</li> </ul>
	<ul style="list-style-type: none"> <li>✓ Explore alternative funding sources by leveraging private and international sources.</li> </ul>
<ul style="list-style-type: none"> <li>Legal and institutional frameworks are not sufficiently developed to support innovation policy.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Improve the enforcement of laws and regulations without creating barriers for innovation activities.</li> </ul>
	<ul style="list-style-type: none"> <li>✓ Enable permissionless innovation to spark greater experimentation and creativity.</li> </ul>
	<ul style="list-style-type: none"> <li>✓ Address legal gaps in regulations on venture capital investment, insolvency, start-ups and spin-offs.</li> </ul>
	<ul style="list-style-type: none"> <li>✓ Fully harmonize legal frameworks – in particular those related to IPR protection – with international standards and best practices.</li> </ul>
	<ul style="list-style-type: none"> <li>✓ Remove regulations that protect entrenched interests.</li> </ul>

Source: UNECE.

## Note

<sup>1</sup> Arkun, A. (2019), National Sustainable Development Goals Innovation Lab pioneering for Armenia and the world, *The Armenian Mirror-Spectator*, 8 August, <https://mirrorspectator.com/2019/08/08/national-sustainable-goals-innovation-lab-pioneering-for-armenia-and-the-world>; Azerbaijan, Government (2020), “ASAN service” was awarded with the United Nations Prize, 12 October, <https://asan.gov.az/en/award/asan-xidmet-bmt-nin-muekafati-ile-telif-edildi>.

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## Chapter V

# INNOVATION POLICY TOOLS: SUB-REGIONAL TRENDS AND FINDINGS

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## The importance of effective innovation policy for EESC countries

Effective innovation policy supports the innovation eco-system along the entire innovation process. It requires policy tools to support businesses in absorbing existing knowledge and technology, particularly from abroad, something that is very important for small, open, middle-income economies like the six countries covered in this IPO. They are still relatively far from the global knowledge frontier and there are wide productivity differences across companies within sectors. These countries can therefore reap significant productivity gains by adopting and adapting existing state-of-the-art technology and business models.

Effective innovation policy also requires tools that promote domestic innovation, whether it is based on domestic R&D or on foreign knowledge. Moreover, it needs tools to develop and strengthen the linkages between key actors in the innovation ecosystems, particularly between business and science. Policy tools are also needed to support the diffusion of knowledge throughout the economy so that innovation processes can build effectively on existing knowledge and experience and can become cumulative. Finally, policy tools are needed to support domestic education and science as key sources of skills and new knowledge that are indispensable for sustained innovation.

Effective innovation policy should stimulate innovation across the economy, rather than in a subset of technology start-ups and R&D firms. Therefore, governments should complement tools to support product development and high-technology manufacturing across the sub-region with support measures for public sector innovation and improved management capacity. Furthermore, they should mobilize direct support to individual projects in the form of financial incentives and collaborative programmes, as well as demand-driven policies, to enable firms to commercialize innovative ideas and to provide an integrated and comprehensive response to present challenges. Frontier technologies, increasingly ubiquitous and affordable connectivity, the potential for digitizing and automating business and production processes, and the growing role of digital platforms in reducing transaction costs and creating a range of opportunities for entrepreneurship and sustainable development all present a range of opportunities for EESC economies and societies. Nonetheless, policies and institutions need to have the means and capacity to adapt rules and target support so citizens can benefit from them more systematically. Linkages are particularly important in a vibrant innovation system, helping firms scout demand, explore opportunities and transfer experiences. Networking platforms,

innovation infrastructure and targeted support mechanisms are essential elements (EBRD, 2019). As chapter 2 notes, transition economies need a broader definition of innovation if they are to unlock their scientific potential, while combining new activities with traditional sectors to upgrade domestic businesses and help them move up in global value chains (Kleibrink, Larédo and Philipp, 2017).

## The pillar II assessment framework

Chapter IV presented sub-regional findings on innovation strategies, innovation policy governance and institutions. This chapter assesses the sub-regional evidence on innovation policy tools in terms of their quality, scale, scope, stage of implementation, impact and fit with the challenges to and opportunities for innovation in the respective countries and the sub-region. The first sub-pillar, *Knowledge absorption*, assesses the support for assimilating external knowledge and overall business development. The second sub-pillar, *Innovation promotion*, looks at the instruments that stimulate competition and provide incentives for investment in R&D activities. The third sub-pillar analyses *Relationships and linkages*, including innovation platforms that enable and encourage linkages between academia and business, as well as the infrastructure necessary to create an innovation system. The fourth sub-pillar assesses policy support for *Knowledge diffusion* within the economy, namely mechanisms that ensure equal and widespread access to information and demand-side policies, innovation brokerage schemes, standardization, and digitalization. The fifth sub-pillar, *Research and education*, evaluates policies to promote science, technology, engineering and mathematics (STEM) in higher-education institutions (HEIs), as well as fundamental and applied research, and cross-border cooperation on research.

## Sub-regional findings

Reflecting the strong commitment of the EESC countries to innovation (chapter II), all have in place national innovation development programmes and related initiatives and measures, as part of overarching strategies for economic and sustainable development.

- The Digital Transformation Agenda 2030 of Armenia includes a series of short-term programmes for creating smart e-government, developing a digital labour force and enhancing cybersecurity, as well as investing on a large scale in expanding digital infrastructure.
- The Innovation Ecosystem Map of Azerbaijan outlines innovation development needs, policy support measures, currently implemented projects and proposed legislation for creating a national innovation ecosystem.
- The Belarusian State Programme on Innovation Development 2016–2020 includes 75 projects implemented to support the development of new industries with innovative potential in high-technology sectors.
- In Georgia an overarching project for innovative development is conducted with international support. The Georgia National Innovation Ecosystem (GENIE) project consists of broad-based investment in developing innovation infrastructure, digitalizing and supporting innovation activity in the private sector.

- The Republic of Moldova’s National Programme for Research and Innovation 2020–2023 outlines improvements to the national research and innovation system, including implementing projects for research collaboration and mobility, human capital development, smart specialization and international cooperation.
- The draft action plan of the Innovation Development Strategy 2030 of Ukraine outlines policy tools aimed at improving the innovation infrastructure, education in innovation and technology transfer, conditions for commercializing research and digitalization.

## Sub-pillar I: Knowledge absorption

Absorbing external knowledge is essential for companies to innovate efficiently, particularly in transition economies, where significant productivity gains can be achieved when more companies adopt state-of-the-art organizational practices, business models and technologies. This requires specific managerial and organizational skills. The EBRD Business Environment and Enterprise Performance Survey (BEEPS) V (EBRD, 2020)<sup>1</sup> first identified the strong correlation between low levels of management quality and low labour productivity in the EESC sub-region in 2014 (see chapter II). Apanasovich et al. (2016) find significant positive correlation between organizational and technological innovation, providing evidence for the hypothesis that learning by doing could be the most efficient way to generate product innovation. These findings are confirmed by several other studies that conclude that good organizational and managerial practices heavily influence the adoption of external knowledge and have a large impact on innovative development within transition economies (OECD, 2017; EBRD, 2019).

