ECONOMIC JOURNAL

ECO

Economic Cooperation Organization

ECONOMIC JOURNAL

ECO Secretariat

Address: No. 1, Golbou Alley, Kamranieh,
Tehran, Islamic Republic of Iran
Tel: (+98212) 283 17 33/34, (+98212) 229 20 66
Fax: (+98212) 283 17 32
e-mail: registry@eco.int

www.eco.int

Special Issue 1, 2022, Baku, Azerbaijan

Special Issue 1(7), 2022

ECONOMIC COOPERATION ORGANIZATION

ECONOMIC JOURNAL

Publisher

Economic Cooperation Organization

Contact address

Economic Cooperation Organization (ECO)

No. 1, Golbou Alley, Kamranieh St., Tehran, Iran,
Postal Code: 19519 – 33114
Tel: *+9821 22831733-4 & 22292066*
Fax: *+9821 22831732*
E-mail: *Registry@ECOsecretariat.org*
Website: *http://www.ecosecretariat.org/*

Economic Scientific Research Institute (ESRI)
(Chief Editorial Office)

196 Hasan Bey Zardabi Av., Baku, Azerbaijan,
Postal Code: AZ1122
Tel: *+994 512804335 & +994 124309618*
Fax: *+994 124300215*
E-mail: *office@esri.gov.az*
Website: *http://www.esri.gov.az/ & http://www.theesri.com/*

The Economic Journal is a publication of the Economic Cooperation Organization since 2009.
Journal is published twice a year.

Baku – 2023

ECONOMIC COOPERATION ORGANIZATION
ECONOMIC JOURNAL

Special Issue 1(7), 2022

Table of Contents

Foreword
H.E. Secretary General Khusrav Noziri 4
Foreword
Mahir Humbatov, Chairman of the Board of Directors of the ESRI 5
From the Editor-in-Chief
Prof. Dr. Arzu Huseynova 6
Implications of New Technologies and Methods on Interoperability
Bayan Adilbekova 7
Assessment of Opportunities to Increase Product Imports from the ECO Countries to Azerbaijan against the Backdrop of the Conflict in Ukraine
Arzu Huseynova 35
Economic Development and Diversification Ranking of Azerbaijan's Administrative Districts: Comparative Analysis
Nazim Muzaffarlı (Imanov) 51
Geology of Uzbekistan after COVID-19: Measures and Perspectives
Alisher Halmurzaev, Muhammadjon Babadjanov 64
Uzbekistan: Post-COVID Economic Recovery Strategy
Bakhtishod Khamidov, Malika Jumaniyozova 69
Uzbekistan's Efforts for Adaptation of the Economy to the Global Economic Crisis
Ulugbek Saydiev 74
Actual Issues of Increasing Socio-Economic Stability in Pandemic Conditions
Naylya Ibragimova 77
The Concept of Reducing Poverty in Uzbekistan
R. R. Khasanov, O. A. Kutliev, G. A. Alimova 81
From the Strategy of Actions to the Development Strategy: Five Years of Efficiency and Priorities in the Economic Sphere
Eldor Tulyakov, Furkat Yunusov 87

Uzbekistan on the Path of Digitilization
Farrukh Khakimov 102
Proposals to the Economic Theory of Labor Migration
Saidnumon Mansurov,Yulbarskhon Mansurov 112
Is Outstaffing or Leasing of Specialists Justified?
Saidnumon Mansurov, Yulbarskhon Mansurov 121
Innompic Ecosystem as a Booster of International Socio-Economic Development
Vadim Kotelnikov 130
Summaries of Completed ECO Projects 136
Submission Terms 144
Author Guidelines *145*

Foreword

This publication provides me a distinctive opportunity to mirror the Organization's commitment; especially in consideration of the post-COVID and refueled aspirations of the Member States, not only to increase their progress-oriented economic collaboration but also to build better regional structures for greater trade and connectivity in the region.

Reflecting on our renewed resolve, I must emphasize that the consecutive organization of 14th and 15th ECO Summits in March and November 2021 reflects the Member States' deep dedication to keep moving forward in the pursuit of their joint development targets. The ECO Heads of State/Government, during their 14th and 15th interactions, kindly gathered and guided us to ensure an expeditious implementation of the Organization's agenda in prioritized areas, including transport, trade, energy, agriculture and tourism. Our leadership specifically focused on strong regional economic integration and urged for ascertaining tangible ways and means to create hefty bridges between the ECO and other regions, taking advantages of greater linkages and promoting cooperation in such areas.

Based on the ECO Vision 2025 and to secure mutually productive economic outcomes, the ECO countries are required to be more interactive and vibrant. I am more than optimistic that strong collaboration amongst the Member States will take us to the avenues of inexorable progress and development, meeting the founding aims and objectives as well as aspirations of the ECO leadership.

Apart from the exploitation of existing regional transport links, some more advanced and modernized corridors are needed to be developed for paving strong connectivity that would lead to an ultimate and well-built economic nexus in the region. The mobilization and challenging of regional efforts and resources are necessary for green growth. Moreover, smooth restoration of tourist exchange in the region is another huge task standing in front of the ECO countries.

I believe this publication providing deep insights and very useful assessment on the current economic situation will work as a lamp to escort the region towards a robust economic integration.

I would like to extend my sincere gratitude to the Economic Scientific Research Institute (ESRI) of the Ministry of Economy of the Republic of Azerbaijan for their invaluable contribution in the successful compilation of this ECO Economic Journal. I also convey my deep apperception to Ms. Arzu Huseynova, Editor-in-Chief of the Journal for her tireless efforts in this regard.

H.E. Secretary General
Amb. Khusrav NOZIRI

Foreword

It is my pleasure to announce the release of the latest issue of the Economic Journal of the Economic Cooperation Organization (ECO). The journal attracts contributions from the ECO Member States, enlightening progressive-minded economists from the ECO countries and elsewhere.

This issue of the Economic Journal encompasses a broad range of articles produced locally and internationally on the priority areas of the ECO countries such as energy, trade, investment, industry, transport, and others. The Economic Journal is one of the regular flagship publications of the ECO. Each issue of the journal covers a wide range of issues such as an analytical overview and trends of socio-economic development, regional integration, economic potential and performance of the ECO countries, global economic challenges and their impact on the region.

It is significant that most of the member states were represented in the sixth meeting of the Editorial Board of the ECO Economic Journal, where the main objective was to discuss the transformation and promotion of the journal to a new quality level in accordance with international standards. A decision was made to include the journal in international reference databases. Therefore, the journal should attain an International Standard Serial Number (ISSN) and Digital Object Identifiers (DOI) to increase its accessibility, popularity and prestige among the wider academic community.

In conclusion, I would like to express my gratitude to all Member States for their support and contribution to the journal's current issue. I would like to take this opportunity to invite all the ECO members to further strengthen our partnerships in different economic sectors and carry out mutually beneficial projects in the areas of common interest.

Mahir Humbatov
Chairman of the Board of Directors,
The Economic Scientific Research Institute (ESRI),
The Ministry of Economy, the Republic of Azerbaijan

From the Editor-in-Chief

The release of the current issue of the ECO Economic Journal is a significant event. The journal has been re-launched after a hiatus of many years thanks to the efforts of the ECO Secretariat, the new Editorial Board and the Chief Editorial Office.

Against the backdrop of the world wars, energy crisis, food security and economic crisis, it is important to conduct joint research on socio-economic issues and disseminate the obtained results to the public of the region and the world. In this context, there is an increasing demand for the publication of the ECO Economic Journal, which meets the highest academic standards.

The ECO Member States have promising human potential, natural resources including oil and gas deposits and water resources, agricultural land, numerous scenic areas and a transport and transit network. The long-term and optimal use of the above-mentioned resources and potential can play a special role in solving the socio-economic problems of the region by promoting both the rapid development of the Member States and the further expansion of existing economic relations.

The main problem facing the Editorial Board today is to make our journal readable and to generate interest in the journal among the academic community. To achieve this, we have to ensure the regular publication of the journal, ensure a high academic and practical publication quality that meets international standards, and develop the journal's website and attract a large readership by digitizing the journal.

Each issue of the journal contains an analytical overview of socio-economic development and trends, economic potential and achievements of the ECO Member States, the crisis and resulting global economic challenges, the impact on the region etc. This issue of the journal consists of two parts: articles and an overview of the projects implemented on the ECO. In the next issues of the journal, we will try to help our readers through analysis and assessment to uncover hidden opportunities of the ECO countries, to propose and discuss new approaches and ideas that will ensure long-term and optimal use of the available opportunities. So, let us get to know more about the joint research in the region and the academic work of the ECO.

In conclusion, I would like to take this opportunity to invite the editors of the journal to work in close cooperation and wish them and their readers success.

Prof. Dr. Arzu Huseynova
Editor-in-Chief of the ECO Economic Journal

Economic Journal, Special Issue 1, 2022

Implications of New Technologies and Methods on Interoperability

Bayan Adilbekova, adilbekova@eco.int
Head of Project Management, Economic Cooperation Organization
No. 1 Golbou Alley, Kamranieh St., Tehran, Iran

Abstract. The paper deals with technological implications for a regional railway network, on the example of the ECO Railway Network (ERN). The magnitude of such impact is directly related to automation and interoperability in railways. From that stance, potential implications were studied from the two perspectives: (i) technological, to see whether the efficiency of railway network changes with the advent of new technologies and (ii) technical, to see the level of the interoperability among regional railway networks to support the railway technological upswing. The paper asserts that the efficiency is one of potential implications of new technologies in railway. The latter has been examined in the context of infrastructure of the ERN. Specifically, technological implications for the ERN resulted in changing its efficiency. Also, the ECO Transport Network (ETN) has been examined against implications for its efficiency driven by new innovations. The implications for the latter have proved to be insignificant because the ETN largely remains dependent on economies of scale. In other words, the transport network performance will always negatively correlate to the increase in the quantity of network users (Shaofeng, 2013). On the other side of the spectrum, the implications for the ERN proved visible as is efficiency increased when new innovations solutions were in. From the technical perspective, the interoperability has been considered as a tool to initiate the influx of new technological solutions in the ERN at the back of the current stage of the development of the overall ETN. The paper resulted in developing the interoperability model for coordination of railway operations in the region to increase efficiency at technical level.

Keywords: New innovations, interoperability, solutions, railway routes, efficiency, train control system, radio block centre, central dispatch system, traffic management platform.

1. Technological Implications: Innovations and performance on transport infrastructure and logistics

In exploring the technological implications in the context of new innovations in railway as applied to the regional railway network of the Economic Cooperation Organization (ECO), the paper stems from the understanding that 'innovations are part of transport infrastructure and logistics' (Ferrari, 2018). In that regard, the paper first looks into where ECO countries stand in global performance on transport infrastructure and logistics. According to previous year's ranking, Türkiye, Iran and Kazakhstan were amongst the top ECO countries by performance on infrastructure and logistics. The input data for ranking in ECO was derived from World Bank's Logistics Performance Index set for year 2018. In overall, the ECO's top ranking countries in transport infrastructure and logistics staged 60 out of 103 of the ECO regional average with the collective score of 2.6 for the region. Taken separately, Türkiye came to be the highest performing country in this area holding the 47th rank, Iran 64th, and Kazakhstan 71st. Figure 1 reflects the ECO countries' performance on infrastructure and logistics in 2018. Having identified the positioning of countries in the ECO region, the paper will now explore how new innovations in railway, basing on the regional countries' performances in transport infrastructure and logistics, can influence the ECO Railway Network at the broader regional level.

Table 1: Performance of ECO countries on transport infrastructure and logistics

Top ranks	Country	Year	LPI Rank	LPI Score	Customs	Customs	INFRA	INFRA	Int shipments	Int shipments	Logistics competence	Logistics competence	Tracking/Tracing	Tracking/Tracing	Timeliness	Timeliness
	Afghanistan	2018	160	1.95	158	1.73	158	1.81	152	2.1	158	1.92	159	1.7	153	2.38
	Azerbaijan	2018	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	Iran	2018	64	2.85	71	2.62	63	2.77	79	2.76	62	2.84	85	2.77	60	3.36
3	Kazakhstan	2018	71	2.81	65	2.66	81	2.55	84	2.73	90	2.58	83	2.78	50	3.53
	Kyrgyzstan	2018	108	2.55	55	2.75	103	2.38	138	2.22	114	2.36	99	2.64	106	2.94
	Pakistan	2018	122	2.42	139	2.12	121	2.2	97	2.63	89	2.59	136	2.27	136	2.66
	Tajikistan	2018	134	2.34	150	1.92	127	2.17	133	2.31	116	2.33	131	2.33	104	2.95
1	Turkey	2018	47	3.15	58	2.71	33	3.21	53	3.06	51	3.05	42	3.23	44	3.63
	Turkmenistan	2018	126	2.41	111	2.35	117	2.23	136	2.29	120	2.31	107	2.56	130	2.72
	Uzbekistan	2018	99	2.58	140	2.1	77	2.57	120	2.42	88	2.59	90	2.71	91	3.09

1.2 Statement of the purpose: Technological and technical implications of new innovations for railway

There exists an opinion that the new innovations in railway, including high speed rail (HSR), intelligent railway, and others, may not be needed in developing countries for the reason that they require heavy investment. The latter becomes a deadweight burden on the developing countries' public budgets. There were instances where some developing countries, Indonesia among others, took considerable time to eventually accept the loans under the large-scale HSR projects (Chew, 2015). Indeed, the innovations mostly come from advanced countries in their search for new expansive markets (Sergeeva, 2018). The quest for ways of minimizing the costs associated with bringing in new innovations to railway has remained acute, as ever. Even in advanced countries, HSR, along with some other innovative railway projects, may turn out to be complex in order to fully align the innovative transit plans with existing regulatory requirements, local stakeholder opposition, and a polarized political environment in the countries initiating such innovations (Rockwood, 2018). And yet, HSR is only one of much broader expanse of new innovations in railway. To that end, wouldn't it be reasonable to apply the new innovative products instead of comprehensive mega projects, such as HRS, which requires mass investment, new skill, and lengthy time to implement (Shunquan). As an alternative, which is less painful, the new innovative solutions (applications) may well serve the specifically-tailored needs of developing countries. Those could well-fit those countries that are currently undergoing their transition onto the mid-to-advanced level in their development paths. To that effect, this paper, while recognizing the lasting need for comprehensive solid investments that bring in new innovations at much broader regional scale, in the form of the newly innovative mega-projects like HSR, suggests looking closer into specific innovative solutions for railway. The latters promise to work well, in the meantime, to address most urgent needs of developing countries. From that stance, today's needs for new innovative solutions in railway have been clearly specified by ECO's diverse stakeholders. Their prime focus is on the filling-in of the missing links in their currently available infrastructures, logistics and freight throughput to be moved by rail. Their forward-looking focus is eventually on sustainable transport networks (Yoan, 2017).

For practical reasons, the listing of railway-specific innovations solutions (applications) has been reflected in table 2 below. These highlight their close alignment with the present day needs of the ECO countries as strategized in their transport plans and programs.

The outstanding needs of national railway networks of the ECO countries have been multiply discussed at the regional level through high-level meetings of Heads of Railway Authorities of the ECO Member States. Thus, the ECO stakeholders' prime concerns are

associated with low 'cargo mobilization'[1] on the key regional railway corridors (Ministerial, 2018). The need for the new innovations solutions to handle infrastructure inefficiencies is through the automated bogie change. The change of bogies is one of the most acute challenges for the regional railway. As such, it has especially been prioritized by stakeholders.

Table 2. Innovations solutions in railways

Types of innovations	Expected Change	Expected Benefits	Efficiency	No.
Green electricity stations	Increase in share of green traction system to 80% by 2025	Save up to 35,000 tons of CO_2 p/y	96 stations in ECO region are used y\y	1.
Hybrid Power Pack	Conversion of rail fleet to hybrid	Benefits of battery-powered and diesel-powered traction system merged into an electrical unit to function both as a motor and a generator	Noise reduction up to 75% and reduction of CO_2 emissions by 20%	2.
Freight wagons with modular frames enabling automated bogie change	Use of flexible flat steel shipment	Multimodality Flexibility Cost effectiveness	1-2% less energy consumption	**3.**
Natural gas powered train	Conversion of trains to methane	Carbone dioxide emissions by 20% by 2025	Replacement of 200 trains will saves up to US$3 mn in fuel costs.	4.
Low maintenance automation trains	Track machines to operate under weather conditions	Additional traffic volumes amount of 23.9 million tones p/y by 2025		5.
Weld traceability across supply chains in the rail sector	Facilitating the recording and transmission of data b/w welding parties	Saves time on Manuka form completion; Provides instant information on each weld	Industry 4. Visibility (via Pandrol Connect)	6.
Robotic installations	Bogie design and production			7.
Advanced truck systems (ATS)	2-pace bogies system	Increase payload; Reduce wheel and track wear	Predicts wheel set conditions; Planned maintenance;	8.
Hydrogen trains	Emits water only	Decarbonized railway	Generation of highly skilled engineering jobs	9.
On-board railway electrical system				10.
Dual system, electricity and diesel autonomous locomotives	Handles both, shunting and lining operations without changing the vehicle	Autonomous steering system controlled by artificial intelligence	Installation of system of sensors, cameras, gyroscopes	11.
On-line marketplace in the railway sector	Specialized platform for buy and sell mobility-related products and services	Fluidity to supply chains of mobility; orders; delivery Covers trains infrastructure depots and stations		12.
Rail Cube Software Solutions	Digital planning, ordering and dispatch.	Standardization across borders.	Comprehensive door-to-door logistics Connection to economic. Areas	13.
Digital railway system				**14**

[1] The ECO specific term - 'cargo mobilization' - has been construed in the present paper as 'railway freight traffic flow'.

Based on the above explanations, this paper singles out among the many new innovations solutions, the following ones: No. 3: Freight wagons with modular frames enabling automated bogie change and No.14: Digital railway system out of 14 reflected in Table 2. The choices have entailed from the first priority issues that have been specified by stakeholders at high level for the ECO.

As with the acknowledging of ever acute need for new innovations solutions in railway, the paper saw it reasonable to define the 'operational efficiency' in individual railway networks of the ECO countries. That would help identify how the efficiency changes with the introduction of new innovations solutions in the regional railway. In so doing, the paper, at onset, developed clear measurements to identify how established are the operational capacities in the individual railway networks of the ECO countries, under the present observation.

1.3 Defining ECO railway network's operational efficiency

The ECO Railway Network (ERN) was established in 2012 (Tramboulas, 2012). It has five key railway corridors that have, in the ECO context, been named as 'routes'. Those are, as follows:

Route No.1 (6543km)

Türkiye

(Bulgaria border)-Kapikule/(Greece border)-Uzunkopru-Istanbul (European side)-Ferry segment (tunnel under construction)-Istanbul (Asian side)-Izmit-Bilecik-Eskisehir-Ankara-Kayseri-Bostankaya-MalatyaElazig-Mus-Tatvan-Ferry Lake Van (new alignment planned)-Van Kapikoy-(border with Iran)

Iran

(Border with Türkiye)-Razi-Sufiyan- Tabriz-(Maraqeh)-Miyaneh (under construction) Zanjan-Qazvin-Aprin (near Tehran)-Mohammadiyeh Kashan-Yazd-Bafq-Kerman-Bam-Zahedan-(gauge change to 1676 mm)-Mirjaveh-(border with Pakistan) Pakistan (border with Iran)-Taftan – Nok Kundi-Dalbandin-Ahmad Wal-SpezandKolpur-Abi Gum-Sibi-Jacob Abad-Rohri-Samasatta-Multan-KhawalFaisal Abad-Wazirabad-Lalamusa-Rawalpindi-Islamabad

Map 1: Map of Route 1

Route No 2 (5626km)

Türkiye

(Bulgaria border)-Kapikule/(Greece border)-Uzunkopru-Istanbul (European side)-Ferry segment (tunnel under construction)-Istanbul (Asian side)-Izmit-Bilecik-Eskisehir-Ankara-Kayseri-Bostankaya-MalatyaElazig-Mus-Tatvan-Ferry Lake Van (new alignment planned)-Van Kapikoy-(border with Iran)

Iran

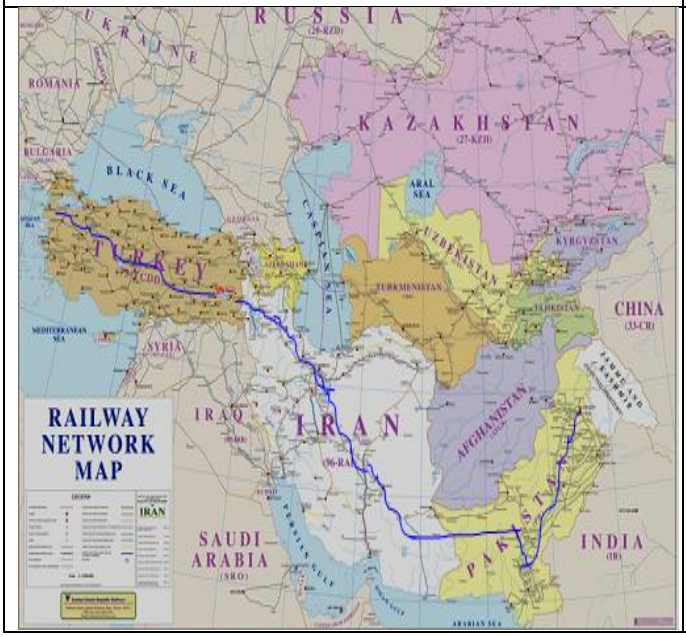
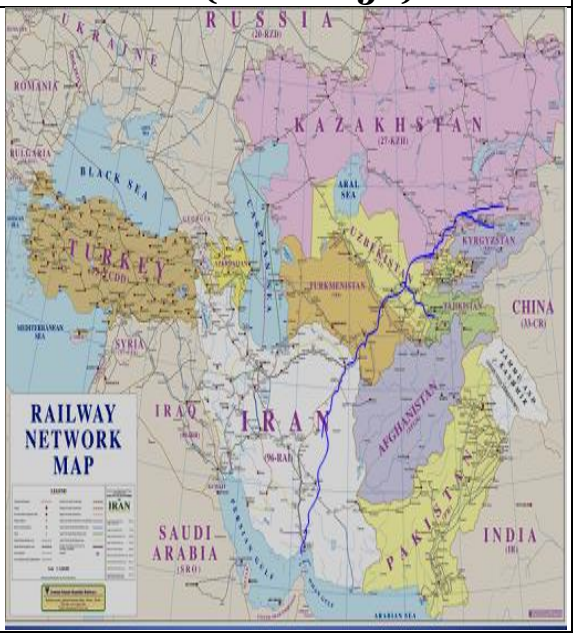
(border with Türkiye)-Razi-Sufiyan- Tabriz-(Maraqeh)-Miyaneh (under construction)-Zanjan-Qazvin-Aprin (near Tehran)-Semnan-Neyshabur-Sarakhs-(border with Turkmenistan)

Turkmenistan

(border with Iran)-(gauge change to 1520mm)-Serakhs-Yoloten-Mary-Turkmenabad-Farab- (border with Uzbekistan) Uzbekistan (border with Turkmenistan)-Khojadavlet-(Bukhara)-Navoi-SamarkandJizzakh-Khavast-Tashkent-(border with Kazakhstan)

Kazakhstan

(border with Uzbekistan)-Saryagash-Arys-Shymkent-Lugovaya-BirlikAlmaty-Aktogai-Dostyk-(border with China**)** towards Alashankou/Urumchi

Istanbul-Almaty (ECORail2A)	**Bandar Abbas – Almaty (ECORail5B)**
	

Map 2: Map of Route 2

Route No. 3 (338km)

Main route connected to branches	Branches
Azerbaijan [railway gauge 1520mm] (border with Russia)-[standard gauge]-Yalama-Sumgait-Baku-Astara-(border with Iran) **Iran** (border with Azerbaijan)-Astara-(under construction)-Qazvin-Karaj-Tehran-Qom-Yazd-Bafq-Sirjan-Bandar e Abbas **Branches: ECO RAIL 3-B-A (CASPIAN SEA, AZERBAIJAN, IRAN)** [Construction completed: Qazvin-Rasht and Bandar e Anzali]-ferry segment to Baku exists. (Azerbaijan) **ECO RAIL 3-B-B (CASPIAN SEA, KAZAKHSTAN, IRAN)** [under construction: Rasht-Astara and Bandar e Anzali]-missing ferry segment to Aktau (Kazakhstan)	**ECO RAIL 3-B-C (CASPIAN SEA, TURKMENISTAN, IRAN)** [under development: Qazvin-Rasht-Bandar e Anzali]-ferry segment to Turkmenbashi (Turkmenistan) **ECO RAIL 3-B-D (IRAN)** Qom-Arak-Ahvaz-Bandar e Emam Khomeini **ECO RAIL 3-B-E (IRAN)** Bafq-Kerman-Zahedan-(under construction) Chabahar

Map 3: Map of Route 3

Route No. 4 (924km)

Kazakhstan

(border with Russia)-Zaisan-Aktobe-Kandagach-(under construction)-Makat-Beineu-Aktau-Uzen (under construction)-(border with Turkmenistan)

Turkmenistan

Under construction: (border with Kazakhstan)-Bereket-Godurolum-(border with Iran)

Iran

(under construction)-(border with Turkmenistan)- [railway gauge 1536mm]-new line to Incheh-Boroon-Gorgan-new line Shahrud-Neyshabur-Torbat e Heydarieh-Bafq-Sirjan-Bandar e Abbas

Map 4: Map of Route 4

Route No 5. (est. 1,200km)

Kyrgyzstan

New line: (border with Tajikistan)-Sary Tash-Irkeshtam-(border with China) towards Kashgar (Kashi)

Tajikistan

[under construction: (border with Afghanistan)-Nijnii Pyanj-DustiKalkhaz Abad]-Kurgan Tube-Kulyab-(new line)-Yavan-(under construction)-Vahdat-(new line)-Karamyk-(border with Kyrgyzstan)

Afghanistan

(border with Iran)-under construction until Herat-[new line: Kusk-Kalainau-Meymaneh-Andkoy-Sheberghan-Mazar e Sharif]-[under construction: Baghlan-Kunduz-Sherkhan Bandar-(border with Tajikistan)

Iran

(border with Türkiye)-Razi-Sufiyan- Tabriz-(Maraqeh)-Miyaneh (under construction)-Zanjan-Qazvin-Aprin (near Tehran)-Semnan-Neyshabur-Sarakhs-(border with Turkmenistan)-Ma'dan e Sangan-(under construction until border with Afghanistan)

Map 5: Map of Route 5

The above-described five key railway routes of ECO are in ownership of the key nodes in each (ECO, 17-18 May 2017). The following table illustrates the number of nodes within each of the five of ECO's key railway routes, dubbed after the names of the country they belong to.