Measures to develop organizational and managerial competencies are evident across the sub-region, including flourishing initiatives and new institutions. Almost all EESC countries have established government agencies dedicated to developing SMEs (Armenia, Azerbaijan, Georgia, the Republic of Moldova, Ukraine) (table V.1).

**Table V.1 EESC government agencies for SME development**

Country	Government agency	Year established	Jurisdiction
<b>Armenia</b>	Fund Investment Support Centre (ISC) <sup>a</sup>	2002	Ministry of Economy
<b>Azerbaijan</b>	Small and Medium Business Development Agency (SMBDA)	2017	Ministry of Economy
<b>Georgia</b>	Enterprise Georgia	2014	Ministry of Economy and Sustainable Development
<b>Republic of Moldova</b>	Organization for Small and Medium Enterprise Sector Development (ODIMM)	2007	Ministry of Economy and Infrastructure
<b>Ukraine</b>	SME Development Office (SMEDO)	2018	Ministry of Economic Development and Trade

Sources: UNECE.

<sup>a</sup> Formerly known as the SME Development National Centre (SME DNC).

These institutions improve entrepreneurial skills and organizational effectiveness in SMEs through business management programmes, consulting and training. But the ability to experiment with and absorb new ideas is particularly limited in SOEs, which still dominate a significant portion of the sub-regional economy. Civil service councils and academies provide training and re-training of public sector personnel in several EESC countries (Belarus, the Republic of Moldova, Ukraine). Yet overall, more needs to be done to promote good organizational and managerial practices, because low managerial skills represent a major constraint on innovative development and productivity growth.

Technical and business services in the EESC sub-region are mainly supported through donor-funded initiatives, such as the EBRD Advice for Small Businesses programme. Although no national schemes or institutions are dedicated to these services, SME agencies provide some relevant consulting, marketing and financial services. Several state agencies across the EESC sub-region provide online registers of private providers (Armenia, Georgia, the Republic of Moldova); however, a broad and sustained market for technical and business services has yet to emerge, in part because of a lack of quality assurance mechanisms and in part because businesses are not sufficiently aware of service availability.

Recent years have also seen growth in innovation infrastructure, such as incubators, accelerators, clusters and business support centres. The degree of uptake varies considerably: the OECD SME Policy Index (2020) highlights that SMEs in all six countries have benefitted from support (co-)funded by government in this area, with the highest share in Georgia (48 per cent of SMEs) and the lowest in Belarus (5 per cent). Nevertheless, policy support for innovation infrastructure has not yet been able to give rise to a vibrant, sustainable market. In the absence of such results, broad policy support might consist of ineffective measures and may reflect rent-seeking and crowding out.

Across the EESC countries, fiscal incentives for innovation more broadly, rather than for sectors or SMEs, are scarce and mostly not clearly targeted. Many are limited to free and special economic zones, which focus on only certain industries, such as manufacturing (UNCTAD, 2019). With public or international funding (through partnerships or with donor support), all the EESC countries have established science and technology parks and industrial parks, where resident companies receive tax benefits. In recent years, tax exemptions for innovative companies have been implemented in Armenia and Belarus, and one is under way in Azerbaijan. One of the most important conduits for absorbing external knowledge is importing more advanced equipment and machinery. All countries in the sub-region provide indirect tax incentives for this purpose in the form of exemptions from value added tax and from customs duty on imported equipment and machinery.

Evaluating the effect of fiscal and tax policy on innovative development requires comprehensively assessing the tax framework to identify effective policies and potential areas for improvement in both specific sectors and the economy as a whole. This assessment is particularly important, as the direct and indirect costs of tax incentives can be high, and the effect of some on innovation is usually limited. Innovative companies struggle to break even in the early stages of the innovation process, so reductions in, say, corporate tax would have very little effect on the kind of investment decisions that innovation policy should target.

## Sub-pillar II: Innovation promotion

Chapter I notes the substantial progress among the EESC countries in improving the regulatory environment for business. Beyond the business environment in general, governments can promote innovation by investing in platforms for young enterprises to develop and test innovative ideas. The number of business plan competitions across the sub-region has increased with the growing start-up movement. In addition to an array of start-up events, including project competitions, tours, summits, forums and master classes, national innovation competitions take place in Azerbaijan, Belarus and Ukraine, and cooperative grant competitions take place in Armenia, Georgia and the Republic of Moldova. International donors provide significant support through competitive grants and indirect financial support in the form of mentorship, training and networking opportunities. As of 2020, multiple innovation-based grant schemes are available in Armenia and Georgia, and several funds support innovation in Ukraine and Belarus; Azerbaijan is setting up an innovation grant scheme under its new Innovation Agency. Nonetheless, obtaining financing for further growth has proven difficult for companies in all six countries. It was identified as the principal strategic priority by the EU's EU4Business initiative in 2019 and as a pressing need by the EBRD Investment Summit that year (EU4Business, 2019). It is thus essential to explore the existing and potential synergies between grant schemes and to establish follow-up mechanisms and regular monitoring of competitive initiatives to measure the effect of allocated funds on the growth and productivity of beneficiaries.

Apart from grant schemes, only limited financing instruments provide support for investment in RDI in the sub-region. Credit guarantee mechanisms are used in Armenia and Georgia, and preferential entrepreneurship loans are distributed in Ukraine. In addition, since 2016, the InnovFin programme has been implemented by the European Investment Bank Group in cooperation with the European Investment Fund, further supporting innovation in the sub-region with a diverse set of financing tools. Nevertheless, R&D loans and valued added tax exemptions on innovative goods are largely unavailable, and the private sector investment scene is still emerging – business angels and venture capital investment are relatively new on the domestic markets of all six EESC countries. A publicly co-funded equity investment instrument has been introduced in Belarus, while in Armenia and in Azerbaijan international donors and private investors have supported the introduction of similar elements. Despite the need for seed capital, many entrepreneurs across the sub-region do not engage in fundraising because they lack experience with attracting investment and awareness of potential opportunities.

The innovation landscape in the sub-region has improved in recent years with the expansion of the support infrastructure for technology incubation. With the aim of responding to market needs, all six countries established publicly (co-)funded incubators to assist entrepreneurs in realizing their innovative ideas, often at the premises of HEIs. Incubator activity, however, has not had a tangible positive impact on innovative entrepreneurship. The need for qualified staff, monitoring and evaluation that is spotty and overly output-oriented, and gaps in service portfolios limit both the scope of incubators and the market demand for them. These recurring shortcomings constrain their effect on innovation, which includes a systemic failure to build on and commercialize results from applied research.