Table 3: ERN key routes, nodes, rail-based segments, innovations-paired segments

No.	Nodes	ECO Railway Routes	ECO-specific names o railway routes	Indication of railway segments that are connected to nodes
1	Zahedan-Taftan	No. 1	ITI	z
2	Serakhs	No. 2	ECORail2A-5B	s
3	Astara	No. 3	Qazvin-Rasht-Astara	a
4	Incheh-Borun	No. 4	KTI	i
5	Turgundi	No. 5	KTAI	t

The following definitions in the paper have been used to employ the key measurements for the analyses to describe major parameters of such indicators:

Table 4: Definitions

ETNE – ECO Transport Network Efficiency ERNE- ECO Railway Network Efficiency ETNE, T= (N, A); ERNE = ε; I – Innovations meaning the new innovations solutions such as applications that are specific for ECO; N – set of the ERN's nodes consisting of I_n elements;	A – set of the ERN railway lines with n_a elements; W – set of Origin-Destination (OD) pairs the ERN nodes with n_w elements; K_n – set of patterns connecting the OD pairs; q_w – demand for the OD pairs.

In each node the number of stations varies: the KTI (Map 4: Route 4.) has only 12 stations along the entire corridor whereas the Istanbul-Almaty & Almaty-Bandar Abbas railway corridor has 37 stations and ITI railway corridor has 48 stations. The analysis under this paper focuses on the consideration of railway freight traffic flow (x_z), which in the context of the present analysis stands for 'cargo mobilization': (x_z). The analysis also focuses on the new innovations solutions termed under the present analysis as the 'Innovations': ($I_z(x_z)$. The latter has been examined from the point of view of how it may impact railway freight traffic flow i.e. 'cargo mobilization' (Report of the 13th Meeting of Heads of Railway Authorities of the ECO Member States, 2017). As mentioned earlier in the paper, the ECO stakeholders have particularly been deeply concerned about 'cargo mobilization' by rail, which, in their opinion, has been low (The 9th Meeting on ITI Container Train, 2017). Likewise, (x) has been examined through the prism of how it be impacted by (I), both being one of the major components of the ERN, under this paper. The term – 'Innovations' – has been used in the analysis to indicate a set of the new innovations solutions (applications) that are specific for ECO (for details pl. see Table 4).

With the objective of exploring how the new innovations solutions will impact the functioning of the ERN, the paper has deployed the two component non-parametric analysis (Sarmento, Renneboog, &Verga Matos, 2017) by using formula of defining the efficiency of the railway network: $\varepsilon = \varepsilon(R, q) = \frac{1}{n_A} \sum_{z \epsilon A} \frac{x_z}{m_z}$;

In the context of the ECO, *R* indicates the regional railway network. Thus, the analysis method admitted that the function of the Innovations is, in fact, its cost value. The latter has

been admitted under the assumption that prior to implementing any new innovation into practical life of any given railway network in the ECO region, the stakeholders in the member countries will first look into how feasible the innovation may turn out to be, in terms of its cost. Thus, the Innovations I_z (x_z) in this paper has been reflected through the following equation:

$$I_z = \left[1 + \alpha \frac{x^z}{c^z} \beta\right]; \quad (1)$$

In equation (1), c_z- capacity of railway segment z;

α and β – the Innovations cost's parameters that were set as constant at: α=0.15; β=4;

The latter parameters evolved from the regional average score on infrastructure and logistics, which when adjusted to the realities of the ERN resulted in the above numeric values that have been taken as constant for computations under the present analysis.

The conditions for indicator variable σ_k^a have been set as:

$$\sigma_k^a = \begin{Bmatrix} 1 \text{ if segment } \alpha \text{ is on the path } K; \\ 0 \text{ otherwise;} \end{Bmatrix}$$

In equation (5) m stands for railway cargo mobilization cost, which has been admitted by stakeholders to be low on rail-based segments (RPC, 14-15 Deecember 2017);

Railway cargo mobilization pattern on a given rail-based segment has been set at:

$$\text{Min } \sum(x) = \sum_{\alpha \in A} \int_0^{x_a} I_a\ (y)dy; \quad (2)$$

$$\text{s.t.d. } \sum_{mk}^{w} = qW, \forall\ W \in W; \quad (3)$$

$$x_a = \sum_{w \in W} \sum_{k \in K} mk\ \sigma_k^a\ , Y_q\ \in A\ ; \quad (4)$$

$$m_k^w \geq 0,\ \ \forall w \in W,\ \ Y_k \in K_w\ ; \quad (5)$$

2. Defining the role of the innovations in the ERT and ERN

The paper recognizes the need for the new innovations solutions as seen in this paper to minimize its cost in order to be feasible for the ECO stakeholders to implement innovations in their respective railway networks. For that, the paper finds the efficiency of the overall ECO Transport Network (ERTE), indicated as 'E'. Such step is needed because the ECO Railway Network (ERN) is, in fact, part of the ECO Transport Network (ETN) (Shimoya, 2016). The formula deployed for computing ERTE has been, as follows:

$$E = E(T) = \frac{1}{n(n-1)} \sum_{c \neq s,z} \frac{1}{d_{s,z}}; \quad (6)$$

In formula (6) E is the efficiency of ETN;
n – number of elements in ETN;
d – demand for cargo mobilization in ETN;
z, s – railway segments within ERN.

The paper first identifies the levels of prominence of the ERTE components' values. The latters are to be used to then define the impact of the innovations on the railway traffic flow i.e. cargo mobilization. In the formulaic context, ERTE is 'T' Thus, T and t∈T have been presented, as follows:

$$p_t(t) = \frac{\Delta \varepsilon}{\varepsilon} = \frac{\varepsilon\,(T,d) - t(T-t,d)}{t\,(t,d)}; \quad (7)$$

In equation (7) $p_{\varepsilon\,(t)}$ is the prominence value of component t based on the ERN's efficiency ε;

T-t represents the status of the ETNE indicating instances when it functions without the innovations solutions embedded in component *g* of ETN (T);

The ranking of prominence values has been fulfilled in the descending order with the upper bound having been set at '1' following the WDI indexing.

The prominence value of the ERN's component t∈T, based on the ETN's overall efficiency E, has been formulaically employed, as follows:

$$p_E(t) = \frac{\Delta E}{E} = \frac{E\,(T,d) - E(T-t,d)}{E\,(T,d)}; \quad (8)$$

The paper while assuming that the rail-based segment marked as 'with the innovations solutions introduced', presented the cost function of the new innovations solutions, as follows:

$$p1_{a\,(x_z)} = 10[(1 + 0.15\left(\frac{x_z}{4}\right)^4; \quad (9)$$

$$p1_{s\,(x_s)} = 15[(1 + 0.15\left(\frac{x_s}{6}\right)^4; \quad (10)$$

$$p1_{a\,(x_a)} = 12[(1 + 0.15\left(\frac{x_a}{3}\right)^4; \quad (11)$$

$$p1_{d\,(x_i)} = 15[(1 + 0.15\left(\frac{x_i}{10}\right)^4; \quad (12)$$

$$p1_{t\,(x_t)} = 20[(1 + 0.15\left(\frac{x_t}{8}\right)^4; \quad (13)$$

In the above equations, p1 (x_t) is the cost value prominence of component *t* based on the ERN's efficiency ε;

By using the generalized gradient projection method, which is commonly applied in analyses when it concerns the differing levels of items under an observation, the paper computed the following numeric values:

$$\bar{x} = \bar{x}_z, \bar{x}_s, \bar{x}_a, \bar{x}_i, \bar{x}_t\} = \{5.7728, 4.2272, 6.1893, 5.4165\};$$

Based on the above-described equations and *x*, the paper computed the ETN's efficiency i.e. ERTE, as follows: E =0.0195. It also computed the ERN's efficiency (ERNE), as follows: ε=0.2688. Based on the resulting numeric values, the total cost value of new innovations solutions has equaled to: 120.5456.

Stemming from the structuring of the ECO Railway Network (ERN), the below table illustrates the ERN's railway nodes and rail segments.

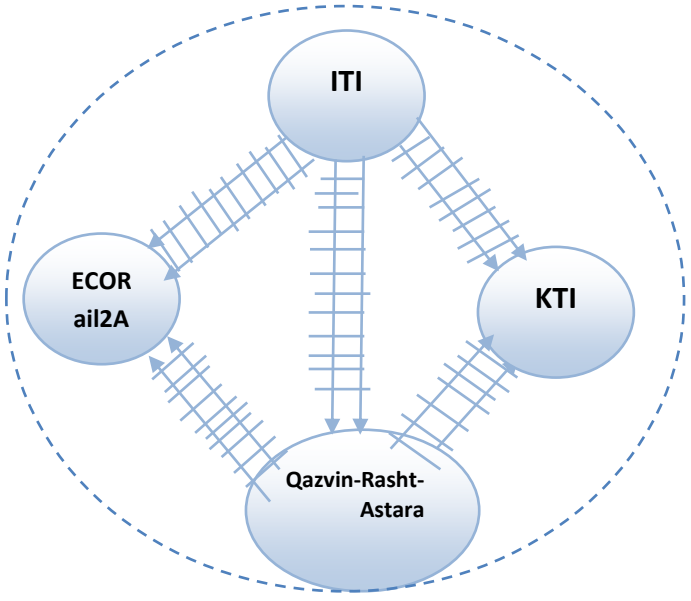
Table 5: The ERN nodes and ERN rail-based segments

No.	ECO Railway Network nodes	ECO Railway Network routes' segments	Numbering of rail-based nodes in scheme 1
1	Zahedan-Taftan	Z	No. 1
2	Serakhs	S	No.2
3	Astara	A	No.3
4	Incheh-Borun	I	No.4
5	Turgundi	T	No.5

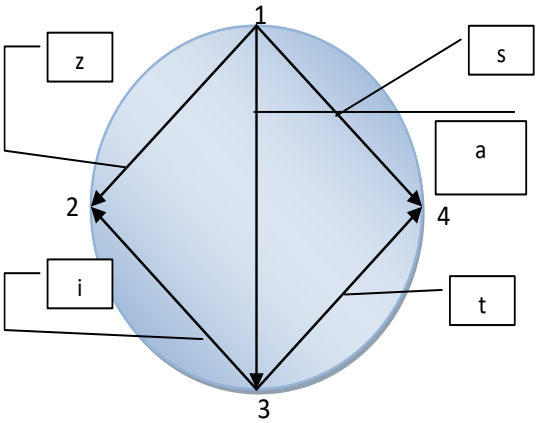
The paper also observed the dynamics in the changes in the ERNE depending on whether its rail-based segments were paired within the corresponding the OD pairs connecting the latters to the following conditions: (i) 'with' or (ii) 'without' the innovations solutions, to be observed under this analysis. For better clarity, the analysis makes a reference to the assumed act of the pairing of the new innovations solutions via the OD pairs. In this the term: "with" has been applied. In other works, the role of the OD pairs in this observation is that they indicate the paring of a given rail-based segment's link 'with' the new innovations and those instances when the same rail-based segment's link is 'without' the innovations. The assumption taken in relation to the above-described pairing stems from the theory that the efficiency of any given transport network is computed based on a relative drop of network efficiency value after it is completely blocked or failed within the network (Dalmo, 2019). Thus, the analysis refers to the assumed absence of the paring of new innovations solutions on a given railway segment of the ERN. In this, the absence of new innovations solutions was indicated by term: "without". Graphically, the ERN's railway nodes and their corresponding rail-based segments as linked to the OD pairs following succession of their vector directions on which demand q was ensured along the pairs (diagram 1 and scheme 1).

ECO railway nodes and rail-based segments within ERN

Diagram 1.



Scheme 1.



In exploring the efficiency changes, Figure 1 illustrates that the ETN's efficiency (*E)* and the ERN's efficiency (ε) do change given the railway cargo mobilization at demand q_{12} depending on whether the railway segment z is 'with' or is 'without' the innovations solutions.

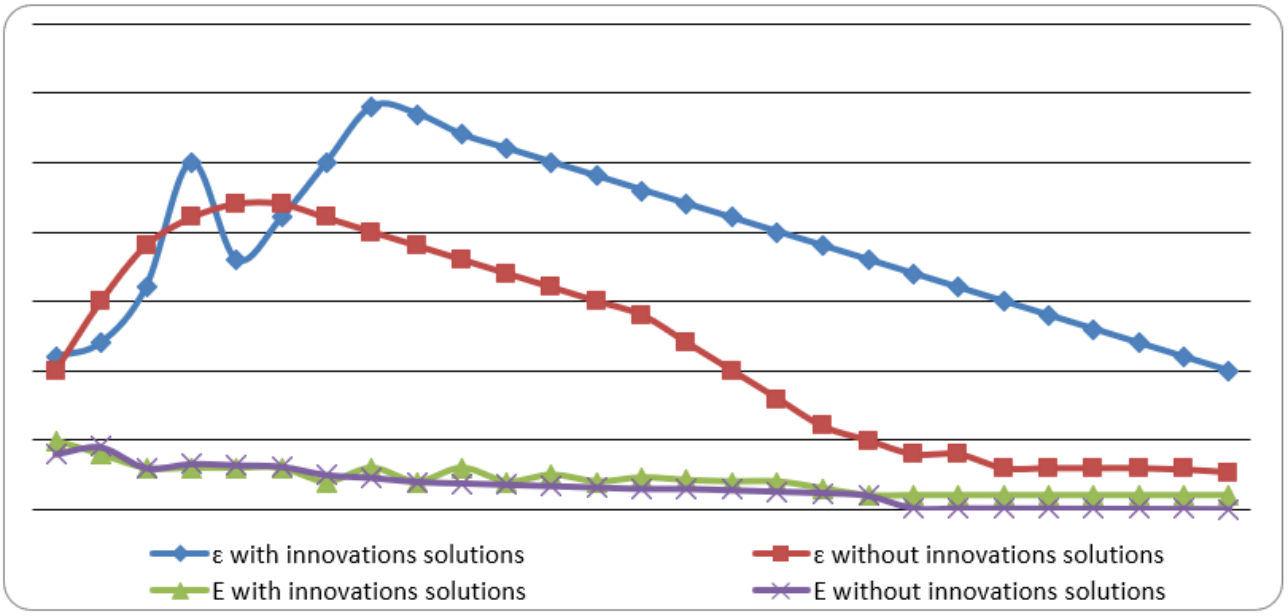


Figure 1: Change in efficiency of ERT and ERN 'with' and 'without' innovations solutions at a lower demand

Figure 2 reveals that the changes in efficiency Ɛ of the ERN and *E* of the ETN stem from the pairing of the rail-based segment *s* with the new innovations solutions through the OD pairs. The latters also occur in their dependence on the conditions of 'with' and 'without' the pairing of the new innovations solutions to the corresponding rail-based segments at a given cargo mobilization demand: q_{14}.

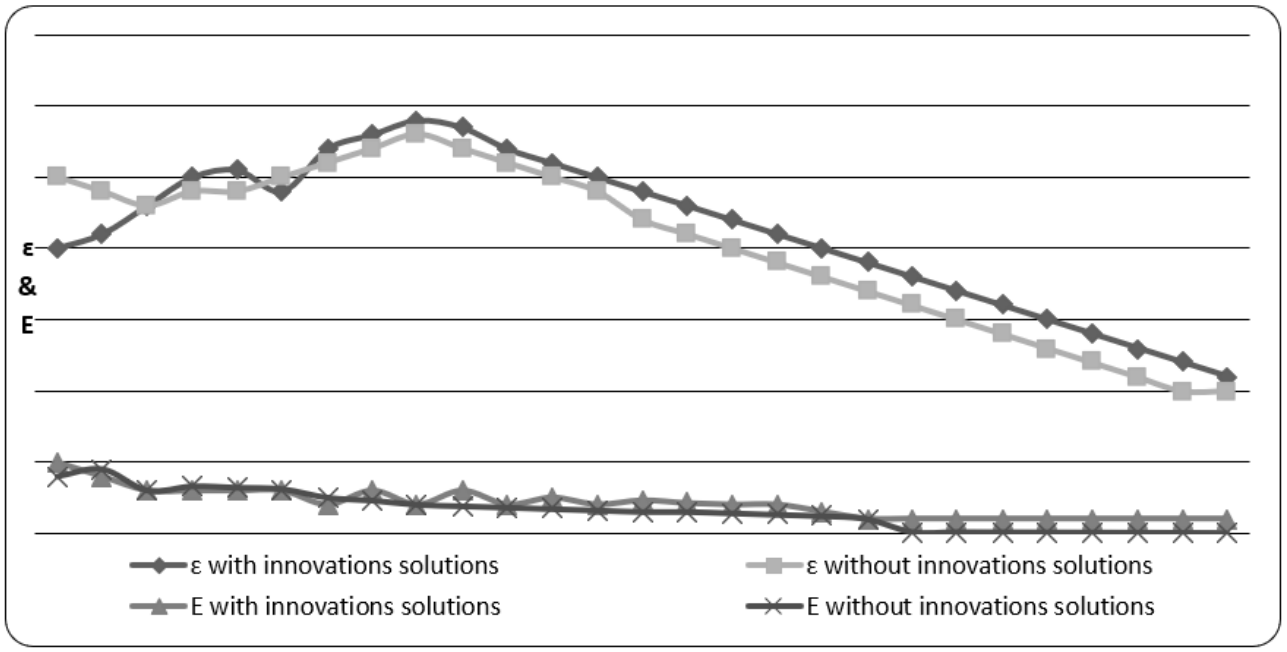


Figure 2: Efficiency of ETN and ERN under conditions of paring 'with' and 'without' innovations solutions at higher demand

Based on the above observations, efficiency *E* of the ERN decreases regardless of whether it has been paired 'with' or 'without' the new innovations solutions on rail-based segments *z* and *s*. The value of *E* 'with' the innovations solutions on rail-based segments turned out to be always larger compared to when it is 'without' the innovations solution on the corresponding rail-based segments.

3. Findings

Being supported by the above-described observations, the paper sums up the two key findings:

(1) The change in the ERN's efficiency i.e. ERNE describes the status of the function of the ERN's infrastructure and cargo mobilization.

(2) When the overall ETN does change, basing such changes on its railway cargo mobilization, in the ERN's real-time infrastructure, there is more than one prominent spot of which the quantity directly relates to the number of railway paths ensuring installation of new railway innovations solutions on the rail-based segments between the changing OD pairs as identified in scheme 1 and diagram 1.

3.1 Innovations and efficiency of railway segments 'with' and 'without the innovations solutions'

Figure 3 below reflects the efficiency on the ERN's rail-based segments 'with' and 'without' new innovations solutions. It also shows the cost function of the innovations when paired 'with' new innovations solutions, which is not high, compared to when it were to incur in the framework of the mega projects requiring massively huge capital investments.

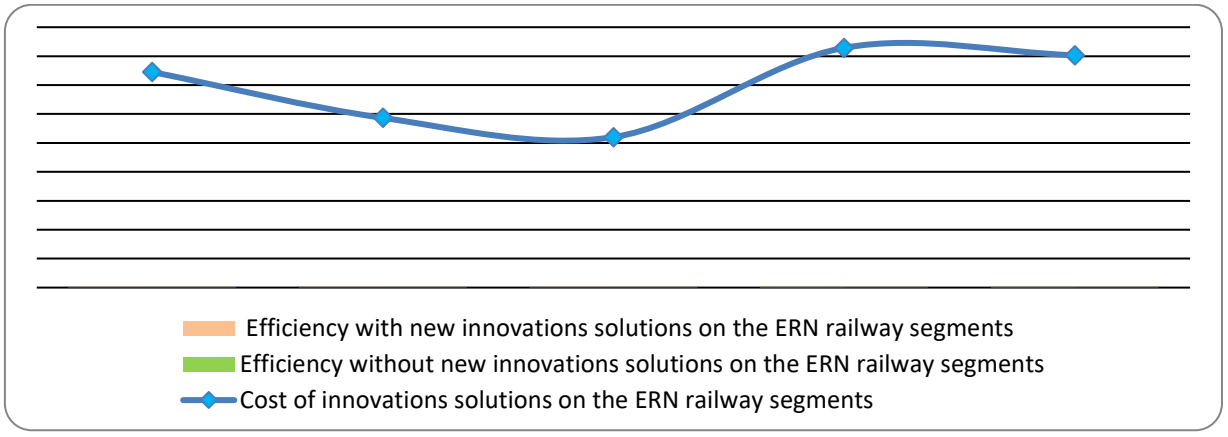


Figure 3: Innovations cost and efficiency of ERN 'with' and 'without' innovations solutions

Overall, the figure above reflects the cost function of the innovations. It also shows how efficiency of the ERN changes with the introducing of the new innovations solutions compared to the efficiency but without its pairing with the new innovations solutions in instances when the latters fail to be introduced.

The critical components of the ERN's efficiency i.e. ERNE can be seen based on the prominence of values of ERNE's major components. In this visibility, the component

indicating the prominence of a value, in the descending order, may be admitted as the first one in the ranking (Lorenzo, 2013). If to follow the analysis under the A, B, and C categorization, the highest 20% of ERNE's components can be recognized as 'critical' and those falling within the range of 20%-50% as 'important'. The rest may be viewed as 'common' values.

The findings of this section are such that ERNE's components like ERN's nodes and its rail-based segments, even under conditions of a non-integrated network, could be used to further identify critical components that require the attention of stakeholders in any given railway network. Under *ceteris paribus* in the context of this paper, the fixed-demand has been set at moderate as the characteristic of the comprehensive transportation network. That has been assumed as constant.

3.2 Conclusions on technological implications of new innovations

The paper, when considering the technological implications for the regional railway, has revealed the operational efficiency of the ECO Railway Network (ERN). Not only that the paper computed the impact of the innovations on railway efficiency but also showed how demand in cargo mobilization changes upon introducing the new innovations solutions in railway networks of the ECO countries. It also revealed that the new innovations solutions and cargo mobilization are the most prominent critical components of the ERN's efficiency. For more, the new innovations solutions and cargo mobilization are the functions of the ECO Transport Network (ETN). Efficiency and ERN's components' prominence values are, in turn, the functions of 'cargo infrastructure' and infrastructure and, for that matter, it is universally admitted that new innovations are part of the infrastructure in transport.

Building further on the latter observations, future research may describe how railway cargo mobilization, new innovations, innovations-focused skill and railway infrastructure would affect progressive railway operations. Most importantly, this paper revealed that the new innovations are one of critical components of the ERN's functioning because it brings the increasing efficiency into the ECO's regional railway performance. Such findings are important for the effective coordination amongst countries at regional level. The latter could be used in guidelining for the purposes of: (i) cargo mobilization on any given railway network; (ii) infrastructure reconstruction/rehabilitation, (iii) maintenance, and (iv) informed planning and decision-making. The paper also points at productivity of the ERN from the point of view of performance in individual countries' railway modes of the ECO transport.