### Sub-pillar III: Relationships and linkages

Governments can support innovation ecosystems by facilitating linkages among businesses, and between science and industry, as these linkages support scientists and businesspeople in commercializing research, creating new products and organizational processes. Business networks play an integral role in the economic development of transition economies, functioning as platforms for sharing knowledge, raising visibility and cooperation. Across the sub-region, business networking is supported mainly by chambers of commerce, business associations and unions, as well as private sector development projects. Several specialized SME agencies offer some form of matchmaking service to facilitate business and create strong intrasectoral linkages (Armenia, Azerbaijan, Georgia), and investment promotion offices work towards improving business conduct and the business environment in all six countries, linking foreign investors with domestic counterparts. The pool of contributing entities organizes events that include business training, business-to-business forums and international exhibitions. Although such platforms contribute to the development of business networking, their scope is often limited to ad hoc initiatives and conferencing events, proving insufficient to build strong cooperation among businesses. To develop more effective policies that respond more accurately to market needs, policymakers and industry stakeholders in the sub-region should engage in more systematic dialogue. Among efforts to create such dialogue are Armenia's sectoral councils and the Industry4Ukraine platform co-established by the Association of Industrial Automation of Ukraine and the Council of Entrepreneurs at the Cabinet of Ministers.

In all six countries, clusters are developing, boosting competitiveness, attracting foreign investment and growing exports in promising sectors of the economy. These sectors include ICT (Azerbaijan, Georgia, Belarus, Ukraine), creative industries (Armenia, Georgia, the Republic of Moldova), agriculture (Azerbaijan, the Republic of Moldova, Ukraine), engineering (Armenia, Belarus) and the automotive industry (the Republic of Moldova). Despite the market-driven growth of clusters, innovation policy in the sub-region often lacks a developed policy framework for clusters, mechanisms for collecting data on regional cluster initiatives.

Cluster stimulation and business networks in the sub-region are mainly supported by ad hoc projects funded by donors (the EU, the German Agency for International Cooperation, the United States Agency for International Development). Recent public-private partnerships between governments and private companies are generating significant impacts on innovative development; examples include Armenia's Engineering City (2018) and Azerbaijan's Digital Trade Hub (2019).

Developing an effective innovation ecosystem requires well-functioning and accessible support infrastructure. In addition to technology incubators, all six EESC countries have established diverse infrastructure elements – including science and technology parks, innovation spaces, accelerators and technology transfer centres – differing in scope, structure and activity. Good practices in the sub-region include government initiatives funded by international organizations, such as Georgia's Technopark (established in 2016) and Armenia's Gyumri Technology Centre (established in 2013). They also include government initiatives based on a public-private partnership model, such as Azerbaijan's Innoland Incubation and Acceleration Centre (established in 2016), as well as international partnerships, such as the Belarus-China Great Stone Industrial Park (established in 2012). These structures not only provide technology facilities and co-working space to

innovative firms, but also offer a wide range of services, training and project development programmes. High-technology parks concentrated in the IT sector have been established in Armenia (Vanadzor Technology Centre), Belarus (Hi-Tech Park) and the Republic of Moldova (IT Park). They offer generous fiscal regimes for resident companies. Engineering laboratories provide platforms for industrial prototyping and product development in Armenia (ANEL) and Georgia (FabLabs and iLabs). Despite the diversity of infrastructure supporting innovation in the sub-region, the IPO analysis identified several recurring shortcomings: publicly funded innovation support structures are often restricted to leasing premises and basic facilities, lacking value added services focused on the development of resident companies. At the same time, many infrastructure elements are not operational because of a lack of financing, a dearth of trained staff or insufficient innovative projects; regional centres often operate below full capacity.

Industry-science linkages in the sub-region are still in an initial stage of development, with fragmented policy instruments in place to stimulate cooperation, collaborative work and mobility between businesses and academia. Activity at public research institutions often occurs in isolation from market needs, and researchers do not actively participate in local labour markets. Industry-research networks in the sub-region are underdeveloped, supported mainly by ad hoc collaborative projects at universities (Azerbaijan). In addition, several government agencies supporting RDI in the sub-region are members of the European Enterprise Network, leveraging the expertise of international networks to support their domestic markets, including the National Agency for Research and Development of the Republic of Moldova, Georgia's Innovation and Technology Agency, and the Republican Centre for Technology Transfer in Belarus. To stimulate market-driven research activity, some state universities (Azerbaijan, Belarus, the Republic of Moldova) apply researcher evaluation mechanisms, but no country yet implements nationwide tools. Tools for greater mobility between academia and industry include dual general-vocational education, targeted work placement and enterprise traineeships for HEI personnel. With growing demand for business education, some countries (Armenia, Azerbaijan) have recently established joint industry-academia RDI centres as public-private partnerships.

The EESC countries apply few policy tools to incentivize collaborative work between businesses and public R&D institutions. The Republic of Moldova's State programme for innovation and technology transfer awards cooperative R&D-type grants for commercialization of innovative research on a competitive basis. Similar grants are available through Armenia's Science and Technology Entrepreneurship Programme funded by the World Bank and the Belarusian Innovation Fund. In Ukraine, the National Academy of Sciences organizes collaborative science and technology competitions, awarding grants to institutions conditional on external counterpart funding. Non-competitive support for collaborative work in the form of innovation vouchers was first introduced in the sub-region in 2014 through the EU Ener2i Research to Innovation project implemented in Armenia, Belarus, Georgia and the Republic of Moldova. It aimed to facilitate the development of innovative solutions for resource efficiency and the renewable energy sector. Despite the research evidence for the positive impact of such schemes on emerging innovation dynamics (Matulova, 2015; Spiesberger and Schoenbeck, 2019), innovation vouchers are offered only in Belarus (without successful candidates to date) and Ukraine (specific to climate technology). A policy framework for an innovation voucher scheme has been scheduled for implementation in Georgia in 2021.

Leveraging diaspora networks is integral to innovative development across the sub-region, with the potential benefits of cross-border knowledge absorption, investment in promising sectors of the economy and R&D spillover effects. Streamlining the temporary labour migration process and introducing functional regulatory mechanisms (Gevorkyan and Gevorkyan, 2012) are particularly important for countries with shrinking populations and large diasporas such as Armenia, but also Georgia, the Republic of Moldova and Ukraine. Most support from the diaspora has been successful without any specific engagement infrastructure. Nonetheless, a principal area of concern across the sub-region is the lack of national mobilization strategies to attract diaspora scientists and entrepreneurs living abroad (Gevorkyan, 2020). Functional regulatory mechanisms, such as a diaspora regulatory mechanism and a migration development bank, operating within a temporary labour migration regime managed by the State, could mitigate the unproductive misallocation of labour resources arising from such migratory trends (Gevorkyan and Gevorkyan, 2012). Multiple other support mechanisms exist: global networking events, foreign-based diaspora organizations, cultural centres and coordination councils (Armenia, Azerbaijan, Ukraine), diaspora databases (Armenia, Belarus), collaborative research projects and grant programmes (Georgia, the Republic of Moldova). Several countries in the sub-region have established government bodies dedicated to strengthening diaspora linkages, including Armenia (Office of the High Commissioner for Diaspora Affairs), Azerbaijan (State Committee on Affairs with Diaspora), Belarus (Consultative Council for Belarusians Abroad) and the Republic of Moldova (National Bureau for Diaspora).

Finally, it is imperative to streamline gender equality principles in the policymaking process in order to ensure a sustainable future for all. The growing representation of women in entrepreneurship, science and technology, as well as their high educational achievement, point to the critical role of gender equality in achieving innovation-driven growth and developing knowledge-based economies. Although legislation in all six countries establishes this principle, all face a long road before substantial differences in outcome are eradicated and the labour force participation of women converges with that of men. In addition to other recurring issues such as social expectations about gender roles, recruitment discrimination, the gender wage gap, and the accessibility and affordability of childcare (chapter I), the share of women in innovative entrepreneurship is low. To tackle these shortcomings, policy efforts have been made in all six countries with the support of governments, international donors and local non-profit organizations. Across the sub-region, initiatives for female entrepreneurship abound: for instance, Armenia established 10 Women Entrepreneurs' Clubs in 2018 with EU support, while in the Republic of Moldova a European training network (PLATO) for female entrepreneurs was launched in 2017.

#### **Sub-pillar IV: Knowledge diffusion**

The widespread access to and use of information requires sound support services aimed at planning and implementing innovation activities as well as improving both hard and soft skills in domestic firms. Although some informational support is available in all six EESC countries, instruments for technology upgrading are scarce across the sub-region, with a dearth of brokerage services and limited industrial technology assistance. Nevertheless, indirect support mechanisms contribute to the development of knowledge diffusion, including seminars, forums, international brokerage and business

matchmaking events (Azerbaijan, Belarus), provision of financial and technical tools as part of large-scale projects (Georgia, the Republic of Moldova) and scientific support offered at technology transfer centres (Belarus). To effectively diffuse knowledge across the sub-region, however, requires integrating relevant market intelligence services and technical assistance into all stages of the business development process.

Some policy efforts have been made towards developing national technology transfer systems through grant programmes (Georgia) and infrastructure development (Belarus, Ukraine). Nevertheless, across the sub-region technology transfer is relatively new and the available infrastructure used below potential. The identified shortcomings are also in line with the main findings of the forthcoming study of the European Commission's Joint Research Center on Technology Transfer (box V.1).

Companies in the sub-region frequently cite a lack of market demand for innovative products and services as a major reason why they do not invest more in R&D and do not engage more in innovation. Governments could use public procurement effectively as a tool to drive demand for innovation on national and sub-national levels (box V.2) while achieving policy goals for sustainable development (such as social objectives and green growth). Public procurement budgets in the sub-region frequently exceed 10 percent of GDP. Governments could use this ample potential to create a predictable and sustained demand for innovative solutions and thereby incentivize enterprises to find ways to meet this demand. Innovation-enhancing procurement requires moving away from tenders with technical specifications with revenues tied to stages to tenders in which bids and revenue flows are tied to impact, thus allowing bidders to experiment with different ideas. Policy efforts to introduce such instruments were made in Azerbaijan in 2019 with the development of a public procurement framework for innovative goods produced in the High Technologies Park of the Azerbaijan National Academy of Sciences. Ukraine has introduced green public procurement policies, in addition to a mechanism for procuring innovative solutions from projects that win the country's Inventions Support Fund grant competitions.

## Box V.1

### Technology transfer study of EU neighbourhood countries

The Competence Centre on Technology Transfer of the European Commission's Joint Research Centre has conducted a diagnostic and benchmark study of the state of technology transfer in the EU's eastern and southern neighbourhood including Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova and Ukraine, as well as Algeria, Egypt, Jordan, Lebanon, Morocco and Tunisia. The goal of this study was to assess the key issues and potential success factors underlying an effective knowledge and technology transfer system, with the ultimate objective of informing policymaking.

The preliminary findings of the study indicate that these systems have weaknesses that include low R&D budgets, young and under-resourced technology transfer infrastructure, insufficient financial instruments and incentives, intellectual property policies and legislation that do not adequately promote technology transfer, low academic entrepreneurship, and weak linkages between academia and industry. Publication of the final country reports and benchmark analysis is expected in late 2020.

There are natural synergies between the Joint Research Centre's study and the IPO. The two projects focus on analysing the quality of innovation ecosystems and identifying their strengths and weaknesses, with the aim of improving policies and informing future programming. Moreover, the EC and UNECE collaborate closely and share the objective and mission of supporting and strengthening the technology transfer and innovation ecosystems in the EESC sub-region.

*Source: EC (2020).*

**Box V.2** Public procurement for innovation

Public procurement for innovation entails the acquisition of and investment in innovative processes and products or services by governments, ultimately fostering experimentation and increasing overall demand for innovation. Innovation-enhancing procurement, specifically, is driven by investment in R&D activities and spurs the development of novel, transformative and sustainable business opportunities and practices, especially for SMEs, and can enable transition economies to build back better after the COVID-19 pandemic.

There are several examples of good practices in public procurement of innovation outside the EESC sub-region.<sup>a</sup> The Swedish innovation agency Vinnova, for example, has initiated the implementation of several national public procurement projects, such as the Innovative Traffic Systems in support of applications that provide traffic assistance to consumers. The country also participates in EU pre-commercial procurement initiatives such as INNOBUILD and PROBIS that support sustainable construction. In addition to being a member of INNOBUILD, Norway also participates in a Europe-wide public procurement project called AI4CITIES, which supports technological innovation in the use of artificial intelligence to reduce carbon emissions. Portugal is one of five European procurers participating in the project POSIDON, supporting effective and sustainable solutions for soil contamination, and Hungary, Poland, Spain and the United Kingdom have implemented the public procurement project CEPPI in support of innovative solutions for increased energy efficiency in cities.

Source: EC (2014).

<sup>a</sup> EC (European Commission), Innovation procurement initiatives around Europe, 20 November 2014. <https://ec.europa.eu/digital-single-market/en/news/innovation-procurement-initiatives-around-europe>.