3. 3 Technical Implications: Interoperability methods

Interoperability is critical for success of railway operations. Most often than not the interoperability does come along with new innovations in railway. Technical implications entail managerial efficiency. For the betterment of the latter, new innovation coordination and guidelines would be needed (Edquist, 2019). Stemming from the operational efficiency described in earlier sections of this paper, the interoperability will be examined in this section in relation to how it could work in the context of the ERN. For this, the paper deploys the operational criterion.

Operational criterion

It is not unusual in ECO for one railroad's locomotives to operate on one another's tracks. In such practices, the tenant locomotives are linked to the host railway control systems. Over the past, container trains along ECO's rail corridors were granted 'green light' for pass-through in test-utilizing the formal channels of communication. As with the introduction of commercialization on regional railway corridors and new technology proposed by ECO's Regional ICT Development Strategy (ICT Ministerial, 2017), which was adopted in December 2017 in Baku during the 2nd Ministerial Meeting on ICT, the model of interoperability has to change. The change has also been necessitated by the inter-regional developments, which followed the concept of the interoperability to embrace a wider perspective "not just technical specifications but an intra-and-inter-regional policy to enhance ICT-related industries while serving as a prerequisite for fully functioning of the Information Society" (Branislav, 2018; EU, 2004, p.7). Based on the above, the model will be structured to meet the following targets: (i) to interoperate across distributed networks; (ii) to accommodate multiple communication system designs; (iii) to support radio interchangeability on board and locomotive, (iv) to support varying deployment timelines, and (v) integrate the above-indicated targets under the comprehensive work plan of the CME on every of ECO's railway corridor.

As required under this model of interoperability on ECO's railway corridors, each railway segment will have to install the train control system (TCS) wayside, back office, locomotive hardware and ensure comprehensive capacity-building training. The installation of TCS and wayside location stations has been envisaged in Article 9 (f) of the ECO's Transit Transport Framework Agreement (TTFA) whereas the installation of back offices and related hardware/software are aligned with Article 8 as well as Article 11 of the TTFA.

Given the new challenges reflected in ECO's strategy on ICT, immediate steps to initiate the model of interoperability on railway corridors will include the following practical actions/measures:

(1) Undertake inspections of the current status of installations along the distance of a selected railway corridor;

(2) Install the train control system equipment on the locomotives and railroad facilities;

(3) Develop, produce, and deploy radio system designed for data transmission of train control system messages at all base stations and trackside locations and on locomotives;

(4) Complete signal replacement, including upgrades to train control systems at all stations along the ECO railway corridors in compliance with ECO Map of Railways;

(5) Develop back office systems and upgrade and integrate dispatching software to include the data required for the train control systems.

(6) Test the integration of all components the system through test runs of container trains.

(7) Test interoperability amongst en-route countries railway networks in utilizing the system.

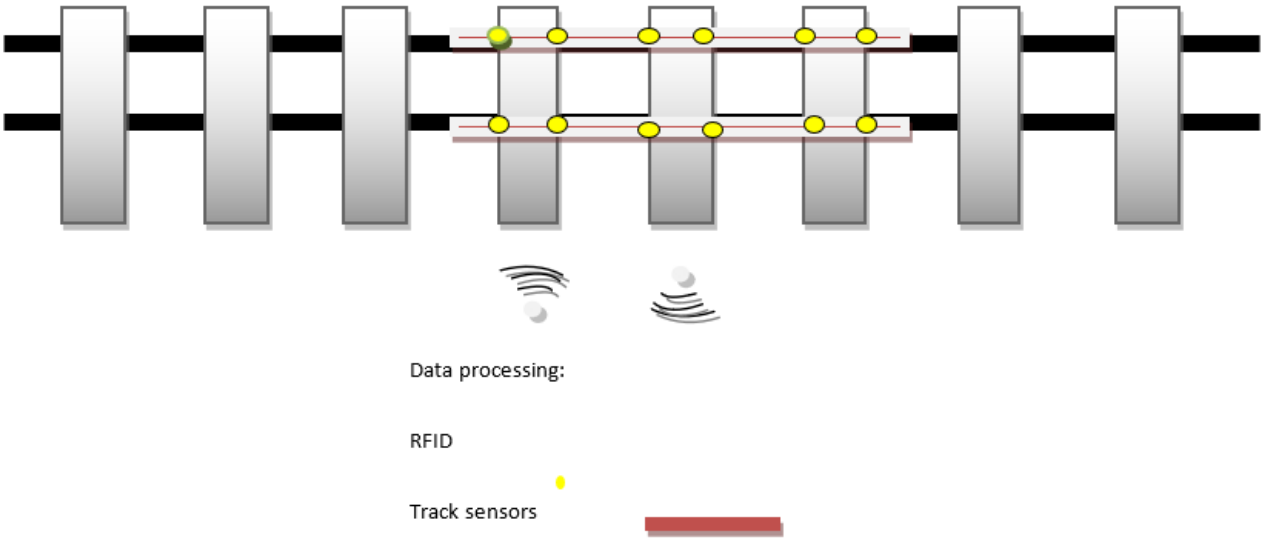
The path to achieving interoperable sustainable operations on the regional railway corridors have been defined to be through optimization (ECO-ITU Joint Study on ICT, 2017); (ECO Vision 2025). By optimization in railway, this paper implies the method of

making the system as perfect, cost-effective, and qualified as possible considering the existing operational constrains and conditions (Hayat, 2017; Ali Zamani, 2011, p.7). The optimization will require installment of the automated supervisory control and data acquisition system (ASCADA). In some of the en-route countries along ECO's key railway corridors, the prototype ASCADA system has already been installed (para-76, Report of the 9th Ministerial; Meetings, 2018); in some others, notably, Turkmenistan ASYCUDA is being installed, in others, including Tajikistan, Kyrgyzstan and Afghanistan it is under consideration. Bearing in mind that the existing railway corridors run through territories of the en-route countries that have been equipped with ASCADA or its prototypes, the following steps have been identified as first immediate for the development of the interoperability model. Most of en-route countries have equipped their locomotive trains with the automated train control systems (TCS) since the serial production of those follow the new technology standards in wagon and loco production. Providing for the central dispatch system of railway corridors will be the core issue to be resolved by the CME, which has been envisaged on the KTI railway corridor as a point of a single window and a single contract (as described in the introduction section).

Based on the above-described arrangements, the following summary of the actions/measures towards the optimization for operability and sustainability have been identified by the paper in the following order of sequence:

1. Automated supervisory control and data acquisition system
2. Automated train control system
3. Central dispatch system

The scheme of optimization with the objective of achieving sustainable and interoperable railway operations is presented below, as follows:



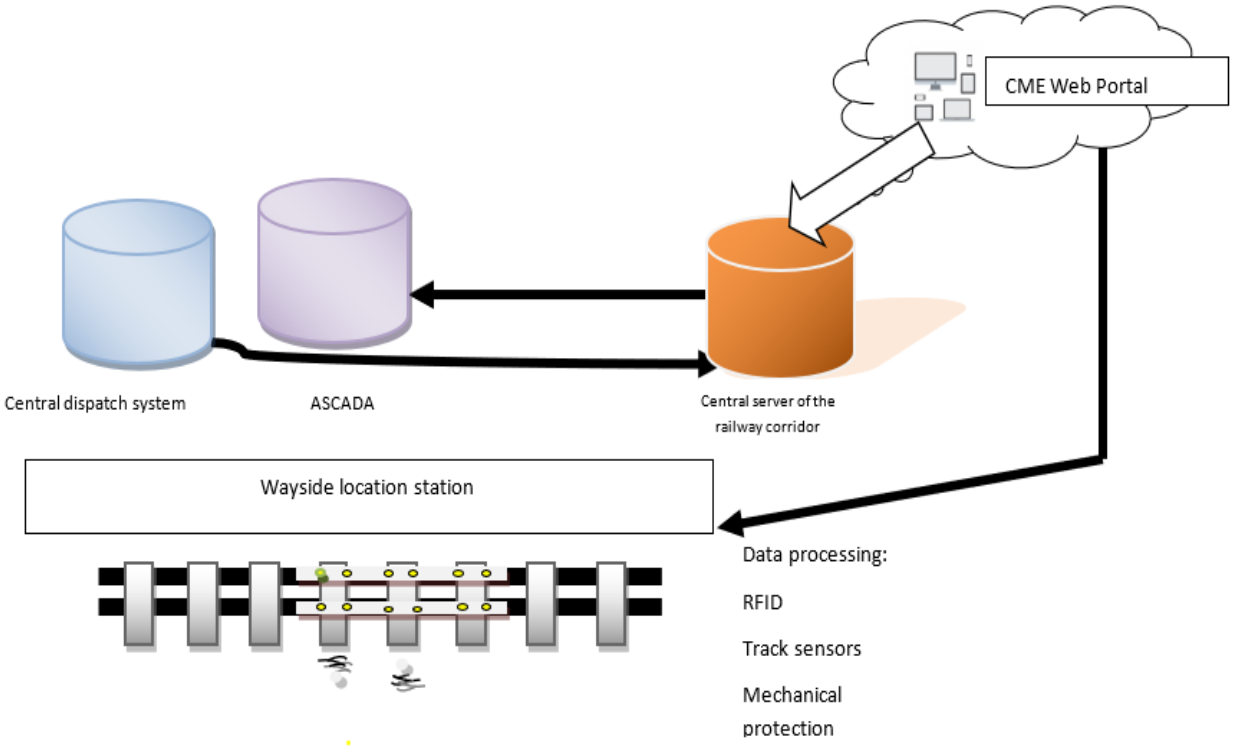
Scheme 1: Optimization scheme to achieve sustainable/interoperable railway operations in ECO

The actions/measures embedded in the optimization scheme have to be integrated under the ECO railway corridors' management. In that regard, the common CME portal will be linked through central server to: (i) automated supervisory control and data acquisition system, (ii) central dispatch system, (iii) wayside location station to read the data of the

automated train control systems. The KTI (Map 4: Route 4.) has only 12 stations along the entire corridor whereas the Istanbul-Almaty & Almaty-Bandar Abbas railway corridor has 37 stations and ITI railway corridor has 48 stations. Therefore, the installation of wayside location stations will be on 97 stations at the regional level. The train-based control systems will have to be installed on the ITI railway route, in Pakistan's segment as the locomotives in this segment are largely outdated.

The configuration of the monitoring platform within the interface of the CME's web portal to be set up may be discussed and defined by the CME's participating parties depending on the design propensities of the involved en-route countries. The platform will function as a SIMobility tool of business-to-business communications enabling the integration of mobility services of various providers (such as road trucks connecting their freight to rail) into a "one window, one-stop portfolio" for the users in railway transport mode (Jarasueniene, 2017; Pieriegud, 2018) p.39.

In the meantime, the holistic scheme of the integration of the CME internal control system with the components of the optimization scheme may be presented as follows:



Scheme 2: Integration of internal systems of CME with the optimization scheme components

Systemic criterion

Under this section, the systemic criterion accounts for frameworking the structure of systems involved in railway operation to realize the desired interoperability from the regulatory perspective (Jayani R.P., 2018). Interoperability in railways does not only require technical, operational, and digital interoperability but it "also requires interoperability of physical and rules-based layers across vast geographies" (WB, 2010); (WEF, 2018) p.14. In this regard, the ECO's legal guidelining framework – TTFA – defines rail transport, primarily, from the point of view of transit railway transport. The TTFA in its Part VI, Article

23 designates the central role to the railway interchange stations in railway transit. The legal framework envisages the inter-railway agreements where the rules and norms for railway transit could be specified for railway corridor operations. Based on this regulation, the interoperability model should be embedded in the inter-railway agreements, including all type agreements and project contracts amongst en-route countries. The practices of such arrangements may include memoranda of understanding, letters of intent or as in the case with the KTI project – memorandum of agreement where the task of creating the CME has been reflected in the work plan of project activities. Based on ECO's legal regulatory system's norms, the targets in developing the model of interoperability for railway corridors will be as follows: (i) to incorporate the interoperability model in the work plan of the project on the railway corridor; (ii) define its characteristics in the description of project activities, and (iii) ensure for the inter-railway arrangement. The technical norms and regulations in this process will be aligned with those of the (iv) Agreement on International Passenger Traffic by Rail (SMPS), (v) Agreement on International Carriage of Goods (SMGS), (vi) COTIF/CIM, and (vii) CIV, and also, within the framework of (viii) CAREC and (ix) UIC. Such norms have been prescribed in Article 23 paras-4 and 5 of the TTFA. Table 6 below reflects the 12 actions in regulatory space to achieve sustainable interoperability.

The systemic interoperability framework reflecting the interoperability on normative regulations amongst the ECO and international organizations specializing in railways envisages the CME to be in the framework of inter-railway agreements amongst the en-route countries of the regional railway corridors. Those legal instruments may be in the forms of memoranda, memoranda of agreements, letters of intent, contracts, project agreements as practices-based empirical evidences revealed in the ECO region (pl. see Figure 4 below).

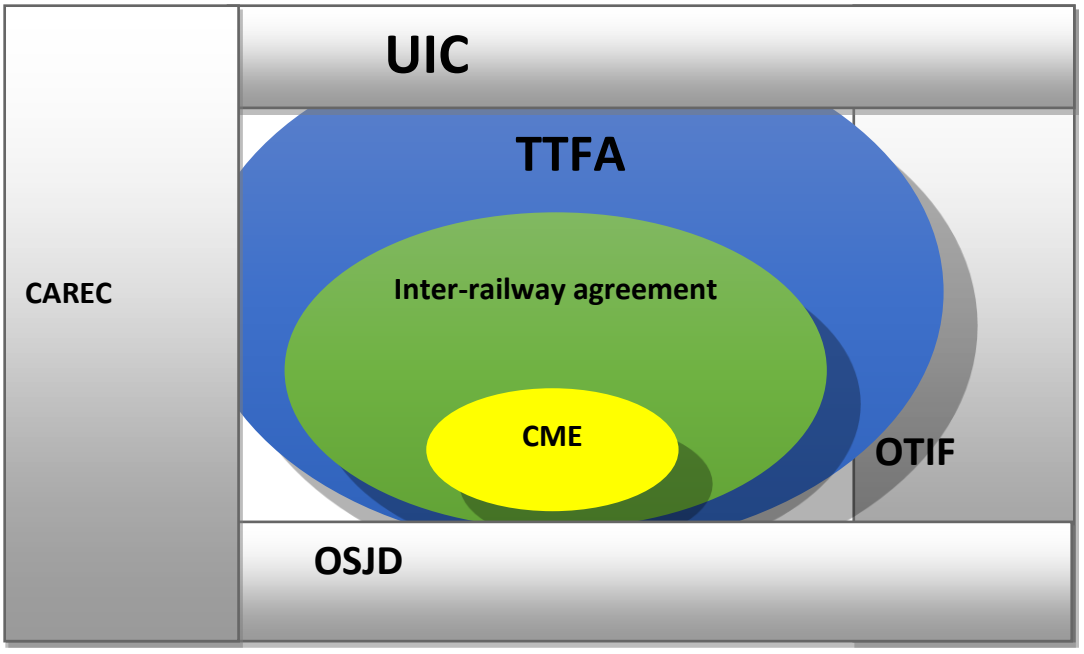


Figure 4: Systemic framework of the interoperability model

Table 6: Regulatory actions needed to comply with in achieving the interoperability on ECO railway routes

No	Regulation-based actions	Article	Responsible	Specified
1	To grant the TTFA member the necessary transport facilities through its territory	No. 4	Contracting Party	TTFA, Annexes
	To facilitate movement of goods through respective territories of the Contracting Parties and provide all necessary facilities for transit transport.	No.2		
	To adopt the prescribed railway transit route.			Annexure-I.
2	To notify the TTCC about additional routes and their characteristics	No. 6	Railway Authority	Annexes II, III
3	To provide adequate facilities and related installations for road, rail and inland navigation and multimodal transport.	No. 8	Contracting Parties	
4	• To establish posts at designated frontier points with control areas. • To ensure adequate manpower resources be available for speedy completion of frontier formalities. • To coordinate working hours of adjacent frontier posts. • To provide reliable mail and telecommunication services. • To facilitate speedy and efficient transit of goods. • To adopt a uniform set of consignment notes/way bills.	No. 9	Contracting Parties	
5	To ensure safety of traffic & ecological protection along ECO's transit routes.	No. 10	Institutional	
6	To establish relevant offices in accordance with domestic legislation.	No. 11	Ministry of transport	
7	To ensure conformity to technical requirements on a transport vehicle dimensions, maximum total weight/axle load and other parameters.	No.17	Contracting Party	Annex IV.
8	To establish border stations and interchange stations for transit transport.	No. 23	Contracting Party	Annex-I
9	To arrange inter-railway agreements between the TTFA members.	No. 24	Railway Authorities	
10	To establish a Customs Transit System for cargo & means of transport to facilitate the movement of goods in the TTFA members' territories.	No. 28		
11	To notify the TTFA members of any additional requirement or modification in the prescribed documentation/procedures to be introduced in regard to traffic in transit.	No. 31		
12	Institute a basic documentation agreement with the TTFA members to facilitate transit.	No. 33	Railway Authority	Annexure VII

The systemic normative ground of actions designed to support the implementation of the interoperability model on railway operations on ECO's key rail-based corridors from the regulatory perspective may be sourced from Table above, which reflects the main regulatory prescriptions relating to railway operations in ECO.

Capacities-driven criterion

This criterion defines the expected capacities of participating railway networks and their measurable performances required to achieve the defined targets of the interoperability within ERN. The railway networks' performances of en-route countries are varied. That is because the share of rail transport in the respective transport sectors varies. Performances largely depend on the operating length of railways in the en-route countries where that of Kazakhstan is currently 15,529 km and, by contrast, those of Kyrgyzstan and Tajikistan are 420km and 651km. At country level, the 2018 logistics performance, including by rail, has been modest. According to the UN logistics performance index, Türkiye and Iran have been ranked 47th and 64th amongst world's top 50 of the overall 160 countries rated in 2018 as in Table 7.

Table 7: 2018 ECO countries' logistics performance ranking according to UN index

Country	Year	LPI Rank	Customs	Infrastructure	Int. shipments	Logistics competence	Tracking/Tracing	Timeliness
Türkiye	**2018**	47	58	33	53	51	42	44
Iran	**2018**	64	71	63	79	62	85	60
Kazakhstan	**2018**	71	65	81	84	90	83	50
Uzbekistan	**2018**	99	140	77	120	88	90	91
Kyrgyzstan	**2018**	108	55	103	138	114	99	106
Pakistan	**2018**	122	139	121	97	89	136	136
Turkmenistan	**2018**	126	111	117	136	120	107	130
Tajikistan	**2018**	134	150	127	133	116	131	104
Afghanistan	**2018**	160	158	158	152	158	159	153

The deployment of human resources in railway transport in ECO countries depends on the efficiency in this sub-sector. While involvement of high technology in it brings in higher efficiency in railway operations, professional maturity of railway involved personnel depends on the various cognitive approaches that the countries take in this regard (PMI, 2013, p.143). Thus, in Kazakhstan the maturity management model has been introduced at national, regional, and local administration levels based on one of the three principles of public service, which is meritocracy (ACSAA, 2017). Therefore, professional excellence, including in railway subsector is handled at all-country level thereby enabling a comprehensive cognitive approach.

Railway proficiency in Türkiye is being handled at corporate level within the corporate management maturity structure of mega projects on rail transport. A simple solution in this area could be the unified organizational maturity model (Sohail, 2005, p. 3). However, not all ECO countries have installed the similar railway management maturity models. In this regard, the space for prospective improvements in the interoperability model under this paper turns out to be significant.

The targets to pursue along this path may include the following seven actions/measures: (1) introducing the railway management maturity model in ECO

countries; (2) organizing a series of short-term[2] comprehensive training programs/courses on the railway management maturity model; (3) establishing the ECO region-specific set of criteria of excellence in the area of railway transport performance; (4) organizing for cost control for interoperability; (5) organizing for the central dispatch center; (6) organizing for the train control systems in en-route countries; (7) organizing for the integration on ECO's railway corridors. At the back of the seven targets for a comprehensive short-term capacity building in en-route countries' railways, the capacities-driven criterion of the cognitive dimension in the interoperability model of ECO's railway corridors is suggesting the following nine actions/measures, as structured in Figure 5:

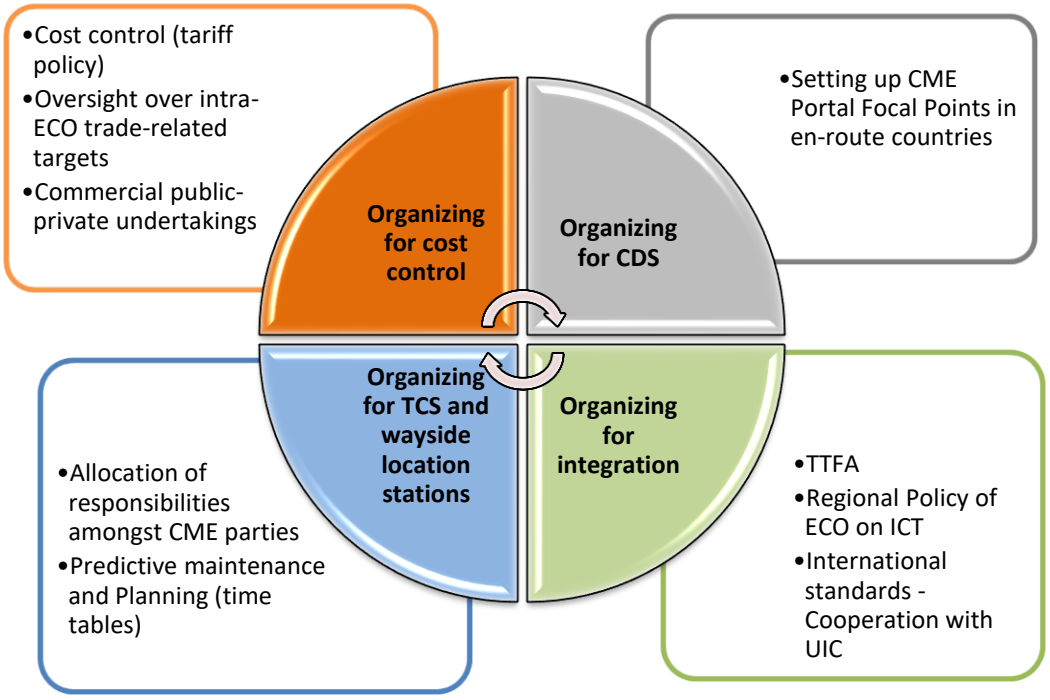


Figure 5: Capacity building targets and comprehensive short-term actions/measures to achieve interoperable sustainability

Participatory

The participatory criterion requires public-private participation in ensuring sustainable nature of the interoperability in railway operations. The existing practices in the ECO countries point that the work models of the public-private partnerships (PPP) are currently operating in Pakistan (Tillmann Sachs, 2007), p.76, Türkiye, Kazakhstan, Azerbaijan and Iran. As an example, the memorandum of understanding on the ITI railway route has been so drafted as to embed the PPPs in processes of rehabilitation and upgradation of the main railway lines; the construction on the Qazvin-Rasht-Astara railway link (Map 3: Route 3) is on the concessions basis; the operations of Nomad Express train on segments of the Istanbul-Almaty & Almaty-Bandar Abbas railway corridor (Map 2: Route 2) and on Baku-Tbilisi-Kars railway line are private. To that effect, railway operations on ECO's railway routes opt to be inclusive of PPP patterns through the CME. From the point of the

[2] Short-term period in the context of this paper spans for up to 3 years from 2018.

operational efficiency, the PPPs have been reported to entail up to 40 percent as Asian practices indicate (Guariano, 2014). In that context, the targets in achieving the sustainable nature of railway operations while, at the same time, maintaining operational interoperability amongst parties involved in ECO's railway corridors may include the following three targets: (1) involving financially sound partners to improve and upgrade ECO's railway operations; (2) ensuring operational efficiency and cost effectiveness within ERN; (3) instituting auxiliary legal modalities for enabling PPP participation in regional rail transport operations. These targets would need to be met by implementing the following four actions/measures to: (i) design and develop PPP operational patterns for ERN-specific operations; (ii) ensure facilitative legal instruments to involve PPP participation in CME's functioning; (iii) organize the regional forum for cooperation on regional infrastructure projects with participation of third parties in project co-financing; (iv) test operational patterns of PPP in practice. The PPP structures will undoubtedly add complexity in the multi-dimensional and multi-level operating structure of railway regional projects (Mazouz, 2008) but they will ensure green and brown field projects with numerous interfaces "to be managed and integrated for operational efficiency" (IRSE, 2018).