Standards and quality assurance certificates raise private sector competitiveness and help SMEs move up in global value chains. Across the sub-region, standardization policies lack instruments targeting SMEs, and laboratories often do not have the equipment necessary to perform testing procedures or specialists trained in product conformity assessment and standardization. Promotion of standardization comes from SME agencies, business associations and providers of technical and business services that help companies put standards into practice, but implementation of such services is insufficient, given the low awareness of ISO standards and the general reluctance of companies to incur associated costs. Nevertheless, procedures for issuing licences and permits have been significantly simplified in the sub-region over the past decade, and a series of EU twinning projects has assisted countries in harmonizing their quality assessment systems and competition laws with EU standards (Azerbaijan, Georgia, the Republic of Moldova, Ukraine). Furthermore, policymakers should consider that standardization could constrain innovation where stringent legal frameworks obstruct new technologies from accessing the market.

Across the sub-region, policy efforts have been made to digitalize, including developing unified open portals of e-government and improving broadband coverage. All six countries have adopted State programmes for developing a digital economy, with provisions for digitalized public services, expansion of digital infrastructure and development of a digital labour force. In addition to rapid broadband development, resulting improvements include a government cloud space (G-cloud) and e-commerce platforms (Azerbaijan), national grid infrastructure (Ukraine) and specialized infrastructure for the delivery of IT-related training (Armenia, Georgia). Yet despite achieving higher connectivity across the sub-region, business processes and products are not yet fully digitalized. Technical and vocational education in ICT is underdeveloped and unable to respond to the growing demand for trained specialists brought by rapid growth in the ICT sector. Further investment is needed to ensure ubiquitous, efficient and affordable connectivity across the sub-region.

## Sub-pillar V: Research and education

As noted in chapter I, all EESC countries demonstrate strong political and societal commitments to education as a main pillar of sustainable development. A pressing challenge for education across the sub-region is bridging the gap between the output of national education systems and the needs of the labour market. Although policy support tools are abundant in the general education subsector, including national STEM competitions (Azerbaijan, the Republic of Moldova, Ukraine), scholarships (Georgia, Ukraine) and infrastructure development projects (Armenia, Belarus), incentives to increase the number of STEM graduates are limited and mainly covered by exchange programmes for undergraduate students. The low number of qualified STEM teachers, outflows of young researchers abroad, the concentration of STEM education in large cities and outdated curricula are some of the long-term constraints to solving the skill shortage discussed in chapter II. Broad-based reforms are taking place in the higher-education system of several countries, most prominently in Armenia, where pilot schemes have been launched in specific regions to evaluate policy impacts, and in Ukraine, where improvements have been made to modernize curricula, with a pronounced focus on STEM. Other recent developments across the sub-region include the introduction of STEM teacher training (Armenia, Azerbaijan, the Republic of Moldova) and vocational education (Azerbaijan, Belarus, Ukraine).

The EESC sub-region is renowned for its strong research legacy and scientific potential. Today, however, the pool of researchers is shrinking, public research funding is low (ranging from 0.2 to 0.6 per cent of GDP) and inefficient in terms of generating commercialization and spin-offs and enhancing productivity, and private sector investment in R&D is very low. The EESC countries have annually approved State research funding, except Belarus, which determines allocations by five-year programme cycles. The largest research institutions in almost all six countries are their national academies of sciences, receiving the highest share of State research funding. Thus, it is imperative for innovative development that activity at public research institutions is synchronized with the rest of the economy, responding to industry needs and systematically generating results that can be commercialized. Yet, in the EESC countries research is often performed in isolation, as noted in chapter II. Also, obtaining project finance can be difficult for public institutions, and the incentives for engagement with innovative projects at such institutions are scarce. Several countries offer competitive research funding for selected projects in priority areas. In Georgia, for example, the Shota Rustaveli National Science Foundation awards about \$25 million in research funding annually, with EU support. The National Agency for Research and Development of the Republic of Moldova helps commercialize research by distributing budget allocations for R&D on a competitive basis. Ukraine distributes competitive grant funding through individual, collective and institutional awards from the State budget, through the National Research Fund. When the private sector is concerned, however, the provisional support measures do not translate into increased investment in R&D, and academic researchers do not actively collaborate with the business sector. Among other shortcomings of R&D in the sub-region are the generally low accessibility of information about the research infrastructure and the limited availability of modern R&D equipment.

EESC countries are relatively well integrated into the international research community. All have engaged with international projects and joint research projects with foreign

counterparts that facilitate technology spillovers and enhance cross-border research cooperation. Early-stage research commercialization in the sub-region is also strongly supported by the EU Framework Programme for Research and Innovation, Horizon 2020. Researchers from all six countries are eligible for funding from the programme. EESC countries have thus deepened their integration into the European Research Area, with some countries having developed national road maps for integration that outline policy objectives for an effective national research system and optimal transnational cooperation (the Republic of Moldova, Ukraine).

## Pillar II: Achievements and recommendations

EESC countries have developed a range of policy tools to support innovation, along with institutional frameworks and strategic documents to guide their implementation. To ensure positive impacts on innovative and overall economic development, support measures need to complement each other in a coordinated policy environment that supports and stimulates systematic experimentation with new ideas, co-creation and integrated diffusion of knowledge. Governments can use demand-driven policies to unlock innovation activity on the domestic markets, while ensuring high connectivity and accessible support infrastructure. They need to enhance and stimulate public sector innovations along with continuously promoting innovation activity in the private sector. Last but not least, aligning education outputs and research activity with market needs is integral for the optimal use of human capital and the development of a highly specialized workforce, able to commercialize innovative solutions in an enabling, knowledge-based economy.

Pillar II IPO evaluation and recommendations	
Achievements	
<ul style="list-style-type: none"> <li>✓ Policy and institutional frameworks to support the absorptive capacity of organizations have been developed across the EESC sub-region with specialized SME agencies, initiatives based on international expertise and preferential fiscal regimes in place.               <ul style="list-style-type: none"> <li>✓ Innovation is promoted through business plan and start-up competitions, donor-funded projects and incubation services, stimulating entrepreneurship and contributing to the growing start-up movement across the sub-region.</li> </ul> </li> <li>✓ The innovation support infrastructure has expanded significantly across the sub-region, and initiatives have been introduced to support the creation of science-industry linkages.               <ul style="list-style-type: none"> <li>✓ All EESC countries have policies that support information dissemination to enhance the diffusion of knowledge within their economies.</li> <li>✓ An increased focus on STEM education and enhanced cross-border research cooperation contributes to the development of human capital and strengthens the integration of countries into the international research community.</li> </ul> </li> </ul>	
Area for improvement	Recommendation
<ul style="list-style-type: none"> <li>• Knowledge absorption is not sufficiently supported in technical and business service provision, and managerial skills development.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Introduce co-financing mechanisms for technical and business services as well as quality assurance instruments for private providers of such services.</li> </ul>
	<ul style="list-style-type: none"> <li>✓ Increase promotion of good public and private sector organizational and managerial practices.</li> </ul>

## Pillar II IPO evaluation and recommendations (Concluded)

Area for improvement	Recommendation
<ul style="list-style-type: none"> <li>The policy tools for innovation promotion do not sufficiently address the issue of low access to finance.</li> </ul>	<ul style="list-style-type: none"> <li>Introduce a set of direct financial instruments for innovative SMEs (concessional R&amp;D loans and subsidies, credit guarantees) and indirect stimulation (exemptions from value added tax on innovative goods and services).</li> </ul>
	<ul style="list-style-type: none"> <li>Expand the scale of available venture capital financing to address the seed and early-stage development gap for innovative start-ups.</li> </ul>
	<ul style="list-style-type: none"> <li>Conduct a comprehensive assessment of the tax policy framework to identify potential benefits of introducing more targeted fiscal incentives for innovation.</li> </ul>
<ul style="list-style-type: none"> <li>Industry-science linkages and business networks in the sub-region are underdeveloped, and the innovation support infrastructure lacks value added services and regular monitoring.</li> </ul>	<ul style="list-style-type: none"> <li>Expand the incentives for mobility and collaboration between academia and industry.</li> </ul>
	<ul style="list-style-type: none"> <li>Support and strengthen the linkages between higher education institutions and start-ups by further developing existing facilities for technology transfer.</li> </ul>
	<ul style="list-style-type: none"> <li>Construct a database of industry-science collaboration to identify priority support measures to address gaps.</li> </ul>
	<ul style="list-style-type: none"> <li>Develop a comprehensive framework for monitoring and evaluation of the innovation infrastructure, assess market needs and integrate value added services in the portfolio of relevant structures.</li> </ul>
<ul style="list-style-type: none"> <li>The ample potential of public procurement as a lever for innovative development has not yet been fully explored, and the existing policy tools for technology assistance are insufficient.</li> </ul>	<ul style="list-style-type: none"> <li>Stimulate demand for innovative solutions by launching pilot and innovation-enhancing public procurement schemes in promising sectors, either separately or as part of existing support programmes.</li> </ul>
	<ul style="list-style-type: none"> <li>Extend the policy support in industrial technology assistance to stimulate technological modernization of production processes.</li> </ul>
	<ul style="list-style-type: none"> <li>Expand ongoing reforms of the higher education system to modernize university curricula and offer highly specialized qualifications that respond to labour market demand.</li> </ul>
	<ul style="list-style-type: none"> <li>Build a STEM community, engaging educators and individuals within and outside a formal educational setting to popularize STEM education and make technical careers more accessible.</li> </ul>
	<ul style="list-style-type: none"> <li>Expand incentives for commercializing research and R&amp;D activity in the public sector.</li> </ul>
	<ul style="list-style-type: none"> <li>Conduct a comprehensive impact assessment of the research initiatives and grant programmes to identify potential inefficiencies and drivers of innovative development.</li> </ul>
	<ul style="list-style-type: none"> <li>Foster the development of state mechanisms for diasporas to prevent the misallocation of labour that arises from migratory trends.</li> </ul>

Source: UNECE.

## Note

<sup>1</sup> The BEEPS V dataset was last updated on 23 August 2017 (EBRD, 2020).

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## Chapter VI

# INNOVATION POLICY PROCESSES: SUB-REGIONAL TRENDS AND FINDINGS

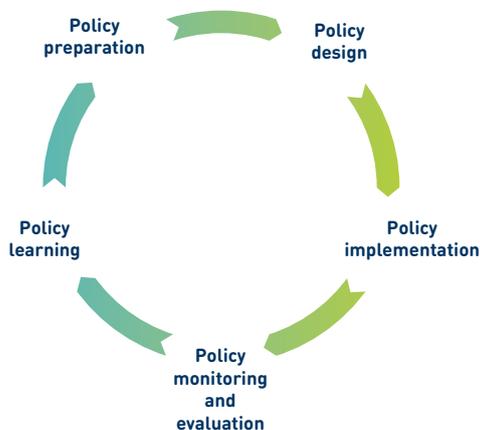
## The importance of effective innovation policy processes

Policymaking processes determine the quality and effectiveness of laws, regulations and vertical support measures, which in turn, affect all areas of the economy, including science, technology and innovation (STI), and sustainable development. Getting policy processes right is especially important in times of crisis such as a global pandemic. To sustain innovation momentum in a world focused on urgent, short-term concerns such as keeping national economies from collapsing and ramping up social spending, governments must use resources carefully, especially as public spending grows rapidly.

This chapter explores the causes for the mismatches between innovation inputs and outputs in EESC countries. It examines the processes in place for making innovation policy, in particular how data and evidence are used in making decisions, designing

and implementing policy, and conducting post-implementation processes.<sup>1</sup> Therefore, the chapter also analyses how efficiently public administrations manage these policy processes, based on good governance practices not only related to innovation per se. Although policy processes can improve the quality of policies, they should be targeted and evaluated, to ensure they add value, not administrative burden.

**Figure VI.1 · Assessment framework of  
pillar III – policy processes**



Source: UNECE.

## Assessment framework

The assessment framework captures the quality of policy processes across the entire cycle from inception and preparation, through design, implementation and post-implementation (figure VI.1). Assessment of this last phase examines the extent to which policies are evaluated and learned from.

Unlike pillars I and II, pillar III is not scored and one specific policy is assessed in each country. Examining all innovation policy processes is beyond the scope of this assessment. Instead, important lessons are drawn for each country from one specific policy case. EESC countries were encouraged to select policies that were advanced in implementation and they tended to select policies that they considered successful.

**Table VI.1 Policies selected under pillar III**

Country	Policy
<b>Armenia</b>	Law on State Support for the Information Technology Sphere
<b>Azerbaijan</b>	Grant Scheme under the State Fund for Information Technology
<b>Belarus</b>	State Science and Technology Programmes
<b>Georgia</b>	Innovation Start-up Matching Grants Scheme
<b>Republic of Moldova</b>	Law on Small and Medium-Sized Enterprises
<b>Ukraine</b>	Strategy of Innovation Development 2030

Source: UNECE.

The analysis draws on primary data from innovation stakeholders, complemented by recent international sources, in particular the OECD, and SIGMA publications on the Principles of Public Administration.

### Sub-pillar I: Policy preparation

The success of innovation policy measures is linked to the nature, incentives and quality of the preparation process. This process starts with an analysis to pinpoint problems, causes, challenges and opportunities. The team developing the policy must collect supporting evidence and provide it to decision-makers. The quality of the analysis is crucial in shaping the quality of the policy: the scope of the analysis determines what kinds of problems are identified and verified, thereby fundamentally affecting the objectives of the policy. Those tasked with drafting policy also need sufficient foresight to ensure that a policy tackles the most urgent and not only the most immediate issues. The immediacy of today's challenges often means that governments fail to take the time to engage with the future (Fuerth and Faber, 2012).