5. Discussions

In this section, with the objective of examining the technical implications of new technologies in railway and thus developing the model of interoperability, the stewardship of the five criteria has been deployed. Those criteria enabled the sourcing of the input data for the model. The quantity and designation of the input data have been aligned with their descriptions in the previous sub-sections of this paper. Accordingly, the set of 30 targets and the set of 40 required actions/measures have been identified and developed under the objective of exploring whether those will produce the sustainable level of the interoperability in railway operations in ECO. In the analysis, the methodology of linear regression analysis has been applied, as follows:

Table 8: Inputs to calculations of the least squares equation

	Targets	Actions			
	X	Y	X2	XY	Y2
Capacities	7	9	49	63	81
Systemic	9	12	81	108	144
Economic	6	8	36	48	64
Operational	5	7	25	35	49
Participatory	3	4	9	12	16
	30	40	200	266	354

Formulas (1) and (2) has been formed to calculate values of a and b:

$$\boldsymbol{b} = \frac{n(\sum XY)-(\sum X)(\sum Y)}{n(\sum X^2)-(\sum X)^2}; \tag{14}$$

$$a = \frac{\sum Y}{n} - b\frac{\sum X}{n} \; or \; \overline{Y - b\bar{X}}; \tag{15}$$

$$a = \bar{Y} - b\bar{X}; \tag{16}$$

By substituting numeric values in formula (1) we obtain the numerical value of *b* and then *a*:

$$= \frac{5(266) - (30)(40)}{5(200) - (30)^2}; \quad = \frac{40}{5} - 1.3\left(\frac{30}{5}\right); = \frac{1,330 - 1,200}{1,000 - 900}; \quad = 8 - 7.8; = \frac{130}{100}; = 0.2 = 1.3$$

Graphically, the computations have resulted as in Figure 6 below:

Figure 6: Targets and actions to meet the interoperability sustainability

The computations showed that the slope is positive, 1.3 indicating that the targets of the interoperability meet the adequate levels of sustainability. If the proposed model of the interoperability be maintained matching the actions/measures to be undertaken against the targets identified by the sets of the criteria chosen under each of the five dimensions, the model will ensure the sustainability levels in proportions of 1:1.3. The coefficient of determination R^2 equals 0.999 indicating that 99.9 percent of variation in the total of the forty actions/measures to be implemented by the member countries' railway networks in order to achieve sustainability of the proposed interoperability model has been explained by the five sets of the targets identified under each of the criteria specified for that purpose.

6. Results

The objective of this section of the paper was to reveal the technical implications of the new technologies in regional railway. For that, this section explored the operational interoperability on ECO's railway routes as one of the technical managerial efficiencies evolving from the advent of new technologies. Thus, the ECO region consisting of the ten member countries has been explored as the area of observation for the operational interoperability. The area has been structured into diverse dimensions in line with the key orientation and types of activities of the ECO region. For each of these dimensions, the steering criterion has been specified though analyzing the critical components within each dimension in order to identify key targets in each dimension to match those with interoperable actions/measures so that the latters be capable of ensuring sustainability through the interoperability model. The assumptions made in the investigations were such that: if the results turn out to be positive then the constructed interoperable model will ensure the desired sustainability.

Based on the outcomes of the analyses, the model has proven to ensure the required

sustainable interoperability on railway corridors of the region. Specifically, the model integrated the multiple dimensions that were built on the guiding criterion in each of the five dimensions. It also presented the structured multi-dimensional railway operations that have proven interoperable and sustainable through the model, if the actions/measures envisaged in the model be implemented as designed.

In sum, the model's technical dimension proves that it enables sustainable track life by prolonged renewal cycles, therefore supporting the sustainable rail transport. The model ensures predictive maintenance as it provides key data concerning technical conditions of the train operation, including on the status of wheels, axle loads, cumulative operating load and travelling speed. All these features have been envisaged in the work plan under the technical dimension. In its cognitive dimension, the model ensures comprehensive short-term capacity building on all dimensions of the interoperability model. The detailed activities have been formulated in the work plan under the cognitive dimension. In its regulatory dimension, the model arranges for harmonizing the regulations, norms, standards in line with the guidelines of the TTFA. Cooperation within regulatory frameworks of the UIC and CAREC specializing on railway transport has been envisaged in the work plan under the cognitive dimension. In its economic dimension, the model accounts for commercialization of railway operations in the ERN. It also accounts for trade to interact with sustainable transport in the same respect as it envisages interaction with customs sub-sector and tourism sector. It advocates for establishment of measurable railway performance indicators to enable the performance-based rating of the en-route railway networks, including on railway interoperability. In its inclusive dimension, the model ensures participation-for-sustainable financing and efficiency. The inclusive nature of railway operations will be ensured at the back of the social responsibility in public-private partnership operations. The model formulated specific actions/measures to be taken in this regard. The model streamlined its content with the input data (critical components, criteria, dimensions, targets, practical actions/measures etc.) and the resulting outcome provides the following characteristics of the model:

- ✓ Single window operation;
- ✓ Simplified and common operating rule set;
- ✓ Smooth transition from one system to another;
- ✓ Common data structure;
- ✓ Monitors full range of operating conditions, infrastructure and trains;
- ✓ Provides for enforced authorities (speed along the entire corridor).

Result: Interoperability Model of Railway Corridors in the ECO region

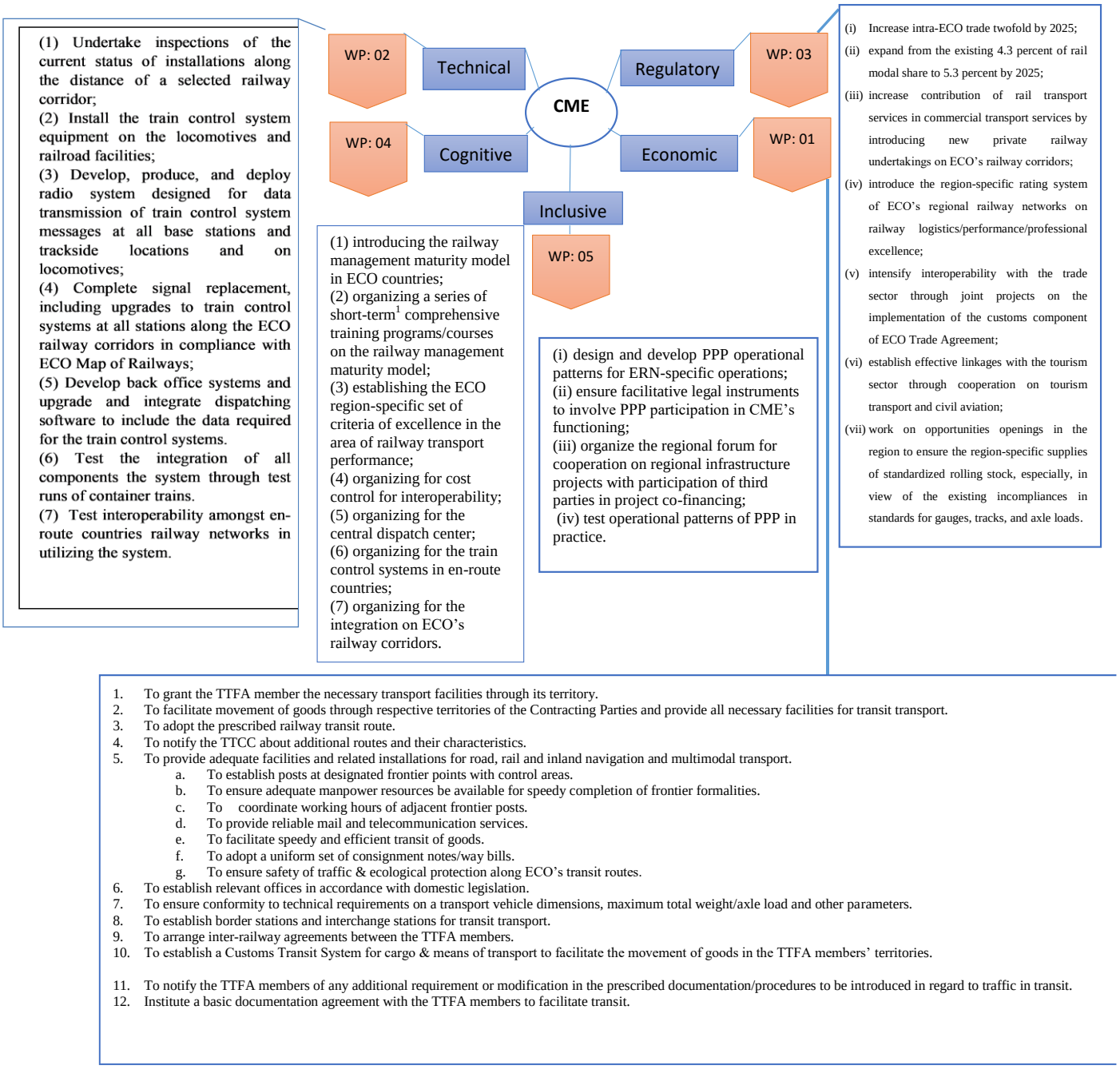


Figure 7: Interoperability model of railway routes in the ECO region

Recommendations based on the interoperability model

The recommendations entailing from the interoperability model developed under this paper include the following:

I. Set the total of 30 Targets in the five dimensions/work areas:
- (i) Capacity building: 7 targets
- (ii) Regulatory: 9 targets
- (iii) Economic: 6 targets
- (iv) Operational (railways): 5 targets
- (v) Participatory: 3 targets

II. Develop the work plan to include the total of 40 concrete practical actions/measures:
- (i) Capacity building: 9 work plan activities

(ii) Regulatory: 12 work plan activities
(iii) Economic: 8 work plan activities
(iv) Operational (railways): 7 work plan activities
(v) Participatory: 4 work plan activities

III. Set up the CME for ECO's railway corridors
IV. Organize for participation and funding, inclusive of the PPP
V. Test the interoperability model in practice

The implementation period has been identified to be from 2019 till 2025.

8. Conclusions on interoperability methods

In this section of the paper, the model of the interoperability of railway routes in the ECO region is expected to positively impact sustainability of the regional ECO Transport Network (ETN). That is being asserted on the ground of clear targets emerged, under this section of the paper, in the five instrumental dimensions of the ECO Railway Network (ERN). Deriving from the critical elements in each of the five dimensions of the ERN while, at the same time, equipped with the three core development principles, the specified 30 targets will be met by 40 concrete activities of 5 work plans under the proposed interoperability model. The latter proved to comfortably match the interoperability targets with practice-oriented actions which, through the functionalities of the interoperability model, will ensure sustainability of the ETN. The model will bring in greater efficiency owing to the involvement of new railway operator undertakings via public-private partnerships at the back of their sustainable financing of regional infrastructure projects. The technical and operational functionalities of interoperability will be handled by the CME, ECO-specific corridor management entity. Cooperation within the common regulatory space on the interoperability amongst the ECO, UIC and CAREC has been envisaged in the region's transit transport framework agreement, TTFA. The resulting model, if successful, will be replicated across the 480 million people region. The impact is expected to have spillover effects onto the inter-regional scale as the technical standards have been derived from the larger scale regional international partner organizations such as the UIC.

Reference list

Boskovic B. & M. P., 2018, *Concept of Interoperability in the Railway System of Europe.* Belgrade: University of Belgrade.

Dalmo, M., Feb 2019, Efficiency in rail transport: Evaluation of the main drivers through meta-analysis with resampling. *Transport Research Part A: Policy and Practice , 120*, 83-100.

ECO, 17-18 May 2017, 16th Meeting of the TSCC. Tbilisi.

ECO-ITU Joint Study on ICT, 2017, Tehran: http://www.eco.int/elib/85651-Joint-ECO-ITU-Study-on-ICT-needs-of-ECO-Member-States.html?t=E-Library.

Edquist, C., 2019, Towards a holistic innovation policy: Can the Swedish National Innovation Council (NIC) be a role model? *Research Policy , 48* (4), 869-879.

Ferrari, P., 2018, Some necessary conditions for the success of innovations in rail freight transport. *Transportation Research Part A: Policy and Practice , 118*, 747-758.

Guariano, M., 2014, Looking forward. *PM Network 28 (1)* , 34-44.

Hayat, S., 2017, Modeling of interface dialog between train and balise location by sginaling system ERTMS in dysfunction cases. *Procedea de Universite de Technology Belfrot-Monbeliard* , 618-627.

ICT Ministerial, 2017, December 5). *2nd Ministerial Meeting on ICT*. Retrieved from http://www.eco.int/general_content/86811-Report-of-the-2nd-Meeting-of-ECO-Ministers-of-ICT.htmlt=General-content

Jarasueniene, A., 2017, Analysis of Management Application Theories and Methods of Developing Railway Transportation. *Proceedia Engineering* , 173-184.

Jayani R.P. et al, 2018, Relationship between innovation capability, innovation type, and firm performance. *Journal of Innovation & Knowledge , 3* (1), 44-55.

Lorenzo, M. et al, 2013, An analytical approach to calculate the capacity of a railway system. *European Journal of Operational Research , 228* (1), 11-23.

Ministerial, E., 2018, *Report of the 9th Meeting of Ministers of Transport of the ECO Member States*. Ministerial, Turkmenbashi.

PMI, 2013, *Organizational Project Management Maturity Model (OPM3®) – Third Edition*.

Report of the 13th Meeting of Heads of Railway Authorities of the ECO Member States. (17-18 April, 2017)., (pp. 1-10). Baku.

RPC, 14-15 Deecember 2017, *Report of the 27th Regional Planning Council of ECO*. Islamabad.

Sarmento, J., Renneboog, L., & Verga Matos, P. (2017). Measuring efficiency by DEA approach and the Malmquist index. *EJTIR , 14* (4), 530-551.

Sergeeva, N. et al, 2018, Championing and promoting innovation in UK megaprojects. *International Journal of Project Management , 36* (8), 1068-1081.

Shaofeng, X., 2013, Transport economies of scale and firm location. *Mathematical Social Sciences , 66* (3), 337-345.

Shimoya, M., 2016, *Feasiblity Study on implementation of customs transit related provisions of ECO Transport Transit Framework Agreement*. ECO.

Shunquan, Q. &. Zongiu Gao, 2017, Developments and Prospects of Long-Span High-Speed Railway Bridge Technologies in China. *Engineering , 3* (6), 787-794.

Sohail, I., 2005, A unified strategic facility for public view. *PMI Global Congress 2005—EMEA, Edinburgh, Scotland. Newtown Square, PA: Project Management Institute.* (pp. 1-19). PMI.

ECO, 2017, The 2nd Meeting of Minister of Transport and Communications of the ECO Member States (pp. 1-10), Baku.

ECO, 12 July 2017, The 9th Meeting on ITI Container Train (pp. 1-9), Islamabad.

Tillmann Sachs, R. T., 2007, Analysis of political risks and opportunities in public private partnerships (PPP) in China and selected Asian countries: Survey results. *Chinese Management Strategies* , 123-148.

Tramboulas, D., 2012, *ECO Railway Network Development PLan*. Tehran.

World Bank, 2010, *Policy Research Working Paper No.5329*. Retrieved May 2019 2019, from WB: http://documents.worldbank.org/curated/en/249851468161954392/pdf/WPS5329.pdf

Yoan, H., 2017, Achieving Sustainability in Railway Projects: Major Stakeholder Concerns. Project Management Journal, *Project Management Journal,48(5)*, 115–132.

Economic Journal, Special Issue 1, 2022

Assessment of Opportunities to Increase Product Imports from the ECO Countries to Azerbaijan against the Backdrop of the Conflict in Ukraine

Arzu Huseynova, arzu.huseynova@esri.gov.az
Economic Scientific Research Institute, Baku, Azerbaijan

Abstract. The article conducts certain analyses on the stabilisation of the situation in Azerbaijan against the backdrop of the surge of prices for food products in the world markets as a result of the conflict in Ukraine. The authors studied the impact of the conflict in Ukraine on global and Azerbaijani import markets. The opportunities for ECO countries to replace the product imports from the biggest importers of Azerbaijan, Russia and Ukraine were analysed. The question of the ability of ECO member states to accept alternative market was researched. Analyses and assessment were made in order to find answers to these and other similar questions. As a result, utilising Market Access Map, Export Potential Map and other tools of International Trade Centre three states out of ECO member states (Türkiye, Kazakhstan and Pakistan) with a high potential to export strategic food products to Azerbaijan were determined.

Keywords: The conflict in Ukraine, strategic food products, price surge, import market, alternative market, ECO member states

Introduction

The conflict in Ukraine inflicted a heavy blow on the global economy. This conflict causes the acceleration of inflation and further increase of prices of food products.

It is not a secret that Ukraine and Russia are the two states claiming special place in international trade. Despite the fact that Russia and Ukraine make up 2% of global GDP with general market prices, they are the producers and exporters of main raw material and food products, mineral resources and energy. Both states are the exporters of agricultural products in the global trade. Russia and Ukraine are the main suppliers of food products to the global markets, as well as to Azerbaijan. Alternative import markets must be searched for in order to reduce the impact of the conflict on Azerbaijan.

1. Impact of the conflict in Ukraine

Today, Ukraine is forced to stop production and stemming from that its import because of the conflict taking place in its territory. According to the assessment of Food and Agriculture Organisation (FAO) 20%-30% of the fields used for the cultivation of winter grain, corn and sunflower in Ukraine in 2022-2023 season will not be cultivated or harvested (FAO, 2022). Russia in its turn, because of the sanctions imposed against it and in order to secure the supply of the internal market banned the export of strategic products to foreign markets.

A number of international organisations shared their forecasts in relation to the results of the conflict. Organisation of Economic Cooperation and Development (OECD) analysed the possible expectations from the conflict and made forecasts. OECD noted that though in December 2021 report 4.5% of global GDP increase had been forecasted, the processes unfolding in commodity prices and currency markets would cause the reduction of global

GDP by more than 1% and will raise global inflation.by 2.5%. The conflict in Ukraine already causes economic and financial shocks, in particularity the surge of oil, gas and wheat prices in the commodity markets.

The World Trade Organisation (WTO) has lowered its forecast for increased global trade from 4.7% to 3.0% for 2022 and noted that the reason for that was the conflict in Ukraine. According to the WTO forecasts the conflict in Ukraine inflicted a blow on global economy, "this forced the WTO economists to review their forecasts on global trade for the following two years".

WTO expects that the goods trade will increase by 3.0% in 2022, which is 4.7% less than the previous forecasts, whereas in 2023 they expect to increase by 3.4%. According to the WTO forecast the fastest economic impact of the crisis is the sky rocketing of product prices. According to WTO remarks, though Russia and Ukraine have a small share in global trade and production, they are the main suppliers of main commodities, including, food, fuel-energy products and fertilizers. The suspension of the supply of grain through the Black Sea ports can lead to serious consequences for the food security of low-income countries.

The main directions of the impact of the conflict are the prices of energy and raw materials; interference into international trade.

Suffice it to consider that 30% of the global grain import falls on the share of these countries (Ukraine 11.5%, Russia-16.8%) 17% of the world corn import and 64% of sunflower oil falls on the share of Ukraine (Latifundist Media; The State Statistical Committee of the Republic of Azerbaijan).

Besides Africa and Middle Eastern countries Russia and Ukraine export wheat to China, Türkiye and India.

On the other side the surge in the prices of fuel and energy carriers is also manifested in the prices of food products. 17.4% of import to Azerbaijan falls on the share of food products and 2.6% on the energy carriers.

Azerbaijan has close trade relations with Russia and Ukraine. Russia and Ukraine are respectively the 1st and 7th partners of Azerbaijan in terms of import. In 2021 goods in the amount of 2.1 billion dollars and 0.5 billion dollars were imported from these countries respectively (Trade Statistics for International Business Development; The State Statistical Committee of the Republic of Azerbaijan).

In 2021 the trade turnover between Azerbaijan and Russia amounted to 3.355 billion USD, which registered 16.12% raise compared to 2020. 2.1 billion dollars out of this amount fell on the share of import from Russia, and 0.921 billion on the export to Russia. Last year the trade with Russia comprised 8.83 percent of our foreign trade turnover. Russia's share on the import to Azerbaijan amounted to 17.72% and on the export to Azerbaijan it comprised 4.5%. In comparison with 2020, the volume of trade with Russia was raised by 12.1 percent, the export to this country increased by 29.8% and the import by 5.7%

Azerbaijan imports 83% of its grain and 100% of its sugar from Russia. The share of Russia in grain imports is 98.8% and the share of Kazakhstan is 1.2%. One of the main products Azerbaijan imports from Russia are forest produce (100 million dollars in 2021). Azerbaijan imports 100% of a number of products from Russia.

The products with the greatest export potential among the products exported from Russia to Azerbaijan are wheat (with the exception of hard wheat) and meslin, longitudinally sawn gravel, soft chopped/skinned wood and ammonium dihydrogen phosphate. Russia has

the greatest potential for the supply of ammonium nitrate. The most required products in Azerbaijan are wheat (with the exception of hard wheat) and meslin (Export Potential Map).

Following Russia, Ukraine is the second trade partner of Azerbaijan among the post-soviet countries. Among the products imported from Ukraine tobacco products and cigarettes, meat and meat products, food products and medicine are prevalent.

The list of imported products from both countries is big.

On the other side, the governments are applying temporary trade measures as part of economic sanctions and anti-sanctions package as a response to the conflict in Ukraine. The quick loss of stability in the region caused the further limitation of the export of significant produce such as food and fertilizers by a number of countries (Decision of the Cabinet of Ministers №103,2022; Decision of the Government of the Russian Federation, №548, 2022). A lot of countries are limiting export of their products.

Ukraine also suspended the export of socially important food products and certain types of raw materials based on trade restrictions adopted on April 5, 2022 in connection with the war. These include: rye, oat, buckwheat cereals, millet, sugar, salt, meat and livestock.

On the other hand, Russia made a decision to limit the export of grain crops, sunflower oil, wheat, oil plants and some other food products. The restriction will be in force until December 31st, 2022 (Decision of the Government of the Russian Federation, №548, 2022).

On April 15th, 2022, Kazakhstan declared restrictions on the export of wheat and flour. The restriction will be in force until June 15th. The export quota for wheat today is not more than 1 million tons, for flour not more than 300 thousand tons. Central Asian Countries attribute this to global deficiency threat. Kazakhstan, selling wheat to foreign markets in the amount of 1 billion 137 million dollars every year is the 9th biggest exporter of wheat globally. The export restrictions of Kazakhstan is a response to the ban introduced by Russia on the export of grain to member countries of Eurasian Economic Union (Armenia, Belarus, Kazakhstan, Kyrgyzstan) (Order of the Minister of Agriculture of the Republic of Kazakhstan №110, 2022).

In order to soften the impact of the supply disruption and surge of food products temporary trade and policy measures must be implemented. As a response to the conflicts and consequent economic shocks the states take trade measures. The most suitable way is to reduce dependency on import.

The suspension of import of products from countries also caused the change in the demand and supply ratio and resulted in the surging of prices.

From that perspective, the government is trying to optimise the prices of strategic food products as part of anti-inflation measures. The volatility of prices in the following periods will directly depend on the changes unfolding in the global markets. The Cabinet of Ministers is trying to preserve stability in meeting the demand for food products by promoting other alternative sources, including by way of new discount mechanisms. Search for new markets for wheat import is under way.

Alternative markets are searched for to prevent the price gouging. Naturally, the most suitable way is to reduce dependency on import. For example, in 2021 wheat was cultivated in an area of 595 thousand hectares in the country. Practically, 38 percent of the cultivated areas are used for the cultivation of wheat. The annual wheat production is 1.9 million tons and over the recent years small raise of production was observed. One part of the areas

liberated from the occupation is also used for the production of wheat.

The products imported from Russia and Ukraine must be replaced with products from other countries. For this let's review the export potential of ECO member states. Let's conduct certain analyses based on the export potential of strategic food products of ECO member states. For this, utilising Market Access Map, Export Potential Map and other tools of International Trade Centre (Trade Statistics for International Business Development; Export Potential Map; Market Access Map; Hidalgo & Klinger & Barab´asi &Hausmann, 2007) we will be assessing the product export potential of countries.

2. Literature review

The indicator of export potential determines the supply of exporter, target market demand, conditions for entering the market and the potential value of export for any given exporter for a certain product and target market based on the economic model linking bilateral ties between the two countries. The supply for available export products is measured by using historical data on the export activity. In order to find exporters, products and opportunities of growth one can compare the potential value of export with its actual value.

Indicator for Diversification of Products estimates the supply by using *Product Space methodology* (Hidalgo & Klinger & Barab´asi & Hausmann, 2007) which creates links between suitable products in the country export baskets of products. The supply is adjusted with the demand of the target market and conditions to access the market.

It should be noted that the export potential map does not consider external shocks (climate and weather change, war and etc.). Therefore, this map can be used as a benchmark in decision-making.

Sufficient works were carried out in regard to the analysis of products in terms of trade globally. These works were mainly directed to the application of equal competitiveness, volatility of prices, labour reserves, application of innovations and etc. in the example of different countries or groups of countries. At the same time, it should be noted that this type of research mostly comes across in the works of international organisations.