Preparation processes need to identify explicit performance metrics that guide continuous monitoring and adjustments. Innovation is an inherently uncertain effort, so a sound preparation process should provide the wherewithal to adapt policies, whether by modifying what is happening or stopping what is not working.

Innovation foresight is a nascent practice in the EESC sub-region, lacking rigour and systematic integration into policy analysis and decision-making. In Azerbaijan, for example, a rudimentary foresight analysis informed, for the first time, the Strategic Road Maps

for the National Economy and Main Economic Sectors, which included visions for the post-2025 period. In other EESC countries, innovation foresight occurs but tends to be ad hoc and restricted, tied to specific policy design efforts and not subject to continuous revision. Foresight plays a stronger role in Belarus, where the State Committee on Science and Technology has developed regular national forecasts of STI trends with the National Academy of Sciences since the late 1990s. Government institutions use these forecasts in conceptualizing policy. In 2019, they developed a comprehensive forecast of scientific and technological progress for 2021–2025 and until 2040. Priority areas of STI activities for 2021–2025 were approved by the President in May 2020 and the resulting State Science and Technology Programmes are closely linked to the outcomes of this foresight process.

Overall, the lack of systematic and continuous use of innovation foresight in EESC countries has three implications: First, innovation policies are rarely grounded in agreed, realistic assumptions from which key performance indicators (KPIs) follow. Second, it is rarely possible to monitor and evaluate impacts in a concerted fashion. Third, if the forecasts themselves are not continuously updated, then government risks getting stuck with measures that do not address actual needs or opportunities.

All EESC countries have set up legal frameworks that define requirements for line ministries related to preparing policy. Yet, the IPO analysis points to three recurrent issues with these frameworks:

- 1.** They are often not enforced centrally or systematically, and therefore at times are circumvented. For example, in the Republic of Moldova a widespread practice in line ministries is to submit draft policy proposals directly to members of Parliament for adoption, bypassing quality control and requirements for evidence-based policymaking.
- 2.** When they are followed, the implementation lacks depth and rigour. In Georgia, for example, under the rules of procedure of the Government and the Law on Normative Acts, institutions must provide general information about a proposed policy, explain the rationale and objective, identify the expected outcomes and assess the effects on the budget. Instead, the established practice has been to provide only explanatory notes of low quality, with scant details on rationale, impact and performance indicators. An exception is the comprehensive cost-benefit and market failure analysis that informed the Georgia National Innovation Ecosystem Project.
- 3.** The provisions of these frameworks are often unclear or contradictory. In Ukraine, for instance, two requirements aim to ensure the quality of policy design. First, the Cabinet of Minister's Rules of Procedures require for all policy proposals an impact assessment, a problem analysis, and a clear rationale and objectives. Second, the Law on the Principles of State Regulatory Policy obliges policy-drafting institutions to conduct regulatory impact assessments (RIAs) of all laws that affect the private sector. The two requirements do not align in their legal frameworks or their implementation. Policymaking institutions that work on private sector development therefore must prepare different RIAs and explanatory notes that largely overlap. This burdens these institutions without providing added value to decision-makers.

A positive development are the recent efforts in all EESC countries to develop structures for RIAs or to conduct pilot RIAs.<sup>2</sup> These efforts, many of them supported by donors, offer a potential platform for enhancing the quality of policy proposals

and moving towards more evidence-based policymaking – provided that they add value, not administrative burden, and become sustainable and country-driven in the medium term.

## Sub-pillar II: Policy design

The policy design process should include stakeholder consultations, allow appropriate time and ensure coherence with other policies. Stakeholder consultations, with other government entities and non-governmental actors, ensure coherence and buy-in across government, relevance to the market and private sector needs, and the commitment of stakeholders to policy implementation. Ideally, gender balance should be considered during consultations and policy development. Governments should expect that stakeholders will advocate in their self-interest, which often is contrary to innovation, and therefore review stakeholder inputs carefully.

Stakeholders need enough time to engage effectively. Rushing the policy design process can easily result in suboptimal analysis, lack of clarity on objectives, incorrect or unclear actions and low credibility, buy-in and effectiveness, leading to dissatisfaction among internal and external stakeholders. Hence, to achieve a good-quality and credible policy, it is important to allocate enough time and institutional resources for its development and adoption (SIGMA and OECD, 2018a).

Innovation policy should align with and contribute to overarching socioeconomic development visions and strategies. To achieve synergies and avoid contradictory actions, policy priorities and activities should be coherent with other relevant policies.

Public-private consultations feature in the policy design process to some extent, albeit not always systematically and with sufficient depth. The analysis found that scrutiny of government work and participation in design by civil society, academia and the private sector is more open, influential, and systematic in Armenia, Georgia and the Republic of Moldova, compared with their regional peers. Ukraine lacks a basic law to uniformly guarantee citizens' rights in interactions with the public administration. In Belarus, the participation of the private sector, especially SMEs, is limited. In Azerbaijan, the level of information available to civil society about activities and decision-making is restricted until the policy has been developed and approved (Council of Europe, 2017). A recurrent issue across all EESC countries is the short time window (rarely longer than 10 days) allotted for stakeholders to comment on policy drafts and the lack of systematic efforts to ensure gender balance in consultations.

Interministerial consultations are structured through governmental rules for procedure. Yet, government bodies involved in such consultations usually face no regulatory requirement to issue formal opinions on draft proposals. In Georgia an e-government software program facilitates this process; it seems to work well and could be a good practice for peers in the sub-region. In practice, interministerial consultation works at least to some extent in most EESC countries: all specific policies examined under this pillar were coherent with overarching, interministerial policy strategies or road maps. In Azerbaijan, for instance, the grant scheme examined was coherent with the National Strategy for the Development of the Information Society. Support of start-up projects on ICT and high technology was included in the strategy in order to create an innovation system that fosters high-tech products and services.

Intraministerial consultations during policy design are not fully regulated yet. Usually departments within the same ministry share policy drafts only when deemed necessary. Thus, not all relevant departments within ministries are consistently consulted and involved in policy design. The lack of systematic intraministerial consultations is likely to cause missed opportunities for synergies and should be addressed.

There are few systematic training programmes on drafting policy for civil servants in the ministries responsible for STI policies. Trainings take place on an ad hoc basis within the remit of line ministries, with no cross-government quality assurance or certainty that the most relevant shortcomings in policy design are addressed.

### **Sub-pillar III: Policy implementation**

To ensure that the policy is put into practice, governments need to put in place a range of processes. Recognizing the risk of unforeseen developments or effects, they need to establish processes to systematically evaluate the impact of policies during implementation using clear performance indicators – and modify them accordingly. The rapidly evolving technological environment requires the policy flexibility provided by a quick, yet considered and informed response to challenges and opportunities that arise.