The assessment of export potential (AEP) is branching out in two different directions in scientific literature. According to the first direction, trade between two countries is positively related to supply and demand for products, and negatively related to trade barriers in the form of customs duties or geographic distance. This is linked with the gravitational model in trade.

United Nations Industrial Development Organization (UNIDO) researchers in their works studied in a coordinated manner trade based on countries, production diversification, comparative advantage and economic growth. They mainly researched whether or not diversification samples covering 177 countries from 1995 to 2015 were in line with PS framework (powershell frame). The results of this research, in particular have great policy impacts for the design of industrial policy directed to active formation of structural transformation of countries (Coniglio et al., 2018).

In his article, Matihas l., Robert J assessed the comparative advantage of Central Asian economies in international trade. Towards that end, historical data mainly on directions such as factor values, transport costs, samples of historical production assortments and

geographical and product composition in the period under review were used.

Yingqi W. and Vudayagi B. They conducted reciprocal analyses of processing industry of China and India. They researched India's processing industry. They claimed that for India it may be impossible to comply with China's growth strategy based on the export of labour-intensive products (Wei & Balasubramanyam, 2015).

Imran and Zhang (2017) analysed the impact of trade costs and comparative technology on the location of industry

Visser et al. (2015) assessed South Africa's comparative advantages for products and industry based on provinces. They determined products on this basis.

On the other hand, the majority of product related research is based on the analysis of modification of prices. Also, the price levels in the regional markets are used as exogenous factors as illustrated in the example of products of special significance and specific countries in the conducted research (Minondo, 2011; Schetter, 2016; Valiyev et al., 2020).

Products diversification indicator (PDI) uses product space concept proposed by Hidalgo, Klinger, Barab´asi and Hausmann in 2007. A number of studies applied this concept in order to advice to the developing countries on the products they can export in the future. These studies, always focused on the opportunities of supply without casting a doubt on whether there will be the export success of the proposed products in the potential target markets (Hidalgo et al., 2007; Decreux & Spies, 2016).

In their article Suleymanov et al. (2021) analysed regional markets in terms of Azerbaijan's economy based on the products in the fields of heavy industry and mechanical engineering. This work makes up the basis of this article.

It should be noted that during the implementation of similar researches the determination of bases and analysis is of special importance. As it can be revealed from the economic theory the trade relations are formed mainly on the basis of demand and supply. And this is the way how prices are formed. Of course, another important moment in order to bring to the market competitive products is to produce by incurring less costs and in this way to be more competitive as opposed to rivals. The development of the production of competitive products is the direction stimulating the diversification of economy and the non-oil sector.

3. Methodology

International Trade Centre (ITC) designed and developed the methodology for the assessment of export potential. Based on the detailed trade and market access data, depending on the needs of the country, it allows to determine the products with high export potential and/or diversification opportunities in a certain target market (Decreux & Spies, 2016):

- Export Potential Indicator (EPI) - serves the countries which try to expand export to new and existing target markets supporting available export sectors. It determines the products of the exporter country which have already proven to be competitive and have good export success in specific target markets at the international scale.
- Product's Diversification Indicator (PDI) serves to the countries aiming to diversify and develop new export sectors facing perspective demand conditions in new and existing target markets.

3.1. Methodology for the assessment of export potential

ITC's methodology for the assessment of export potential has been designed and developed in order to reveal products and sectors of a country with an export potential for the existing and new markets guided by the statistical data on detailed trade and market access. This can be applied in order to estimate unrealized volume of export potential at the sectoral level.

The assessment of export potential is based on the fragmentation of the product's share to the supply and global demand component in the overall export of the country. The global demand is replaced with a demand in a certain target market (including the conditions for entering the market). Though the ability of the country to provide for available products (EPI) is measured by revealed comparative advantage, its ability to diversify to new products (PDI) is based on the product space concept of Hausman and Hidalgo (Hidalgo & Klinger & Barab´asi & Hausmann, 2007). According to this concept the relations between products are created with the assessment of the frequency by which products come across in the export baskets. The demand and supply component in certain target markets determines the potential share of the product in joint country export.

In order to convert potential shares to potential export values the general export is used between a country and a target market. Potential values should be understood as a typical value of trade flows considering both the country's export indicators, as well as target market demand forecasted for the short-term future. So, the export potential for some countries may be too low, on many occasions it can exceed the potential for other traditional markets (Decreux & Spies, 2016).

4. Database

As a database, the data (Trade Statistics for International Business Development) from trademap.org internet portal of the International Trade Centre (ITC) being the joint organisation of the World Trade Organisation and the United Nations and data from Azerbaijan Republic's State Statistical Committee (DSK) was used.

Based on the export potential methodology ITC assesses export performance, target market demand, conditions for entering the market and bilateral ties between exporting and importing countries in order to provide for the list of unused opportunities of the Export Potential Map.

The data was collected by using 6-digit codes of Harmonized system of commodity classification of foreign economic activity during customs clearance of goods in foreign trade. Expressing import and export indicators by means of value and in-kind form the database covers 2002-2020 years. The database compiled based on Harmonized System was processed and based on the signs of import, in the example of Azerbaijan and Economic Cooperation Organisation, the localised factors of strategic food products were calculated and local markets with the greatest demand were determined.

5. The analysis of opportunities to replace some import products in Azerbaijan with products from ECO member states

Azerbaijan is a member state of Economic Cooperation Organisation (ECO) ECO's 2025 vision is to increase its share in the global trade and use trade potential for economic growth. Import to Azerbaijan is 11.706 billion USD. 18% of that falls on the share of Russia, 4% on Ukraine, 21% on ECO member states and 55% on other countries (Azerbaijan Republic's State Statistical Committee).

Azerbaijan's trade turnover with ECO member states is 2.5 billion USD. Can ECO member states replace the products imported from Ukraine and Russia? Can ECO member states accept alternative market? Analyses and assessment were made in order to find answers to these and other similar questions.

Azerbaijan has agreements on trade relations with ECO member states. A number of ECO countries are the members of the Commonwealth of Independent States (CIS). In addition to general agreements with ECO member states the bilateral agreements with individual countries and country-based agreements are in force,

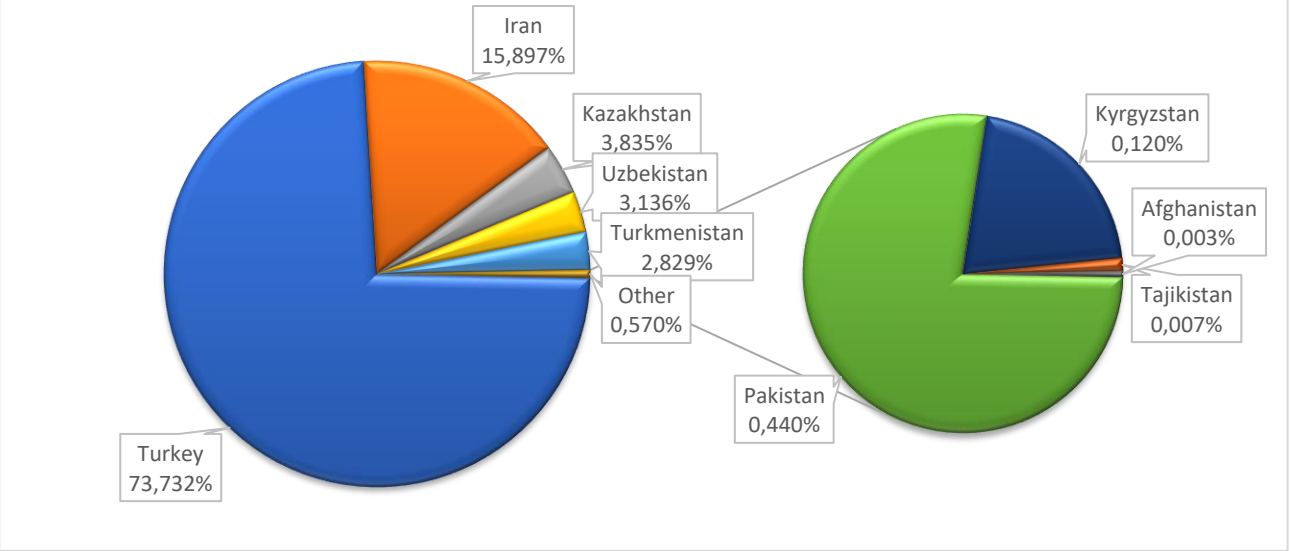


Figure 1. Azerbaijan's import share with ECO countries in 2021 (Export Potential Map)

As it can be seen from Fig.1 among the ECO countries the greatest import turnover is with Türkiye.

Let's conduct certain analyses based on the export potential of strategic food products of ECO member states. For this we will use Market Access Map, Export Potential Map and other tools (Trade Statistics for International Business Development; Export Potential Map; Market Access Map; Hidalgo & Klinger & Barab´asi & Hausmann, 2007).

As we know the price of wheat which is a strategic food product is increasing in the world market and many states introduced bans on its export. The annual demand for wheat in Azerbaijan is 3.5 million tons. 40 percent of the demand for wheat in Azerbaijan is met at the expense of import (1.4 million tons). The suppliers with greatest potential to export 1001XB wheat (with the exception of hard wheat) and meslin to Azerbaijan are the Russian Federation, Ukraine and Kazakhstan. Since all three states introduced bans on the export, the main candidate from ECO member states is Türkiye.

Based on the export of 1001XB wheat (with the exception of hard wheat) and meslin to Azerbaijan the country with the greatest potential of export from the ECO countries after the three main importers is Türkiye. Another exporter of this product is India. Azerbaijan is holding talks with India.

Türkiye has the closest export ties with Azerbaijan. Its overall trade turnover with Azerbaijan is 1.6 billion USD. Türkiye's export potential for wheat (with the exception of hard wheat) and meslin amounts to 1.2 million USD. The actual export is 138 thousand USD, unused potential is 1.1 million USD, export is 2.2 million USD.

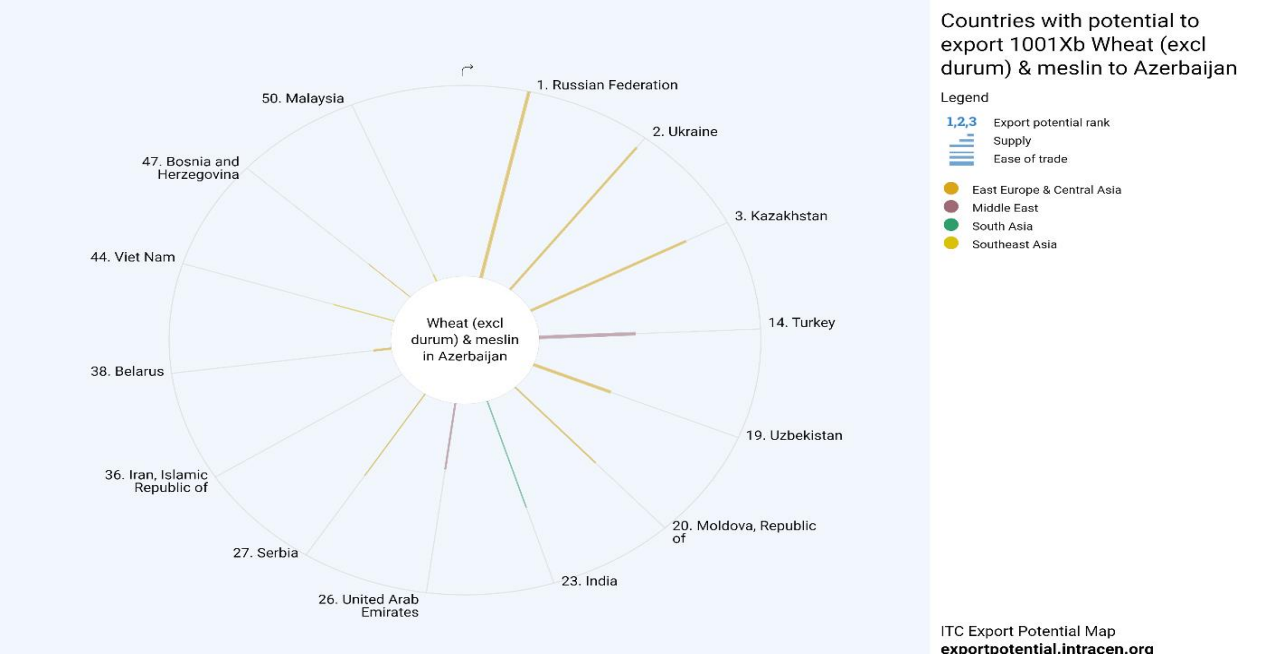


Figure 2. Potential of countries exporting 1001 Xb wheat (with the exception of hard wheat) and meslin to Azerbaijan (Export Potential Map)

Table 1 presents data on ECO member states and India with a potential to export wheat (with the exception of hard wheat) and meslin.

Table 1. ECO member states and India with a potential to export wheat (with the exception of hard wheat) and meslin.

Country	Export potential (million $)	Actual export (million $)	Unused potential (million $)	Overall export (million $)	Overall trade turnover (million $)
Kazakhstan	24	27	-	844	141
Türkiye	1.2	0, 138	1.1	22	1600
Uzbekistan	0.62	0	0.62	20	43
India	0.217	0	0.217	110	80
Iran	0.025	0	0.025	2.2	359

Source: Designed by the author according to the State Statistical Committee of the Republic of Azerbaijan and Trade Statistics for International Business Development

0201 Fresh or frozen meat of cattle is imported to Azerbaijan mainly from Belarus (Table 2).

The suppliers with the greatest potential to export fresh or frozen meat of cattle and meat to Azerbaijan are Belarus, Poland and Holland. Russia has the closest export ties with Azerbaijan. Poland has the highest supply strength. Table 4 displays the countries with the highest export potential among the ECO member states. Considering that Kazakhstan introduced restrictions on the export of products, then Pakistan becomes a more suitable exporter. The export by Pakistan 020120 of fresh or frozen meat of cattle and meat products comprises 46 million USD.

Table 2. 0201 Countries importing to Azerbaijan fresh or frozen meat of cattle

Exporters	Value imported in 2020 (min $)	Trade balance 2020 (min $)	Share in Azerbaijan's import (%)	Quantity imported in 2020	Unit of quantity unit of value ($/unit)	Unit of value ($/unit)
World	3927	-3924	100	1215	Tons	3232
Belarus	3596	-3596	91.6	1151	Tons	3124
Ukraine	161	-161	4.1	50	Tons	3220
Luxembourg	91	-91	2.3	5	Tons	18200
Russia	30	-30	0.8	1	Tons	30000
Kazakhstan	22	-22	0.6	6	Tons	3667
USA	20	-17	0.5	1	Tons	20000
The Netherlands	5	-5	0.1	0	Tons	
Belgium	1	-1	0	0	Tons	

Source: Designed by the author according to the State Statistical Committee of the Republic of Azerbaijan and Trade Statistics for International Business Development

Figure 3. Potential of countries exporting fresh or frozen meat of cattle and meat to Azerbaijan (Export Potential Map)

Table 3. 020120 Data on ECO member states with a potential to export fresh or frozen meat of cattle and meat

Country	Export potential (million $)	Actual export (million $)	Unused potential (million $)	Overall export (million $)	Overall trade turnover (million $)
Kazakhstan	0.94	0.73	0.89	6.2	141
Pakistan	0.6	0	0.6	46	13

Source: Designed by the author according to the State Statistical Committee of the Republic of Azerbaijan and Trade Statistics for International Business Development

Another product 020220 is the meat of frozen cattle with bones (with the exception of carcasses and semi-carcasses).

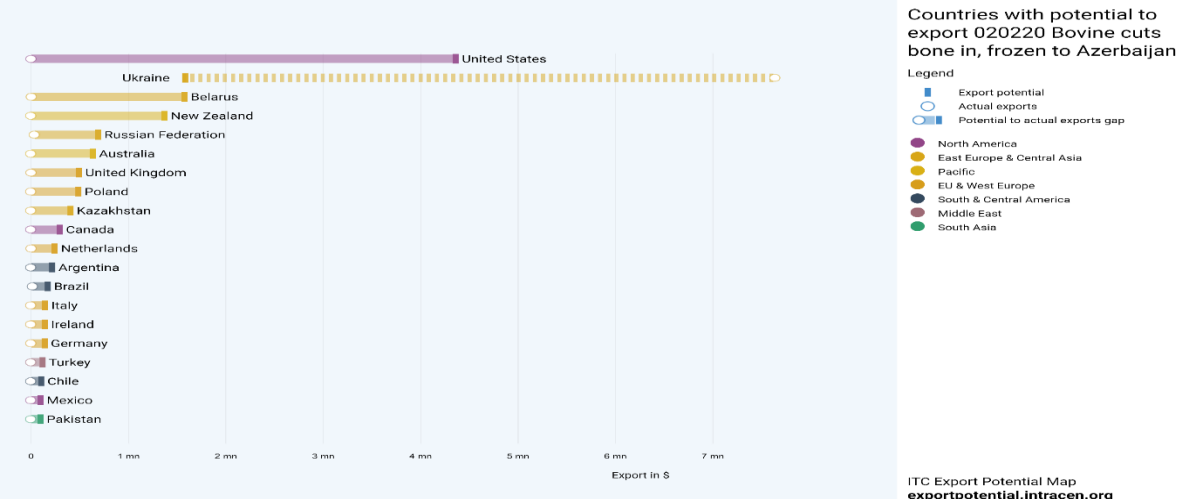


Figure 4. Potential of countries exporting to Azerbaijan 020220 meat of frozen cattle with bones (with the exception of carcasses and semi-carcasses) (Export Potential Map)

Suppliers with the greatest potential to export meat of frozen cattle with bones (with the exception of carcasses and semi-carcasses) to Azerbaijan 020220 are the USA, Ukraine and Belarus. Türkiye has the closest export ties with Azerbaijan. The USA has the highest supply ability. Out of ECO countries the states with relatively high export potential are Kazakhstan, Türkiye and Pakistan. Pakistan's export of this product is 2 million USD.

Table 4. Data on ECO member states with a potential to export meat of frozen cattle with bones (with the exception of carcasses and semi-carcasses)

Country	Export potential (million $)	Actual export (million $)	Unused potential (million $)	Overall export (million $)	Overall trade turnover (million $)
Kazakhstan	3.37	0	3.37	2.3	141
Pakistan	0.27	0	0.27	2	13
Türkiye	0.50	0.000001	0.50	0.197	1600

Source: Designed by the author according to the State Statistical Committee of the Republic of Azerbaijan and Trade Statistics for International Business Development

020714 Main exporter countries of frozen poultry meat and edible umbles of Gallius domesticus bird species are Ukraine and Russia.

Table 5. 020714 Countries exporting to Azerbaijan frozen poultry meat and edible umbles of Gallius domesticus bird species

Exporters	Value imported in 2020 (min $)	Trade balance 2020 (min $)	Share in Azerbaijan's import (%)	Quantity imported in 2020	Unit of quantity and unit of value (USD/unit)	Unit of value (USD/unit)
World	22866	-22866	100	19151	Tons	1194
Ukraine	17569	-17569	76.8	15556	Tons	1129
Russian Federation	4613	-4613	20 Feb	3088	Tons	1494
Belarus	423	-423	01 aug.	183	Tons	2311
Moldova, Republic of	99	-99	0.4	153	Tons	647
Canada	80	-80	0.3	103	Tons	777
Türkiye	55	-55	0.2	46	Tons	1196
Georgia	27	-27	0.1	22	Tons	1227

Source: Designed by the author according to the State Statistical Committee of the Republic of Azerbaijan and Trade Statistics for International Business Development

Figure 5. 020714 Export potential of the countries exporting to Azerbaijan frozen poultry meant and edible ubmles of Gallius domesticus bird species 20714 (Export Potential Map)

The suppliers with the greatest potential for the export of frozen poultry meat and edible umbles of Gallius domesticus bird species are the USA, Brazil and Holland. Chile has the most extensive export ties with the remaining countries of the world on this product, Brazil, in its turn has the highest potential supply in its category. The higher export supply among the ECO member states can be attributed to Türkiye. Türkiye's potential for the export of frozen poultry meat and edible umbles of Gallius domesticus bird species is 306 million USDs. The actual export is 214 million USD, unused potential is 177 million USD, export is 214 million USD.

Another strategic product 151219 are sunflower and saffron oil (except the raw material) and their fractions. The main importer of this product is Russia.

Table 6. 151219 Countries exporting to Azerbaijan sunflower and saffron oil (except the raw material) and their fractions

Exporters	Value imported in 2020 (min $)	Trade balance 2020 (min $)	Share in Azerbaijan's import (%)	Quantity imported in 2020	Unit of quantity and unit of value (USD/unit)	Unit of value (USD/unit)
World	11743	-5055	100	11963	Tons	982
Russian Federation	10643	-10643	90.6	11094	Tons	959
Türkiye	817	-817	7	645	Tons	1267
Ukraine	205	-205	01 July	183	Tons	1120
Italy	62	-62	0.5	32	Tons	1938
Belarus	9	-9	0.1	6	Tons	1500
Germany	3	-3	0	1	Tons	3000
Iran	2	-2	0	2	Tons	1000
Spain	1	-1	0	0	Tons	

Source: Designed by the author according to the State Statistical Committee of the Republic of Azerbaijan and Trade Statistics for International Business Development

The country with the highest export potential is Türkiye.

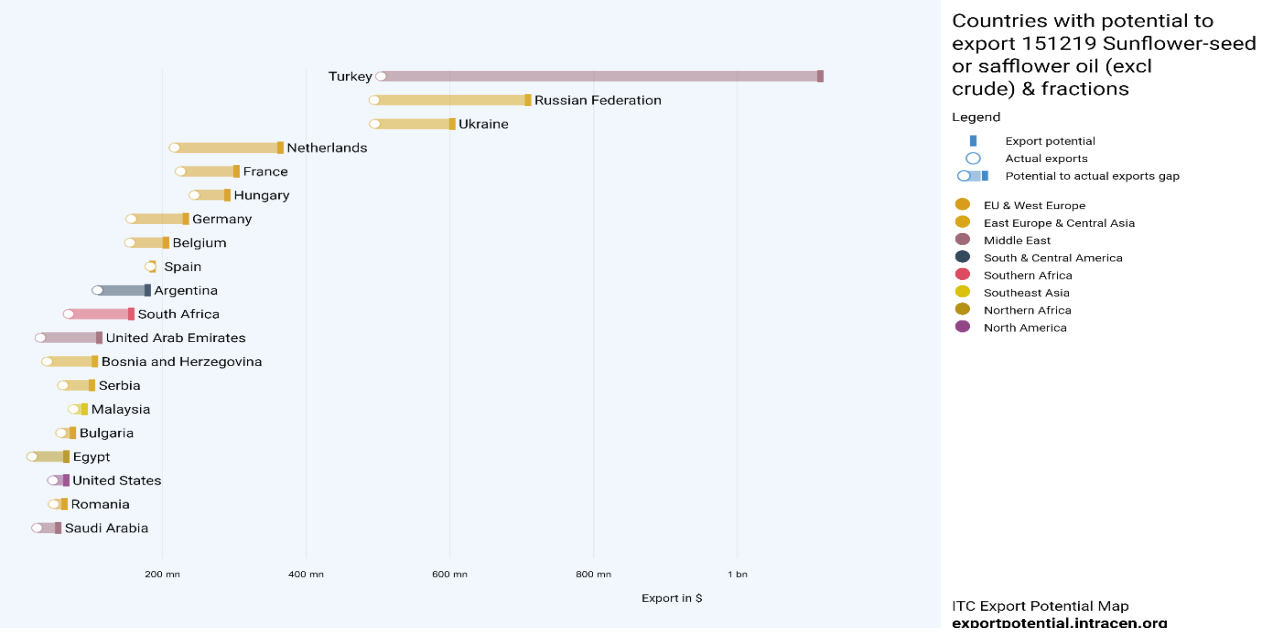


Figure 6. 151219 Potential of countries exporting to Azerbaijan sunflower and saffron oil (except the raw material) and their fractions (Export Potential Map)

Türkiye's global trade turnover is 174 billion USD. Türkiye's potential to export sunflower and saffron oil (with the exception of raw material) and their fractions amounts to 1.1 billion USD, actual potential is 505 million USD, potential is 505 million USD. Türkiye's potential for the export of sunflower and saffron oil (with the exception of raw material) and their fractions amounts to 6.9 million USD. The actual export is 725 thousand USD, unused potential is 6.2 million USD, export is 505 million USD. Türkiye by showing the greatest absolute difference in terms of potential and actual export creates an opportunity to create additional export in the value of 619 million USD, its unused potential is 619 million USD, its export is 505 million USD.

Another state with high export potential is Kazakhstan. Kazakhstan's potential for the export of sunflower and saffron oil (with the exception of raw material) and their fractions amounts to 149 thousand USD. It has no actual export, unused potential remains as 149 thousand USD, export is 18 million USD.

Conclusion

The impact of external shocks on the economy is unavoidable. Recently declared pandemic, price surges as a result of the conflict in Ukraine, bans introduced by states on the export of products of strategic significance, political bans and other external shocks make the crisis unavoidable. The ratio between the supply and demand in the market changes. Many states enter the markets with their products, others exit the markets. Against this backdrop of this it is hard to predict volatility of prices. The prices will depend on the changes directly taking place in the market. Countries are looking for more stable new importers and engage in negotiations. The government of Azerbaijan is looking for new alternative sources. For example: Azerbaijan holds talks with India on wheat import, increases the number of cultivation fields. In addition to that Azerbaijani state can expand its trade relations with other countries. In the conducted research we only determined some of the states with high potential to export some products among ECO member states.

Table 7. Countries with high export

Countries with high potential to export some products for Azerbaijan	**Unused potential of countries (million $)**				
	Türkiye	**Kazak-hstan**	**Pakistan**	**Uzbekis-tan**	**Iran**
Wheat (with the exception of hard wheat) and meslin	1.1	0	-	0.62	0.025
Meat of frozen cattle with bones (with the exception of carcasses and semi-carcasses).	0.5	3.37	0.27	-	-
Frozen poultry meat and edible umbles of Gallius domesticus bird species	2.7	0.062	-	-	-
Sunflower and saffron oil (except the raw material) and their fractions product	505	0.149	-	-	-
Based on fresh or frozen meat of cattle		0.89	0.6	-	-

Source: Designed by the author according to the State Statistical Committee of the Republic of Azerbaijan and Trade Statistics for International Business Development

As a result of analysis conducted on some strategic food products it was revealed that among the ECO member states, the state with the high potential to export strategic food products to Azerbaijan is Türkiye. Azerbaijan's trade turnover with Türkiye is 1.6 billion USD and it is possible to increase this turnover. Türkiye has an unused potential to export wheat (with the exception of hard wheat) and meslin in the amount of 1.1 million USD, meat of frozen cattle in the amount of 0.5 million USD, poulty meat and edible umbles of Gallius domesticus bird species in the amount of 177 million USD and sunflower and saffron oil (with the exception of raw materials) and their fractions in the amount of 619 million USD.

Though among ECO member states Kazakhstan introduced a ban on the export of some products until July, this country also has a high export potential. The country with third highest export potential among ECO member states in Pakistan (Table 7.)

The conflict in Ukraine keeps unstable the situation in the world markets. Azerbaijani state must find alternative sources in the very short period of time. On the other hand the state must improve trade policy on the stimulation of production in order to replace the import of strategic food products, the export potential and import market must be diversified, production of competitive products by way of supporting production mostly at the expense of local raw materials must be achieved and quality and competitive products must be promoted.

Reference list:

Asrid Prange, De Oliveyra. Wheat is becoming more expensive because of the war and coronavirus. Is there a way out? https://beta.dw.com/ru/pshenica-dorozhaet-iz-za-vojny-v-ukraine-i-koronavirusa-est-li-vyhod/a-61212406

Coniglio N.D., Vurchio D., Cantore N., Clara M. On the evolution of comparative advantage: pathdependent versus path-defying changes. United Nations Industrial Development Organization, Department Of Policy, Research And Statistics Working Paper 24/2018.

Decision N 548 of the Government of the Russian Federation dated 31st March, 2022 "On measures regulating the taking of sunflower oil, cake milk and other solid remains from sunflower seeds outside of the territory of the Russian Federation to the states, which are not the members of the Eurasian Economic Union and making amendments to some acts of the Government of the Russian Federation, "https://www.macmap.org/OfflineDocument/UKRRUS/Sanction_RUS_05.pdf "

Decision of the Cabinet of Ministers №103, dated 18th March, 2022, on the measures to regulate the taking out of the country of a number of main food products and goods used in their production https://www.macmap.org/OfflineDocument/UKRRUS/Sanction_AZE_01.pdf

Decreux, Y., Spies, J. 2016. Export Potential Assessments –a methodology to identify export opportunities for developing countries; mimeo (Geneva, International trade center). https://umbraco.exportpotential.intracen.org/media/1147/vc-methodology-20-12-2018.pdf

Export Potential Map, https://exportpotential.intracen.org/en/about

Food and Agriculture Organization of the United Nations (FAO). (2022). Information Note: The importance of Ukraine and the Russian Federation for global agricultural markets and the risks associated with the current conflict. https://www.fao.org/3/cb9013en/cb9013en.pdf.

Hidalgo, C.A., Klinger, B., Barab´asi, A.L., Hausmann, R., 2007. The product space

conditions the development of nations. Science 317 (7), 482–487 https://doi.org/10.1126/science.1144581.

Latifundist Media. An Agrarian Media Holding Group - https://latifundist.com

https://www.macmap.org/OfflineDocument/UKRRUS/Sanction_UKR_01.pdf

https://www.worldbank.org/en/research/commodity-markets.

Imran M., Zhang G., An H Impact of market access and comparative advantage on regional distribution of manufacturing sector. China Finance and Economic Review (2017) 5:4 DOI 10.1186/s40589-017-0047-1.

International Trade Centre (2018). Exploring Malawi's export potential. ITC, Geneva., 2018, 60 p.,https://umbraco.exportpotential.intracen.org/media/1119/exploring-malawi-export-potential_final-low-res.pdf

International Trade Centre (ITC)/ Spotting Products with Export Potential –An ITC Assessment to Support Export Promotion Activities in 64 Developing Countries. Geneva: ITC, 2015. xi, 38 pages. Doc. No. MAR-15-358.E

Lücke, Matthias; Rothert, Jacek (2006): Central Asia's comparative advantage in international trade, Kiel Economic Policy Papers, No. 6, ISBN 389456279X, Kiel Institute for the World Economy (IfW), Kiel.

Market Access Map, https://www.macmap.org/

Minondo, A. Does comparative advantage explain countries 'diversification level?. Rev World Econ 147, 507–526 (2011). https://doi.org/10.1007/s10290-011-0097-7.

Order of the Minister of Agriculture of the Republic of Kazakhstan number 110 dated 16th April, 2022 "On some issues dealing with taking of individual goods outside of the territory of the Republic of Kazakhstan " https://online.zakon.kz/Document/?doc_id=38796820&show

Schetter, Ulrich, 2016. "Comparative Advantages with Product Complexity and Product Quality," Annual Conference 2016 (Augsburg): Demographic Change 145933, Verein für Socialpolitik / German Economic Association.

Suleymanov A., Mehdiyev M., Musayev R., Orujova M., Huseynov V. Analysıs of regional markets for heavy industry and machine building products (in the example of Azerbaijan economy) // Science Technologies Innovations No. 1(17) 2021 pp.17-33.

This Month's Spotlight: What Does the Invasion of Ukraine Mean for Global Food Markets? https://tradebriefs.intracen.org/2022/3#trade-trends

Valiyev V., Mekhdiyev M., Suleymanov A., Ganbarli Sh. Analysis of price changes in socially important food products (example of Azerbaijan). Statistika: Statistics and Economy Journal,

2020, No.2, Vol. 100, 169–192.

Visser M., Pisa N.M., Kleynhans E.P.J., Wait R. Identifying the Comparative Advantage of Products and Industries of South Africa's Mpumalanga Province. Southern African Business Review, Vol 19 No 2 (2015).

The Republic of Azerbaijan Ministry of Economy -www.economy.gov.az

The State Statistical Committee of the Republic of Azerbaijan - www.stat.gov.az

Trade Statistics for International Business Development - www.trademap.org

Yingqi Wei and V. N. Balasubramanyam (2015) A comparative analysis of China and India's manufacturing sectors. Working Paper. Lancaster University, Department of Economics, Lancaster.

Economic Journal, Special Issue 1, 2022

Economic Development and Diversification Ranking of Azerbaijan's Administrative Districts: Comparative Analysis

Nazim Muzaffarlı (Imanov), n.muzaffarli@gmail.com
Director-General of Institute of Economics,
Ministry of Science and Education of the Republic of Azerbaijan,
Allahyar Muradov, allahyarmurad@gmail.com
Deputy director of Institute of Economics,
Ministry of Science and Education of the Republic of Azerbaijan

Abstract. All the countries try to achieve the balance between the social-economic development of their regions. There are of course serious reasons for that. Economic disproportions among the population pave the way for serious consequences, it causes both internal and foreign migration, and in particular, in multinational and multi-confessional countries it even causes public outcry. In this research, for the first time, Azerbaijan's Regional Economic Development and Diversification Index (REDDI Index) was calculated and comparative analysis made based on the developed rankings of the districts. The REDDI Index is a composite indicator estimated as weighted mean of the 2nd sub-index. The sub-indexes are as follows: The sub-index for the static level of the economic development (SLED) and Field Diversification (FD) sub-index. The first sub-index assesses the current development level of the economy, while the second measures its stability and sustainability degree.

Keywords: district, economic development, diversification, General Product Output, incomes from employment, field structure

Introduction

Economic Development. It is well known that the goal of the economy and its development in its normal state is to increase the public welfare. Guided by this a number of economists express the level of economic development with its final result, that is with the welfare indicators. The simplest and most generalized indicator of public welfare are cumulative incomes, that is the total of individual incomes, but this indicator (social welfare function) does not envisage how the incomes were divided, including repeated division on financial-budgetary tools. Therefore, some experts include indicators characterising the distribution of incomes along with the per capita income during the calculations on the assessment of the level of economic development (Montenegro, 2004).

The extreme expression of this approach is "to declare" all the indicators characterising public progress as economic indicators. Of course, all the processes unfolding in the society are connected with the economic development in one way or another. But is it enough grounds to describe every indicator (set of indicators) describing public life as economic development indicator? Let's assume that one of the targets of public progress adopted by the majority is gender equality (at least, in Western Countries). To measure this Gender development index must be calculated (Gender Development Index, 2021). May be this index can be considered as an indicator of human development and the latter as an indicator of economic development, but it can only be the indirect indicator of economic development at its best.

It is natural that there are many indirect measurements of the level of economic development. For instance, one of the ideas put forward recently is that the level of transportation, in particular of railway transportation is one of the significant indicators of economic development in low-income countries (Bazi & Firzli, 2013). This and other similar approaches, undoubtedly are not irrational, but if there are direct and universal indicators of economic development and if they are available, shouldn't be logical to use them?

According to the majority of economists, the most significant one out of these universal indicators is GDP per capita or GNP (The World Bank Database: GDP per capita, 2021). Since both of them are indicators deriving from rates they are expressed internationally in dollars considering the parity of the buying capacity of money to have a look at price differences between the countries. These indicators are also calculated by the World Bank and International Monetary Fund and are publicly available. To develop the ranking of world countries for GDP or GNP per capita is purely a technical issue and requires the alignment of relevant indicators based on the descending order. But it should be noted that GDP and GNP per capita indicators characterise the level of economic development in terms of the volume and scale of economy and its efficiency is expressed only indirectly and not directly. In principle it is possible to assess the efficiency of economy based on two criteria and both of them are significant. The first one of them is the final goal of economic development - public welfare. For its measurements per capita income indicators are used. The second criteria is public labour productivity which is estimated by dividing GDP to the number of employed population. These indicators are available in databases of the World Bank and International Monetary Fund.

The downside of using GDP, GNP and GNI per capita indicators in comparisons between the countries is that these indicators are linked directly to the number of population, its changes due to population growth and decline. But during the comparative analysis of economic development based on regional countries these downsides lose their relevancy.

Diversification of economy. As it is known, one of the important features characterising real economic development is its stability (sometimes described as "sustainability") and sustainability against internal and external shocks. The majority of economists believe that in terms of stability and sustainability the diversification of economy (field wise diversification) is one of the critical conditions. Among the "colourful" arguments that were voiced on many occasions to substantiate this view is that the higher the "hegemony" of one field, the higher the economic crisis and unemployment risk and in contrast, diversification reduces this risk.

The diversification of economy can be studied from different angles, including based on the field diversification of local production, export (sometimes even import), employment and investments. However, it is natural that the diversification of production here is the main means because all the remaining depend on that.

Among the factors that make diversification complicated is that its opposite specialisation "is not a bad thing in itself". Specialisation of economy on the production (export) of certain products and services - especially in relatively small countries and on top of that in the regions of small country is a positive trend in itself. Sometimes, it is simply unavoidable. For instance, in the 90-s of the last century could Azerbaijan refuse the oil contracts "for the sake of diversification"? Of course, not. Even though, it was known

beforehand that as a result of implementation of these contracts the economy of the country will almost turn into single faceted economy and will be heavily dependent on oil and gas production and exports.

If this pole of specialization-diversification dilemma must consist of one or several (few) fields of economy, all the other fields must be represented in the other pole of economy. It is clear that in the contemporary world there exist no countries with the first or second pole. Other countries aside, even the countries that can be considered self-sufficient are trying to take position at the optimal interval amongst these poles. The most complicated side of the problem is finding this optimisation interval, that is the lowest and highest optimal thresholds of diversification.

The thing that makes it complicated is that the diversification of economy is described in most cases as optimal field structure of the economy. However, diversification and optimal field structure are totally different concepts. The latter envisages such a level of the former so that the public benefits on certain criteria become as high as possible, that is, for example, bringing to the maximum public benefits such as raising the level of GDP per capita, GNI or level of employment. There are such cases both from theoretical and practical point view that diversification of economy in any given country and at any time span does not bring it closer to the optimality "corridor", but rather takes it further away (Grossberg, 1982; Jackson, 1984). Generally speaking, development of the optimal field structure of economy is a more complicated task as opposed to just achieving its diversification.

The science of economy has been trying to measure the level of diversification for about 70 years. So far very different economic methods and mathematical tools were proposed. Both the static (based on the acquired level) and dynamic (based on the approach considering diversification as a process) economic-mathematics models were developed. There are already works under progress that analyse the classification of existing methods and tools (Wagner, 2021). But so far, there is not any method which is universally accepted to measure the level of diversification.

Literature review

A number of reputable international research centres and prominent individual scholars conduct wide-spectrum research on the comparative analysis of the level of economic development in world countries and regions. As a rule, the results of such research, are presented in the form of country rankings. Different entities analyse economic development from different angles and of course, based on different methodological approaches.

Among the most popular (mostly referenced) researches, we can name the World Economic Forum's "The Global Competitiveness Report", World Bank's "Doing Business report", Heritage Foundation's "Index of Economic Freedom", UN Development Programme's "Human Development Report", World Intellectual Property Organization's" Global Innovation Index" and a number of other researches.

The comparative analysis of these types of countries mainly does not assess the level of economic development, but rather the factors stipulating (or contributing) to it. Whether it is advanced physical infrastructure (electricity, gas, potable water supply, air, sea, land and railway network and etc.), favourable business climate (light tax load, ease of licensing,

accessibility of loans and etc.), liberal foreign trade regime (low import duty, "soft" non-tariff barriers and etc.), or unofficial impediments negatively affecting economic activity (corruption, non-formal monopoly, unjust competition and etc.) they do not directly characterise the level of economic development. The availability of positive factors from this list and the absence of negative factors can be attributed as necessary conditions for the successful economic development. But they are not the indicators of the final result – the level of economic development of the country.

One of the old ideas which is yet to lose its significance for the assessment of the level of diversification was put forward by C.Stigler, one of the leading representatives of the Chicago school back in the 60s of the last century. This measurement is based on the "Equiproportional Measure" of fields. The main hypothesis is that the ideal diversification is when the economic activity is equally divided between individual fields and all the fields have equal share. This idea, of course, can be applied to different fields: it is possible to assess the internal industry diversification based on the equal shares of separate industrial fields. In the following decades different options were offered for the measurement of diversification based on this idea and even its in-country regional variations were reviewed.

Those who are against the "equal share fields" draw the attention to the two issues. The first, the share of fields can be measured based on different criteria - for instance, value expression of product and service output, number of employed, volume of drawn investment and etc. Since the fields of economy are different due to its effectiveness (productivity) level the results obtained based on these factors are also different. There is a logic peculiar to the selection of each one of this, that is no one can be considered as unambiguously superior than the other. Secondly, this approach does not consider the market demand, production technologies, objective differences in terms of commodity flow among the different fields, including the comparative advantages of the fields.

The second criticism is not fully just, because as it was noted, the interpretation of diversification as optimal field structure is false. But the share of truth in the first criticism is great. Despite that, in order to assess the level of diversification of economy in Azerbaijan this concept is the most successful one among the available options.

Azerbaijani economists also conducted researches for the assessment of the level of diversification of economy. Among them we can name the book by K.Aslanli, Z.Ismayil and A.Mehtiyev titled "Assessment of the diversification of economy and import". Here, the statistical data on the proportion of different fields of Azerbaijani economy, firstly of oil and non-oil fields, on the structure of export was collected, state policy oriented to the diversification of economy, adopted legislative acts and expedient programs were researched, and comments were issued on the economic policy decisions targeting diversification of economy. O.Bagirov analysed the geo-political impacts of diversification policy to show that the ratio between oil and non-oil sectors changes in favour of the latter. Some of our economics researched field problems of diversification (for instance, within industry).

Methodology

As it was noted in this research the ranking of Azerbaijan's administrative districts was not designed from the factors stimulating the economic development, but from the

indicators expressing the actual status of economy. The indicators characterising static economic development – paying no attention to the differences in areas based on the number of population – was estimated based on per capita. There is no need for this during the assessment of the level of economic diversification.

The Comparisons were made based on the Regional Economic Development and Diversification Index. This is a composite indicator estimated as weighted mean of the 2nd sub-indexes. The sub-indexes are as follows: The sub-index for the static level of the economic development (SLED) and Field Diversification (FD) sub-index. The first sub-index assesses the current development level of the economy, while the second measures its stability and sustainability degree.

All estimations were done based on the latest issued official indicators (statistical data of 2019) and cover 67 administrative districts (Naftalan city was viewed as an administrative region) including 9 districts of Karabakh economic region.

Sub-index of the static level of economic development

The current level of economic development in the regions of Azerbaijan was assessed based on the 3 indicators:

i)Gross output per capita (GO),

ii) Public labour productivity measured in product output per employed (PLP),

iii) Per capita income from economic activity (IEA).

The first indicator is a most general characterisation of the level of economic development. This indicator reflects the overall volume of manufactured products and services during the year by the residents, that is the enterprises which received official state registration in that same region. These include products and services delivered to consumers, products and services produced by the producers for the intermediate and final consumption or collection.

The Gross Output per capita estimated for the districts of Azerbaijan reminds of the two indicators used in between country comparisons - synthesis of GDP and GNP indicators. The State Statistical Committee of the Republic of Azerbaijan incorporates into this indicator products and services of foreign companies which once functioned in the regions, but on the other hand the Committee cannot fully incorporate the products and services by local companies which operate in that same region, but which are officially registered somewhere else.

Though the Gross Output per capita indicator can thoroughly demonstrate the scale of economy in the regions, it does not provide any information about its effectiveness. The effectiveness of the economy, as it is known, is determined by the efficiency level of the use of production resources. The most significant among these resources in human and its labour. There exist two approaches equally significant for the efficiency of the use of human potential. The first one of those is how thoroughly labour resources are used. Its indicator is the level of employment, and its measurement is the ratio of population capable of working to the employed population. The indicator of the second approach is the effectiveness (productivity) of public labour, its measurement is the division of gross product output to the number of employed population. How many products and services are produced by one employed person is a more universal and "deep" indicator because it indirectly expresses the efficiency of the use of other resources (production means, natural resources, infrastructure installations). Therefore, in order to measure static economic development of the districts

in this research the second indicator used is public labour productivity measured by gross product output per employed.

Another decisive feature characterising economic development is how much revenue it creates. This is a principal issue because there exist many factors under the impact of which the economy expressed with higher cumulative values can create less revenue. Whereas the designation of economy is to provide for the welfare of people and to bring incomes to people for that. Therefore, in order to assess actual economic development of the regions the third indicator used in this study is income per capita.

However, it is clear that the incomes acquired by people on these or other regions are not the only incomes created by the economy of that specific region. For instance, the funds transferred by labour migrants to their families in any way can`t be considered the development indicator of the region their families live in. It may be the opposite that the greatness of these fund proves to the weakness of the economic development in that same region. Therefore, in our case the income indicator was "cleaned off" such additions and converted to *income per capita created from economic activity*. This indicator includes only the income obtained from employment (hired work and self-employment), as well as income generated from leasing of property or real estate, currently acquired transfers (pension, allowance and social assistance, monetary value of in kind benefits) and excludes the funds obtained from others domestically and wired from abroad.

All 3 indicators expressing the level of economic development were indexed with the below standard formula and brought to the interval of [0, 100]:

$$V_i = \left[\frac{(V_f - V_{eh.min})}{(V_{eh.max} - V_{eh.min})}\right] \times 100$$

It is envisaged to conduct the analysis of the districts of Azerbaijan based on REDD: in the future (in any case in the next 5 year). İn order to maintain the comparability of the current and future results during the indexation maximum and minimum indicators used were differentiated from actual maximum ($V_{max\ act}$) and minimal ($V_{min\ act}$) indicators, and were calculated as estimated maximum ($V_{est.max}$) and estimated ($V_{est.min}$) minimum. Here it was hypothesized that in the coming 5 years the variation of indicators used in the calculation of REDDI will not exceed 20%. Therefore, the estimated maximum indicator was calculated and rounded by adding 20% to the highest indicator (actual maximum indicator) among the districts, the estimated minimum indicator, in its turn, was calculated and rounded by deducting 20% from the lowest indicator (actual minimum indicator) among the districts.

$$V_{est.min} = V_{min\ act} - 0{,}2 * V_{min\ act};$$
$$V_{est.max} = V_{max\ act} + 0{,}2 * V_{max\ act}$$

The same calculation was done for the remaining 2 indicators.

Thus, by using standard normalisation formula and estimated maximum and minimum indicators the 3 under-indexes of the Static Level of Economic Development sub-index - under-index of gross product output per capita, public labour productivity under-

index and income per capita from economic activity under-index were estimated. The sub-index is the weighted mean of these under-indexes.

The under-indexes are positively oriented, that is the higher they are, the higher is the sub-index. The sub-index is also positively oriented, that is the higher its value for any given district (its proximity to 100), the higher the static level of economic development in that district.

Field diversification (FD) sub-index

In order to assess the stability and sustainability of economy in the regions of Azerbaijan the field diversification level was studied, towards that end, as it was noted, "equal share fields" approach was utilised. Based on the approach the field diversification sub-index developed for each economic district, city of republican subordination and administrative region. However, considering the field related characteristics of economy in the cities a somewhat different approach was utilised for five cities.

The first hypothesis states that the best diversification of economy in the administrative districts of Azerbaijan is the equal division of economic activity (gross product output) to 4 main areas - industry, agriculture, services sector and construction (the services sector included transport, communication and trade). In other words, each of these areas produces 25% of gross product. Of course, raising the number of fields of identical significance would increase the accuracy of assessment, but for the time being, it is expedient to apply "equal share fields" principle on these four fields (viewing transport, communication and trade all under the same umbrella).

Interestingly enough the distribution of the country's economy (not considering Baku) among these four fields is very close to what we call "ideal" distribution. The special weight (26%) of agriculture which boasts to have the greatest share exceeds the special weight of the services sector with the smallest share (24%) by 2 percent points. This fact once more time confirms that "equal share fields" principle is totally acceptable for Azerbaijan.

Field diversification sub-index has been built on total deviation of 4 main fields from ideal distribution in individual districts. The less the total deviation, the higher is the regional economic diversification level.

The results obtained following the determination of the total deviation for each economic region, city of republican subordination and administrative region have been normalized with standard indexation formula and brought to the interval of $[0, 100]$:

$$\mathrm{SD} = \left[\frac{(V_{max} - V_{fakt})}{(V_{max} - V_{min})}\right] \times 100$$

As it is seen, the sub-index values were "reversed" because in this case the advantage will not be in the greatness of indicators, but rather in the fact that they are small.

Determination of weights

Upon the quantifiable assessment of the level of economic development and diversification it must be absolutely taken into account that the importance of sub-indexes forming it is different. The importance of indicators (under indexes) forming the sub-

indexes of composite character is not the same. Therefore, as it the case in other similar studies, here too, the majority of measurements were carried out based on special weights.

In order to determine the weights 24 experts among the economic scientists of the country who can be considered specialist in the researched area were selected. Each one of them having filled out a survey assigned weights to sub-indexes and to the components of the first sub-index based on their considerations. During the calculations the simple estimated mean of the special weights proposed in the survey form were used.

Thus, sub-index of the static level of economic development was calculated with:

$$İİSS_i = 0{,}35*MB_i + 0{,}29*ƏM_i + 0{,}36*İFG_i$$

formula and economic development and diversification index of districts was calculated with:

$$RİİDİ_i = 0{,}59*İİSS_i + 0{,}41*SD_i$$

formula and based on the acquired results the administrative districts of the country were listed in descending order.