Objectives, performance indicators and detailed action plans are the basis for regular review of progress. Continuous monitoring of and regular review of progress identify administrative, institutional and technical challenges and inform potential revisions and complementary measures, including adjusting activities and reallocating resources.

Implementation of the policies examined under this pillar is roughly in line with underlying objectives, performance indicators and action plans. Main outputs have been achieved and followed the output targets set. In Georgia, for example, the Start-Up Matching Grants Programme is on track, with one project financing cycle concluded in 2018, albeit slightly below the spending objective, and two more under way. As the programme becomes more known and its processes tested and established, the number and quality of applicants has increased – a trend Georgia's Innovation and Technology Agency expects will continue.

Appropriate costing and financing, political backing, and policy coherence are the leading reasons for the trend. Countries in the sub-region were asked to choose policies that were most advanced and that they considered most successful for the analysis in this pillar. The exception is Ukraine's Strategy of Innovation Development 2030, which at the time of the data collection did not have an approved action plan, despite having been adopted in July 2019.

Except for Ukraine's Innovation Strategy, all policies underwent some kind of review process during their implementation that led to subsequent adjustments. In all cases, these reviews were coherent with high-level, overarching policy developments, but rarely did data and evidence inform and drive these reviews and modifications. In Azerbaijan, for example, as a result of the shift from the "ICT Innovations" approach to the "Innovations Everywhere" approach in 2018, the Government established the Innovation Agency, to replace the State Fund for Development of Information Technology, with the aim of focussing innovation grant schemes on innovation in general rather than only in the ICT sector.

A shortcoming across all policies examined is the near-absence of a concerted sustainable development perspective. For example, the Innovation Strategy of Ukraine refers to laying the foundations for sustainable growth through innovation; however, it does not clarify the relation of interventions to specific social or environmental targets. All six EESC countries need to improve efforts and mechanisms to incorporate the three pillars of sustainable development in innovation policies, by focussing on the systemic impact and long-term effects of such policies on sustainability and by identifying overlaps or contradictions with other areas of public policy.

### **Sub-pillar IV: Post-implementation**

One of the most important capacities that governments need is to learn from experiments and to stop or change what is not working. Evaluating policies and learning from them play key roles in informing how governments design, reform and put into practice future measures. Evaluations enhance accountability and establish legitimacy for the use of public funds and resources. They promote learning and enhance the efficiency and effectiveness of future policies. They should provide evidence for causality, value for money, social return and, importantly, potential trade-offs and negative effects that may have arisen unintentionally. The pressure to deliver more and better for less in the wake of COVID-19 makes this an area for urgent reform in the medium term.

Although policy evaluation practices have improved, these improvements are often driven by requirements by international donors for individual projects, rather than for innovation policies overall. Georgia is a partial exception: the Policy Planning, Monitoring and Evaluation Manual, developed in cooperation with OECD-SIGMA, set new, uniform, good practice-based standards for evaluating policies and assessing impact.

Looking more closely into the evaluation processes, several problematic issues become clear – especially regarding the imperative to learn from what is not working. The evaluations were carried out by the implementing bodies, with clear conflicts of interest, were superficial, and were centred on outputs (such as the number of grants disbursed), with no analysis of outcomes and impact and trade-offs. There are few processes in place to ensure that learning systematically informs the policy design process. EESC governments need to make concerted efforts to establish a culture of evaluating policies, by promoting the quality of policies, through guidelines, capacity-building and ex-post review and control mechanisms. Whenever evaluation does take place, it needs to be leveraged, with lessons learned and problems identified informing future policies.

## Pillar III: Achievements and recommendations

Pillar III IPO evaluation and recommendations	
Achievements	
<ul style="list-style-type: none"> <li>✓ Legal frameworks for policy preparation are largely in place.</li> <li>✓ Public-private consultations occur in all EESC countries during innovation policy design, albeit at varying degrees of openness.</li> <li>✓ Governments structure Interministerial consultations through rules for procedure.               <ul style="list-style-type: none"> <li>✓ Implementation or enforcement of most policies examined is on track and follows an action plan.</li> </ul> </li> </ul>	
Area for improvement	Recommendation
<ul style="list-style-type: none"> <li>• Innovation policies do not sufficiently consider the three pillars of sustainable development.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Enhance efforts and mechanisms to incorporate the three pillars of sustainable development in innovation policies.</li> <li>✓ Integrate innovation foresight practices into the policy processes of relevant ministries to capture future trends in and perspectives on research activities for incorporation in the long-term strategic direction of innovation development.</li> </ul>
<ul style="list-style-type: none"> <li>• The underlying analysis that shapes policy preparation is limited and not sufficiently based on evidence.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Review the legal frameworks for preparing policy to ensure that they are clear, flexible, appropriate for the purpose and complied with – and enforce them.</li> <li>✓ Build on RIA efforts to enhance the quality of policy preparation and its evidence base, ensuring that efforts add value, not administrative burden, and become sustainable.</li> </ul>
<ul style="list-style-type: none"> <li>• Scrutiny of government work and participation in innovation policy design by multiple stakeholders is not systematically ensured.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Develop and/or enhance ministerial approaches to public-private consultation on policy design and implementation. Consider gender balance during consultations and in developing policies.</li> <li>✓ Strengthen interministerial consultation processes, ensuring that all relevant government bodies are involved in the policy design process and given enough time to comment.</li> <li>✓ Define realistic implementation timelines and targets. Regularly review policies against these timelines and targets, and update them in light of both unforeseen developments and progress towards clear KPIs.</li> </ul>
<ul style="list-style-type: none"> <li>• Policy evaluation and impact assessments are of poor quality or not implemented at all.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Establish a culture of evaluating policies and promote the quality of policies, for instance through guidelines, capacity-building and ex-post review and control mechanisms.</li> <li>✓ Adopt a more systemic linkage of monitoring and evaluation practices to policy design, including in government bodies responsible for STI policy.</li> </ul>

Source: UNECE.

## Notes

- <sup>1</sup> In this chapter, policies are defined as all systems of laws, strategies, regulatory measures and vertical support measures affecting STI that a governmental entity or its representatives promulgates; post-implementation is defined as policy evaluation and policy learning.
- <sup>2</sup> According to the OECD (<https://www.oecd.org/regreform/regulatory-policy/ria.htm>), “Regulatory Impact Analysis (RIA) [sic] is a systemic approach to critically assessing the positive and negative effects of proposed and existing regulations and non-regulatory alternatives. As employed in OECD countries it encompasses a range of methods. It is an important element of an evidence-based approach to policy making. OECD analysis shows that conducting RIA within an appropriate systematic framework can underpin the capacity of governments to ensure that regulations are efficient and effective in a changing and complex world. Some form of RIA has now been adopted by nearly all OECD members”.

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