Final conclusion Regional Economic Development and Diversification Index

The final index was calculated without considering 9 administrative districts of Karabakh economic region. Among the administrative districts the leader in REDDI is Kurdamir (49.72) Kurdamir registered high result on both sub-indexes, it was 3rd on the SLED (Static Level of Economic Development) and 5th on FD (Field Diversification). Bilesuvar comes second in the ranking. Pushing it far up in the ranking is the high diversification of economy (1st place on FD sub-index), and its result on the static level of economic development is more modest (16th place).

Accordingly, there is similarity in the indicators of Gabala and Goygol positioned on the 4th and 5th places respectively. Both districts ended up high in the rankings on FD sub-index (respectively, 2nd and 3rd places), but were somewhat behind (28th and 40th places respectively) on SLED sub-index. It is clear that the fact tat districts ended up in top ten on REDDI ranking was possible only due to high diversification.

Table 1. REDDI and its sub-indexes (administrative districts which registered higher results than the REDDI average indicator, 2019)

Ranking	*Administrative districts*	*REDDI*	*Sub-indexes*			
			SLED sub-indexes		*FD sub-indexes*	
			Ranking	*SLED*	*Ranking*	*FD*
1	Kurdamir	49.72	3	23.82	5	87.01
2	Bilasuvar	49.16	16	19.34	1	92.08
3	Babek	48.69	8	20.68	4	89.01
4	Gabala	46.83	28	16.69	2	90.20
5	Goygol	45.46	40	14.47	3	90.07
6	Kangarli	44.73	13	19.39	7	81.19
7	Hajigabul	44.71	4	22.89	18	76.13
8	Khachmaz	44.62	12	19.39	8	80.93

9	Goychay	43.67	11	19.40	11	78.59
10	Gazakh	43.40	42	14.21	6	85.41
11	Guba	42.95	19	18.87	13	77.60
12	Khizi	42.60	1	42.11	58	43.29
13	Gadabay	42.49	18	18.88	16	76.46
14	Shahbuz	42.15	7	20.89	24	72.75
15	Sadarak	41.79	20	18.55	20	75.24
16	Sharur	41.60	10	19.68	23	73.15
17	Oguz	41.16	44	13.98	9	80.27
18	Siyazan	40.96	2	27.06	44	60.96
19	Agsu	40.88	37	14.79	12	78.43
20	Beylagan	40.48	38	14.75	14	77.52
21	Shabran	40.21	14	19.38	32	70.19
22	Absheron	40.17	17	19.22	31	70.32
23	Salyan	40.15	47	13.37	10	78.68
24	Ismayilli	39.81	29	16.61	22	73.20
25	Sheki	39.73	34	14.96	19	75.38
26	Agjabedi	39.72	26	17.09	25	72.30
27	Shamakhi	39.62	21	18.28	30	70.34
28	Gakh	38.87	41	14.28	21	74.25
29-30	Masalli	38.83	49	12.62	15	76.56
29-30	Neftchala	38.83	23	17.46	34	69.58
Average score on administrative districts		*38.41*	*16.86*		*69.41*	

Table 2. REDDI and its sub-indexes (administrative districts which registered lower results than the REDDI average indicator, 2019)

Ranking	Administrative districts	REDDI	Sub-indexes			
			Ranking	SLED	Ranking	FD
31	Lankaran	38.18	52	11.80	17	76.15
32	Shamkir	37.57	24	17.28	38	66.77
33	Ordubad	37.56	31	15.55	35	69.23
34-35	Agdash	37.23	15	19.36	41	62.96
34-35	Balakan	37.23	45	13.81	28	70.94
36	Zagatala	36.93	35	14.84	36	68.73
37	Gusar	36.72	39	14.64	37	68.49
38	Terter	36.42	53	11.53	26	72.25
39	Agstafa	36.32	51	12.18	27	71.04
40	Julfa	36.24	27	16.86	39	64.13
41	Ujar	36.04	50	12.61	33	69.75
42	Imishli	35.69	9	20.08	49	58.16
43	Tovuz	34.50	36	14.80	42	62.86
44	Lerik	34.12	56	8.85	29	70.48
45	Goranboy	33.52	33	14.99	45	60.17
46	Naftalan	33.35	6	21.15	54	50.92
47	Sabirabad	33.18	32	15.05	46	59.27
48	Astara	32.43	54	10.64	40	63.78

49	Dashkasan	31.99	5	22.83	56	45.18
50	Zardab	31.77	55	10.21	43	62.80
51	Saatli	31.65	48	12.68	47	58.94
52	Gobustan	31.31	25	17.24	53	51.57
53	Yevlakh	30.68	30	15.67	52	52.29
54	Samukh	30.20	46	13.51	51	54.20
55	Barda	28.82	22	18.08	57	44.26
56	Yardimli	28.51	57	7.77	48	58.37
57	Jalilabad	27.10	43	14.18	55	45.69
58	Fuzuli	25.11	59	4.24	50	55.15
59	Shusha	16.95	62	1.69	59	38.91
60	Lachin	15.35	63	1.37	60	35.45
61	Kalbajar	15.26	61	2.25	61	33.97
62	Agdam	13.85	60	2.92	63	29.59
63	Zangilan	12.23	67	0.03	62	29.80
64	Khojali	12.05	58	4.80	65	22.49
65	Jabrayil	10.94	64	1.27	64	24.87
66	Khojavend	6.20	66	1.13	66	13.48
67	Gubadli	5.89	65	1.15	67	12.72

Though, the equal share of all the fields (similar fields) of economy, in principle, is the indicator of the economic diversification (and thus the indicator of sustainability of economy), when the economy is not successfully developed it loses its meaning. By the same token, though, the acquired (current) development indicator is high, when there is no field diversification (when it is too weak), it poses a great risk for the stability and sustainability of development. Therefore, the greatness of discrepancy based on sub-indexes in all the cases indicates to the importance of implementation of urgent measures.

Final Considerations

The presented study can be considered another view of interregional economic balance and infield diversification of economy in the districts. Its peculiarity lies in the fact that it has been built on specific (which can be considered new in a certain sense) measurement methodology.

There is one universal feature of comparative social-economic research. Here, the main result - is the ranking itself and the recommendation deriving from these rankings to state entities is in “automated reading mode”.

Interregional comparative studies can help seriously to local government bodies (in our case to city and regional executive powers) to adopt correct decisions.

From theoretical point of view, there should be a certain link between the level of economic development of countries and their regions with the field diversification of their economies. Though the economic development which has not been diversified enough (in other words which is not stable and sustainable) can be rapid for a certain period of time, it will eventually stop and even start to decline.

In a normal situation, the correlation between the static level of economic development

and field diversification is quite high. This dependency on the regions of Azerbaijan is on an average-high level (0.61) and is positive. This means, the more strengthened the diversification of economy is, the more inclined the level of economic development is to increase. The reverse is true as well: the economic diversification in the regions with greater economic development, as a rule, is stronger.

It should be reiterated that economic diversification is not the same as the optimisation of its field structure. Considering this, we can argue that if the level of economic development was to be compared with the improvement of the field structure a greater dependency would have been observed.

The state investments directed to building and development (that is to their expansions and modernisation) of production and service enterprises have "retaining" character. It is more significant for all the regions in terms of sustainability of both the level of economic development and diversification ("long lastingness"). The investments directed to enterprises in this or other time span also "work" in the following periods (years). Therefore, upon the assessment of the factors impacting the current level of development and diversification of economy in any given administrative-territorial unit, it would better to study the "collected" investments as opposed to made investments in the year when the

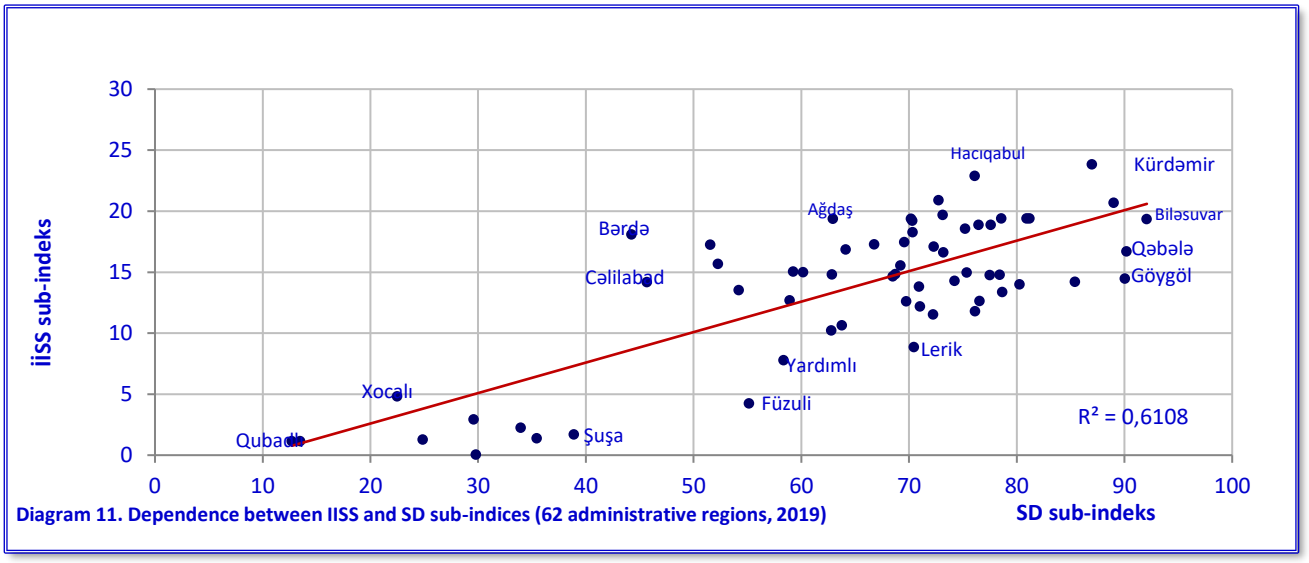


Diagram 11. Dependence between IISS and SD sub-indices (62 administrative regions, 2019)

analysis was made.

Reference list:

Montenegro, A. (2004). An Economic Development Index; available at: https://econwpa.ub.uni-muenchen.de/econ-wp/dev/papers/0404/0404010.pdf [accessed on May 22, 2021].

Gender Development İndex - 2021; available at: http://hdr.undp.org/en/ /content/gender-development-index-gdi [accessed on May 22, 2021]).

Bazi, V. & Firzli, M. (2013). Transportation Infrastructure and Country Attractiveness. – Revue Analyse Financière, 2013, No 48; available at: https://www.academia.edu/6494981/Transportation _Infrastructure_and_Country_Attractiveness [accessed on May 22, 2021].

Per capita GDP (2021), available at: https://www.investopedia.com/terms/p/per-capita-gdp.asp [accessed on May 22, 2021].

The World Bank Database: GDP per capita, PPP (2021), available at: https://data.worldbank.org/ /indicator/NY.GDP.PCAP.PP.CD [accessed on May 22, 2021].

Grossberg, A.J. (1982), Metropolitan Industrial Mix and Cyclical Employment Stability. – Regional Science Perspectives, 1982, No. 12 (2).

Jackson, R.W. (1984), An Evaluation of Alternative Measures of Regional Industrial Diversification. – Regional Studies, 1984, No. 18 (2).

Wagner, J. (2021), Regional Economic Diversity: Action, Concept, or State of Confusion. – Journal of Regional Analysis & Policy, Jan. 2000, No. 30; available at: https://www.researchgate.net/ publication/ /228966062_Regional_Economic_Diversity_Action_Concept_or_State_of_Confusion [accessed on May 22, 2021]

The Global Competitiveness Report – 2020; available at: http://www3.weforum.org/docs/WEF _TheGlobalCompetitivenessReport2020.pdf [accessed on May 22, 2021]

Doing Business – 2020: Comparing Business Regulations in 190 Economies; available at: https:// openknowledge.worldbank.org/bitstream/handle/10986/32436/9781464814402.pdf [accessed on May 22, 2021].

İndex of Economic Freedom - 2021; available at: https://www.heritage.org/index [accessed on May 22, 2021].

Human Development Report – 2020; available at: http://report.hdr.undp.org [accessed on May 22, 2021].

Global Innovation Index – 2020; available at: https://www.globalinnovationindex.org/Home [accessed on May 22, 2021].

Stigler, G.J. (1968). The Organization of Industry, Homewood, IL: Irwin. Maraqlıdır ki, C.Stiqler 1982-ci ildə Nobel mükafatını həm də sənaye strukturları sahəsində innovativ tədqiqatlarına görə qazanmışdır.

Fursenko, N.O. (2018), Problems of measurement of diversification of regional economy. – World of Economos and Management, 2018, Volume 18, № 3;

Aslanli K., Ismayil Z.and Mehtiyev A. (2013), Assessment of the diversification of economy and import. – Baku, 2013;

http://www.freeeconomy.az/site/assets/files/1188/iqtisadi_diversifikasiya_az.pdf [last view date- 22 May 2021].

Baghirov, O. Economic Diversification in Azerbaijan and Its Geopolitical Implications. – Eurasia Daily Monitor, 2019, Vol. 16, Issue 123; available at: https://jamestown.org/program/economic-diversification-in-azerbaijan-and-its-geopolitical-implications [accessed on May 22, 2021].
Rzayev M.A. (2018). Policy of production diversification in industrial enterprises. – Economy, Management, law, 2018, № 5; http://elibrary.az/docs/jurnal/jrn2018_323.pdf [last view date- 22 may 2021].

Economic Journal, Special Issue 1, 2022

Geology of Uzbekistan after Covid-19: Measures and Perspectives

Alisher Halmurzaev,
Muhammadjon Babadjanov,
info@cerr.uz
Center for Economic Research and Reforms
under the Administration of the President of the Republic of Uzbekistan

Abstract. The article presents an overview of the geology of Uzbekistan after the Covid-19 pandemic, focusing on the measures and perspectives to enhance the country's mining sector. Uzbekistan possesses abundant natural resources, including precious metals, non-ferrous metals, organic fuels, and uranium. The country holds prominent positions globally in reserves and mining of various minerals. To attract foreign investment, the article emphasizes the need to adhere to international reporting standards, such as the JORC Code, and highlights efforts to train local geologists in line with these standards. The article also discusses organizational improvements, regulatory frameworks, groundwater resource management, and the potential for scientific and innovation advancements in the geological industry.

Keywords: geology, Uzbekistan, Covid-19, mining sector, natural resources, investment, foreign investors, regulatory framework, groundwater resources, scientific innovation

Introduction

The Republic of Uzbekistan is blessed with rich natural resources including precious, rare and non-ferrous metals, various organic fuels such as oil, natural and condensed gas, different types of coal, shale oil, uranium and many more. The country firmly holds fourth position in the stock of gold and seventh in gold mining, eighth in uranium reserve and eleventh in uranium mining.

There are more than 2025 mining fields around the country: construction materials - 867, groundwater - 649, hydrocarbons (oil, condensed and natural gas) - 244, precious metals - 97 (gold, silver), non-ferrous and rare metals - 12, radioactive metals - 38, raw materials mines - 37, chemicals - 32, gemstone - 30, coal and oil shale - 7, ferrous metals - 5.

Uzbekistan secures leading positions in the world in confirmed stocks of such minerals as gold, uranium, copper, natural gas, tungsten, potassium salts, phosphorite, and kaolin. Not only do the rich stocks of minerals provide the existing mining complexes with a long perspective, but they also allow for increasing facilities and re-organization of the extraction of the most important minerals such as gold, uranium, copper, lead, silver, lithium, phosphorites, potassium salts, agrochemical ores, and other. According to estimates of Boston Consulting Group, over the next ten years, the country's investment potential will amount to $ 65 billion, of which more than 45 billion falls to the raw materials industries.

In April 2020 the country developed post-pandemic measures to mitigate the adverse effects of the pandemic. The conceptual measures tangled different aspects of the sector including investment, structural changes, regulatory framework, scientific and innovation potential as well as modernization programs. In particular, measures chase objectives such as increasing the reserves of gold, silver, copper and eight types of non-metallic minerals, and the volume of mineral extraction by at least 1.5 times in the framework of ongoing investment projects.

The country is devoted to the allocation of funds for the modernization of the industry and the digits are only growing over the years. In 2017 - 2019 in consecutive three years, 6.5, 23 and 18.2 million US dollars were allocated respectively in the framework of the modernization program. In this period, a third of the technology and equipment in the industry has been renewed. In 2020, about 53 million US dollars are expected to be allocated to modernize drilling, mining, laboratory, geophysical, energy equipment, special equipment, auxiliary and other types of equipment.

The use of modern equipment allows not only to gain access to facilities previously inaccessible due to technical capabilities but also to improve the pace and quality of well drilling at previous facilities by reducing the time previously spent on repairs. Moreover, the use of modern equipment can reduce the time of work at all stages, reduce the negative impact on the environment and drill wells of complex design. It is estimated that employing modern equipment will increase the drilling depth from 800 meters to 1200 and productivity by 1.7 times. By July over 100 units of special equipment are expected to be renewed with funds allocated from the State Budget.

Successful implementation of the program will increase exploration work by 35 percent. This exploration of 16 perspective hydrocarbon sites and confirmation of the volume of reserves at 23 new fields are expected to be completed by the end of the year. Other geographic information technologies also will be implemented into the sector that allows the processing of spatial data, such as Global Mapper (software package for a geographic information system), Erdas Imagine (software package for processing geospatial and hyperspectral images, as well as vector data) and ENVI (image analysis software used by professionals of geographic information systems, remote sensing scientists and image analysts).

1. Attractiveness of the industry for investment

Given the big potential of the sector, for the successful implementation of the investment attractiveness of the industry (namely, foreign investment), it is necessary to switch to international standards of reporting. Among the widely recognized international standards is the JORC Code, which sets standards, recommendations and principles for applying public reporting on mineral exploration results and ore reserves. The main principles of the code are transparency, materiality and competence.

Despite the fact that transparency and materiality are the guiding principles of the code, the key component of providing a high-quality report at an international level remains qualified personnel, that is, competent specialists. Hence, the Uzbek government developed a crisis management program to eliminate the pandemic crises in the sector where among first measures is to train local geologists in accordance with international JORC standards by attracting foreign specialists. The measure is aimed to ensure the preparation of the necessary reports in accordance with the expectations of potential foreign investors.

Further measures include reaching an agreement with the World Bank on attracting investors to the Kyzylturuk (gold) and Sangruntov (oil shale) mines, as well as with the European Bank for Reconstruction and Development to the Oktepa (silver) and Jetimtov (phosphorite) mines. It is planned to negotiate with international financial institutions on attracting investors to the remaining 16 fields until November 1, 2020. Attracting foreign investors will directly serve to transfer new technologies, accelerate enriching stocks, and

ultimately stimulate regional economic activity, increase employment and tax revenues.

2. Organizational improvement: State Committee on Geology and Mineral Resources

As was mentioned earlier, conceptual measures tangled structural changes. A number of regulatory acts have been adopted to strengthen the functional potential and expand the activities of the State Committee on Geology and Mineral Resources. This is especially important given the need for rational and efficient use of the country's natural resources. In particular, the President's Decree "On measures to radically improve the activities of the State Committee of the Republic of Uzbekistan on geology and mineral resources" assigned the following main tasks and directions to the State Committee on Geology and Mineral Resources:

- to carry unified state policy in the field of geological study, use and protection of mineral resources;
- to improve the efficiency and effectiveness of exploration;
- to maintain an active investment policy in the field of geological exploration and industrial development of mineral deposits and create a favorable investment climate;
- to monitor the implementation of state programs for the development and reproduction of the mineral resource base;
- to implement state supervision in the field of use and protection of mineral resources during their geological study, mining, and processing of mineral raw materials;
- to implement effective measures of modernizing the geological industry by employing modern high-performance exploration equipment, providing advanced and innovative technologies;
- to implement systemic measures of training qualified personnel for the geological industry.

Additionally, another Presidential decree has been adopted "On measures to improve the organization and conduct of geological exploration for oil and gas" according to which the function of conducting research and regional geological surveys, geophysical and drilling activities as well as development and reproduction of hydrocarbon reserves of the republic were transferred to the State Committee on Geology and Mineral Resources.

3. Regulatory framework

Regarding the regulatory framework of the after-pandemic development program revised version of the Law "On mineral wealth" is to be adopted. The current law was adopted in 2002 and the government believes it should be revised based on industry development trends and best foreign practices in the field.

The working group at the State Committee on Geology and Mineral Resources is to develop a new version of the law based on the study of the legislation of Türkiye, Chile, China, Canada, Germany, the Russian Federation, Kazakhstan and Australia.

One of the recommendations for the upcoming revision of the current law is that the

rules and requirements in the new draft law will be direct in nature and will regulate the rights of foreign investors in more detail.

At the same time, it is expected that the principles of competition for the transfer of subsoil use rights directly in the norms of the draft law will be reflected. At the same time, the rights of mineral users will be strengthened, and the conditions for government and local authorities to intervene in the activities of subsoil users will be determined in detail.

4. Groundwater resources

The study of groundwater is among the most important areas in geological science. It aims to solve land reclamation problems and to create an optimal water regime on agricultural lands, as well as for hydrogeological substantiation of construction works.

Accordingly, monitoring and maintenance of the groundwater cadaster of the country has been greatly improved. As part of the program State Committee on Geology and Mineral Resources plans to accelerate the completion of drilling 70 wells. This will secure enough water supply for irrigation for 3000 ha of land. It is worth noting that recently 250 observation wells were equipped with automatic remote measurement devices.

Organizational structuring has also been tackled in the program. To ensure efficient management of groundwater resources in the country State Unitary Enterprise "Uzbekhydrogeology" as a separate authorized body is now assigned to carry unified policy in this area.

Moreover, by the end of the year, the country will introduce a system for online monitoring of water consumption in 200 new wells (also at 400 groundwater-level wells). The extension of this measure will include the development of interactive groundwater maps.

5. Potential for scientific and innovation

In recent years, Earth Remote Sensing (ERS) has become an indispensable tool for the study and management of mineral resources. The observation is carried out by aircraft and spacecraft equipped with special multichannel tools that record electromagnetic radiation in different ranges. There are different methods for studying the earth using remote sensing technology - a surface survey using satellite imagery, as well as processing Airborne geophysical surveys data that reflect the properties of the rock at depth.

In order to increase the efficiency of exploration and extraction of natural resources, measures have been developed to organize geological research using satellite imagery by the airborne geophysical method by the end of the year. Both methods are relevant depending on the scope. In particular, airborne geophysical methods and technologies are used at all stages of geological exploration, starting with the early stages of the search and ending with the transportation of extracted minerals.

Important features of airborne geophysical technologies are high productivity (up to 30,000 linear kilometers per month with one aircraft) and the absence of anthropogenic load on the studied territories. As a rule of thumb, the use of traditional methods (seismic exploration and drilling) has difficulties associated with logistics, which leads to a significant increase in the cost of project. Application of airborne geophysics methods in these

conditions allows obtaining huge data about the geological structure of the study area in a short time by optimizing the planning and implementation of heavy geological and geophysical work due to the reasonable positioning of prospecting wells.

Given the relevance of the application of these methods, in 2019 the first modern airborne geophysical complex in Central Asia was launched in Uzbekistan by which innovative methods for the study of mineral resources were introduced. At the initial stage of geological work, widely used programs in the world based on modern geographic information technologies are actively employed. High-resolution satellite images from satellites are also actively used, which makes it possible to conduct research on vast areas and with great accuracy to obtain information about the layers of deep occurrence of minerals.

Also, in order to support research activities in the field of geology, as part of comprehensive measures, the Ministry of Innovative Development has announced a call for application for applied and innovative projects. The purpose of the competition is the generating high-tech products and innovative technologies aimed at solving urgent problems, real needs and regional problems of geology development.

In addition, to further improve the system of training qualified personnel for the geological industry,

On May 13 of this year, the Resolution of the President of the Republic of Uzbekistan "On measures to organize the activities of the University of Geological Sciences in the system of the State Committee for Geology and Mineral Resources" was adopted.

According to the resolution, the University of Geological Sciences was established, specializing in the integration of education, research and practice in the field of geology.

The University is a specialized higher education and research institute of the republic for the training of qualified personnel in the field of geology and the implementation of research work for the State Committee on Geology and Mineral Resources, mining companies and other sectors of the economy.

The university is expected to consolidate the potential of advanced theoretical knowledge of geological science and enterprises in the field of mining metallurgy, to implement projects such as the Digital Geology and the National Electronic Base of Rocks and Minerals, as well as to train students on remote sensing methods of the Earth based on high-resolution space photographs.

Students are trained on the basis of the state educational standards of Uzbekistan in accordance with the programs of leading foreign universities in the field of geology and mining.

The adoption of this decision will serve to implement the results of research in geology, the widespread use of modern teaching methods, radically improve the system of training highly qualified personnel in geology, as well as strengthen the material and technical base of education on the basis of advanced foreign technologies.

Economic Journal, Special Issue 1, 2022

Uzbekistan: Post-COVID Economic Recovery Strategy

Bakhtishod Khamidov
Malika Jumaniyozova,
Email of Center: info@cerr.uz
Center for Economic Research and Reforms under the Administration of the President of the Republic of Uzbekistan

Abstract. This article examines the challenges faced by Uzbekistan in striking a balance between controlling the pandemic and reviving its economy. It analyzes the impact on macroeconomic balances, identifying declines in imports, remittances, and exports. The government's focus is on stimulating domestic demand through cash support for households, aiding small businesses, and providing targeted sector-specific assistance. Effective management of investments and consumer behavior, along with fostering collaboration among private, public, and non-profit sectors, are highlighted. With pragmatic responses and regulatory measures, Uzbekistan aims to navigate post-COVID economic challenges and achieve a robust recovery.

Keywords: Uzbekistan, post-covid economic recovery, government intervention, fiscal policy

Introduction

Given the high likelihood of the second wave of the COVID-19 outbreak, countries still face a choice between the people and the economy. Today the task of reducing the spread rate of infections directly contradicts the task of limiting the depth of the economic recession accompanied. In other words, a slowdown in the process of reaching the peak of infection can occur only when the economy will not operate at full capacity. In this case, the removal of workers from their jobs, social distancing of consumers reduces economic activity, which affects economic growth negatively, and through the channel of economic expectations – to the levels of investment and consumption.

Estimations show that without government intervention (containment policy), with an initial mortality rate of 2 % and reproduction rate of 50% in overloaded health systems, 1% of the world's population can die (76 million people). However, if the quarantine and self-isolation policies are activated for a short period of time (a month or two) and 50% or more people may not be able to work, GDP may decrease by 6.5-10%.

It should be emphasized that most countries choose the intervention policy in order to smooth the epidemiological curve (the first wave was in February-April, the second one is possibly in the coming autumn) in order to avoid beds and mechanical ventilation device shortage problems in infectious diseases hospitals.

Therefore, economic recession during the fight against the spread of COVID-19 is recognized as a necessity, and at the same time, it can cause long-term economic damage, because many firms and banks may go into bankruptcy, job places may be reduced and a large number of people may fall below the poverty line, and national balances loose balances. Consequently, governments can and should try to smooth out the curve of economic downturn, through their anchors of economic intervention.

1. Impact of pandemic on the macroeconomic balances of Uzbekistan

The following were observed based on preliminary results of the first quarter of 2020, compared with the previous year:

- a decline in the imports of consumer goods and medicines (according to Chinese statistics, in the first quarter of 2020, China's exports to Uzbekistan decreased by 14.3%);
- a decrease in migrant remittances (according to World Bank forecasts remittances will decrease by 20%, the number of citizens who could not go to work abroad amounted to 143 thousand people);
- slowdown in the import of technologies, semi-finished products and raw materials (due to the temporary delays in international transportation);
- a decrease in the export of goods and services (as a result of a decrease in external demand and prices for basic commodities, according to Chinese analysis Uzbekistan's exports to China in the first quarter of 2020, decreased by 31.2%);
- decrease in budget revenues (as a result of reduced economic activity);
- increase in unemployment (according to opinion polls 21% of people temporarily lost their jobs);
- decrease in demand for durable goods and services (as shown by a survey by the *Center for Economic Research and Reforms*, 68 % of the population believes that now it is not the time to buy durable goods, against 13 %);
- decrease in saving and investment;
- an increase in the share of non-performing debts and bank liquidity;
- increase in the social responsibility of the government and pressure on the budget, government debt (the government intends to attract loans of international financial institutions which amounts to $3.1 billion).

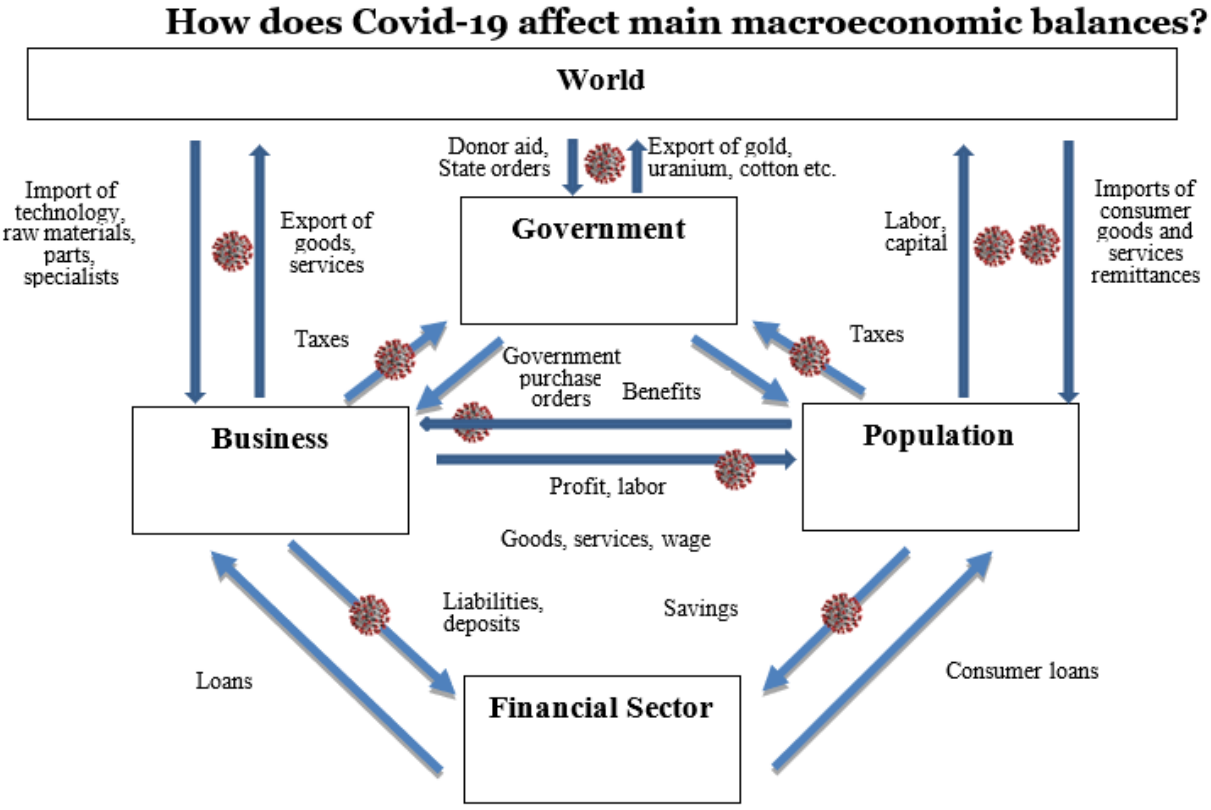
Given the interrelations and interdependence among sectors and agents of the economy, **without an economic intervention policy, an economic recession can turn into a financial crisis** (due to the problems in liquidity in the banking system), **a debt crisis** (due to an increase in additional debts) or a **foreign currency crisis** (due to the decrease in foreign trade).

2. Government policy objectives and tools

The primary task of the government is to minimize the level of economic downturn and neutralize its negative consequences.

An analysis of world experience shows that macroeconomic tasks of many countries are aimed at stimulating, first of all, domestic demand, in particular:

- providing households with cash and partial compensation for mortgage/rent payments;
- providing temporarily dismissed or remotely working workers with salary for the period of quarantine;
- ensuring that firms have sufficient cash to pay employees, suppliers, to fulfill obligations to creditors and tenants, especially small and young enterprises, in order to avoid bankruptcies.
- support banks to avoid the transformation of the health crisis into a financial crisis.



Where in, alternative stimulation tools can be:

1. Increased government spending on the public health sector (fiscal policy).
2. Tax exemption, tax reduction, tax holidays and other types of benefits (tax policy).
3. Announcement of tax credits and providing the population with temporary universal income and companies with cash grants (social policy).
4. Reducing interest rates, launching quantitative easing policy and lending schemes (monetary policy)
5. Support new sectors of the economy that are not affected by the virus spread (industrial policy).

Most countries take measures in accordance with the point 3.

3. Recovery policy priorities

So far, the Republic of Uzbekistan has adopted 12 decrees of the President on counteracting the negative consequences of the pandemic for the population and enterprises, aimed at supporting strategic sectors, small businesses, ensuring the stability of the state budget, ensuring the provision of medicine to the population. Meanwhile, given the high level of uncertainty in the global economy, it is expected the adoption of additional regulatory acts in the form of pragmatic responses to the development of events.

Given the interconnectedness and interdependence between sectors and agents of the economy, as well as the limited financial recourses, it is important that state support entities having the greatest influence on the recovery

process. It is assumed that this effect depends on two main indicators: (i) the multiplier effect of the industry/agents on the entire economy and (ii) the depth and volume of the decline of the industry/agents because of quarantine measures. At the same time, state support, focused on these areas, has a relatively large direct and indirect (through increased activity in other sectors) stimulating effect on the entire economy.

1. Since the adverse effects of demand factors on the economy are more tragic than the effect of supply factors it is preferable to support, to a greater extent, households (measures to increase household incomes and the creation of additional demand for locally produced goods and services) and to a lesser extent enterprises (measures to compensate rents and obligations to banks).

The analysis of the households shows that out of 80% of the population employed in the private sector 33% are self-employed (i.e., taxi drivers, hairdressers, builders), who completely lose their sources of income during the quarantine. Therefore, in particular, it is necessary until the end of the year to maintain the measures used to stimulate domestic demand through broad measures to support incomes (benefits to low-income households, motivation for self-employment, community service, implementation of additional infrastructure projects and others).

2. Small businesses are expected to suffer the most, as they often own more vulnerable structures, have less access to insurance and other means of financing, fewer chances to choose their location, and have limited ability to mitigate consequences and provide preparedness for shocks. At the same time, in Uzbekistan, small businesses account for three-quarters of the employed population and more than half of the GDP. Taking into account the importance of SME, it is suggested:

- to develop financial support mechanisms for small business workers in regions highly dependent on the activities of small enterprises in order to ensure adequate demand for products;
- to take measures to resume the activities of transport and non-food trade (especially computers and communication sectors) in accordance with rules of disinfection;
- to consider issuing interest-free or government-guaranteed loans to small businesses (with the exception of newly created enterprises);
- comprehensive support for the activities of small exporting firms;
- technical and technological support for possible types of remote work (business consulting, banking and finance, insurance, trade) and measures to expand the reach of digital technologies and the Internet.

3. Domestically oriented enterprises, whose buyers lose most of their income as a result of the quarantine, as well as enterprises producing durable goods (automobiles, electrical appliances, furniture) and strategic enterprises that incur losses before shocks occur. The leading sectors of the service sector will suffer the most losses from the current situation: tourism, catering, non-food goods trade, air transportation, rail and road passenger transport, non-food consumer goods production (textiles, shoes, electrical equipment, etc). In addition, the interconnection and interdependence analysis of the sectors of the economy shows that sectors with the highest multiplier effect and the least degree of dependence on imports include educational, financial, health, travel services, information support, research and development services, accommodation, development of computer programs, repair of

household appliances and computers, forestry, agriculture, gas clothing. Consequently, active support of these sectors of the economy is offered.

4. At the same time, it is important the behavior of the agents receiving financial support from the government. From this point of view, it is necessary to control the investment activity of enterprises and the consumer behavior of the population. It is considered to develop indexes of business activity and consumer sentiment. In particular, *the Center for Economic Research and Reforms (CERR)* has already developed indices for changes in consumer sentiment, business climate and business activity. At the moment, the issue of developing such indices in regions of the country is planned to be studied.

5. At the same time, the relative combination of the roles of the private, public and non-profit sectors will allow us to study how various main sectoral groups can work effectively with minimal duplication of roles and without conflict.

In particular, under the Presidential Decrees, measures were taken to support the business, which provided funds in the amount of 3.7 trillion sums. Within the framework of the nationwide “Charity and Support” (Saxovat va Ko’mak) movement, which is designed to efficiently dispose of sponsorship and charitable funds of enterprises, 101 thousand enterprises provided social assistance to a total of more than 361 thousand families. In addition, international organizations such as the World Bank, the United Nations Development Project and others are actively conducting research to identify hot spots for the negative impact of the pandemic

6. Non-economic important tasks of the state that are crucial for economic recovery include restoring public order and market infrastructure, ensuring the availability of capital, labor, natural resources, uninterrupted provision of public services and spiritual/ethical values of the society.

Economic Journal, Special Issue 1, 2022

Uzbekistan's Efforts for Adaptation of the Economy to the Global Economic Crisis

Dr. Ulugbek Saydiev, info@cerr.uz
Center for Economic Research and Reforms under the Administration of the President of the Republic of Uzbekistan

Abstract. The article examines the specific measures taken by the government of Uzbekistan to combat the spread of COVID-19, support affected sectors, protect vulnerable groups, stabilize prices, and ensure the stability of the banking and payment systems. It also addresses the economic challenges faced by various industries and the initiatives undertaken to stimulate economic growth, create jobs, and improve living standards amidst the crisis.

Keywords: Uzbekistan, development strategy, pandemic crisis, COVID-19, emergency measures

For the last three years, Uzbekistan is progressively implementing its new development strategy, initiated by President Shavkat Mirziyoyev. The strategy embraces five priority areas: public administration and civil society, rule of law, economy, social issues, and international relations.

The global pandemic crisis led to a situation where the Uzbekistan government had to align the strategic development plan with the emergency measures to mitigate the pandemic effect on the health and well-being of people and the economy as a whole.

The first cases of infections with COVID-19 emerged in the country in mid-March. In response to the challenges associated with the spread of the pandemic, on March 19, the President signed a decree on priority measures to mitigate the negative impact of the pandemic and global economic crisis. A special state commission headed by Prime Minister Abdulla Aripov and the Anti-Crisis Fund of 10 trillion UZS were created by the decree. The first measures included:

- financing the measures to combat the spread of coronavirus infection;
- supporting entrepreneurship and employment;
- expansion of social support for the population;
- ensuring the sustainable functioning of the economy.

To avoid panic among the population, all necessary measures have been undertaken to prevent the dissemination of false and inaccurate information in the media. Since March 16, Uzbekistan closed all its transport connections with foreign countries except cargo transportation. All incoming vehicles are treated with special disinfectants. Charter flights are arranged for citizens who want to return home from abroad. All mass events, including sports, cultural and religious, have been suspended. Wedding events have to be held observing the necessary sanitary measures. Most public organizations and all educational establishments were recommended to transfer their work and external connections to the online mode.

More than 5,5 thousand specially trained healthcare professionals are mobilized to combat the spread of infection. Two national level, 14 regional hospitals, and 216 sanitary

and epidemiological establishments provide health care measures to combat the pandemic. The epidemical situation is being assessed based on hourly and daily data.

Social protection measures have been undertaken by the government to support the groups of the population whose well-being is affected by the pandemic. The people quarantined with infection and suspected of infection, as well as persons with children under the age of 14, are paid temporary disability benefits in the amount of their average salary. A simplified procedure for issuing the document on a temporary disability is set. The allowances to families with children and childcare benefits, which terms ended in March-June, are extended by six months. The number of beneficiaries who receive financial support is increased by 10 percent, up to 60 000. Employees of budgetary organizations who suspended their activity get their salaries in time. The basic foodstuffs and hygiene products (masks, antiseptics, etc.) are delivered to lonely elderly and disabled people. Extraordinary interventions have been undertaken to ensure the stability of prices in the foodstuffs market.

The stability of the banking and payment systems has been provided by means of monetary policy instruments. By October 1, 2020, commercial banks deferred a total sum of 5 trillion UZS loan repayments for tour operators, hotel business entities, transport and logistics firms, and other enterprises, including those who are experiencing difficulties due to restrictions on trade. Also, tax holidays were granted to these business entities. Recently, due to the relaxation of quarantine measures, 17 thousand manufacturing and 10 thousand construction enterprises resumed their activity. In most of them, cash flows decreased by 3 times compared to the period before the quarantine regime. The Government and Central Bank of Uzbekistan make the appropriate measures to provide these enterprises with liquidity.

According to the preliminary estimates, the pandemic affected the level of unemployment in the country and led to a reduction in the income of about 450 thousand families. Appropriate measures are being undertaken to mitigate these challenges on the national and regional levels. An additional 1 trillion UZS was allocated for the implementation of the state family business program. In total, 4 trillion UZS to be allocated for the family business programs this year. To date, 540 thousand families got support from the nationwide charity fund “Generosity and Support” in the amount of 307 billion UZS.

In Uzbekistan, more than 5.5 thousand medical staff were involved to stop the pandemic situation. It was entrusted to provide them with an extra 120 percent of their salary.

The Ministry of Internal Affairs and the National Guard are monitoring the observance of quarantine by citizens.

There were defined special tasks of providing tax holidays and preferences for credit debt, the allocation of budget loans to sectors most exposed to coronavirus.

For example, there are growing risks of non-repayment of loans in the amount of 90 billion UZS in the hotel business, 650 billion UZS in the transport and logistics sector, 180 billion UZS in the catering sector, 3.6 trillion UZS in foreign trade enterprises. Travel agencies and hotels continue to pay a tourist fee of $ 2-3 per day.

In this regard, an instruction was given to extend the maturity of loans of these enterprises, temporarily suspend the collection of tourist fees.

In the regions, the governors are authorized to provide deferred enterprises with

payment of local taxes for up to 6 months.

Along with this, tax rates on personal income for individual entrepreneurs and tax on the use of water resources for farmers are reduced by 50 percent. In this case, the loss of local budgets will be reimbursed from the republican budget.

A moratorium on tax audits will be announced before the end of the year, accrual of interest on the tax debt of enterprises are suspended.

Given the situation in international trade, it was instructed not to apply fines in connection with overdue debts on export-import operations, to increase the product pass through the “green corridors”, and to promptly solve the problems associated with cargo transportation.

Solving the tasks set in this direction will not only significantly mitigate the social consequences of the global economic crisis but will also help expand the country's economic potential by creating new jobs and increasing output, which in the long run will increase the incomes and living standards of the population.

Economic Journal, Special Issue 1, 2022

Actual Issues of Increasing Socio-Economic Stability in Pandemic Conditions

Ibragimova Naylya Muradovna, nibragimova@ifmr.uz
Institute for Forecasting and Macroeconomic Research, Uzbekistan

Abstract. During the pandemic crisis, both a policy of social sustainability and a policy of economic growth are crucial. In Uzbekistan, the basis for effective crisis management was the adoption of measures on social protection combined with mitigation of the COVID-19 economic consequences.

Keywords: incomes, social support, economic stability, anti-crisis measures, Uzbekistan

Prime task facing the country in the context of unfolding global pandemic crisis is to secure socio-economic stability and support living standards and incomes.

Coronavirus pandemic has demonstrated that both social sustainability and economic growth policies are crucial. Effective government management during epidemiological crisis was mainly based on the willingness and means-ends readiness of countries for taking joint steps: nations and governments made an important choice between economic growth, income generation and maintaining a people's health.

On the one side, the most successful Asian countries (Taiwan, Singapore and Hong Kong) from the early stages of a sudden outbreak of the epidemic applied new methods of control and localization of the epidemia. Outstanding specific practical response methods and theoretical concepts in Taiwan relied on developed by the Center for Epidemic Control of the Spread of Infectious Diseases created after the outbreak of SARS in the region in 2003, including several research centers and government agencies. On the other side, Europe and the United States reacted very slowly without tracking infected or potentially infected people and their healthcare system was not ready to accept such large number of cases.

The spread of coronavirus has once again proven the importance of health as a major part of human capital and the need for a prepared healthcare system. Uzbekistan is taking enhanced measures for the further spread of coronavirus in the country. Particular attention is paid to the organization of quality medical services to the population, disease prevention, organization of patient care in accordance with international standards.

In order to reduce the scale of the spread of coronavirus infection and organize provision of effective medical services to patients, the Ministry of Health of the Republic of Uzbekistan has created a reserve of over 5 thousand beds in state medical institutions. Also, it is allowed for non-governmental medical organizations to provide medical services to coronavirus infected patients, for a period up to September 1, 2020, on the basis of agreements concluded between the Ministry of Health of the Republic of Uzbekistan and non-governmental medical organizations, on exception base since coronavirus is classified as an infectious disease requiring emergency preventive and anti-epidemiological measures. The costs of non-governmental medical organizations related to the provision of medical services to patients infected with coronavirus are covered by the funds of the Anti-Crisis Fund under the Ministry of Finance of the Republic of Uzbekistan.

However, the task of the state as a stabilizer is also to reproduce the predictable living conditions of the population to set goals and earn income.

Based on the global impact of the coronavirus pandemic, experts expect a rapid decline in economic growth and an uncertain slow recovery. A protracted recession or recession in economic growth means a sharp increase in unemployment, an increase in the risk of impoverishment of the population, a drop in budget revenues, and, as a result, a reduction in the potential consumer and government spending on the social sphere and healthcare.

The main factor in the slowdown of economic growth and household incomes is the large-scale lockdown of enterprises or reduction in spending on services and non-food products as a result of collapse in retail trade and public catering, service sector as well as a change in consumer preferences and decreased consumer spending.

A preliminary assessment of changes in the reduction of costs for services and non-food products as a result of large-scale lockdown showed that quarantine measures can reduce the consumption of non-food goods and services by 10-15%. Since share of non-consumer goods and the service sector is about 50% in the structure of consumer spending, the overall decrease in the capacity of the consumer market (the volume of consumer spending) can amount to 7% of current consumption. However, here it will also be necessary to take into account the possibilities of reimbursing consumer demand unsatisfied during the quarantine period after the quarantine period (in part of services and non-food items), measures taken to support the population and provide free medical care and food support to vulnerable segments of the population, as well as granted loans to private sector enterprises to provide payment of wages at the expense of the state budget and various charitable funds, transition to the remote provision of services. As a result, potential consumer spending may fall by less rate (3-5% of current consumer spending).

The second factor in the income decline is the reduction in remittances from labor migrants. Thus, according to the forecasts of the World Bank (World Bank, 2020), due to the combination of the global coronavirus pandemic and the decline in oil prices in 2020, the volume of remittances in the countries of the Central Asia will decrease by almost 28% (or $1 billion for Uzbekistan). As a result, since the estimated share of transfers of labor migrants in the total income of the population is 10% (about 38 trillion soums), a drop in transfers of 20-22% can lead to a decrease in the total income of the population by about 2 pp (20% drop in 10% of total revenue).

Reduction in income combined with negative impact of other factors (unemployment, decrease in the propensity to consume, the possible inflationary pressure) required the *introduction of effective social security measures extremely important to protect the poor and vulnerable during the current crisis*.

In order to preserve the *incomes of people and the stable operation of enterprises*, a Presidential decree was signed on March 19, 2020 on priority measures to mitigate the negative impact of the pandemic on the economy of Uzbekistan (УП№-5969, 2020). An Anticrisis fund under the Ministry of Finance of the Republic of Uzbekistan had been created in Uzbekistan in the amount of 10 trillion soums in order to ensure macroeconomic stability, nonstop operation of industries and economic sectors, effective social support to the population during the period of counteracting the spread of coronavirus infection and other global risks, and preventing a sharp decline in the country's population incomes. Anticrisis funds will be directed to:

• preventing the spread of coronavirus, providing medical institutions with medicines, protective and diagnostic tools, timely financing of quarantine expenses, measures to

combat the spread of coronavirus infection;

• support for entrepreneurship and employment;

• expansion of social support for the population;

• ensuring the sustainable functioning of economic sectors.

An additional 3.6 trillion soums were allocated from the Anti-Crisis Fund for social services and the construction of infrastructure. In particular, solving the problems of 152 projects created over 10 thousand new jobs. So, in a month's time, a list of additional infrastructure projects in the republic's regions, financed by the Anti-Crisis Fund and providing for construction, reconstruction and repair, was formulated for 2020:

• infrastructure facilities of small industrial zones - in the amount of 400 billion soums;

• streets of cities and other settlements, current repair of public roads - 1 trillion soums;

• water supply and sanitation facilities - 500 billion soums;

• irrigation and land reclamation facilities - 400 billion soums;

• healthcare facilities - 500 billion soums;

• comprehensive schools and other social facilities - 800 billion soums;

• other facilities that provide increased economic activity and employment, including the expansion of mortgage lending.

An additional 200 billion soums will be allocated to the Public Works Fund from the Anti-Crisis Fund. These funds will be directed to employment, construction of additional infrastructure in the mahallas. An additional 500 billion soums was be allocated to the State Fund for Supporting Entrepreneurship to assist business entities creating jobs.

The Ministry of Finance, the Ministry of Employment and Labor Relations have been instructed to provide interest-free loans at the expense of the Anti-Crisis Fund to pay wages to business entities that have suspended their activities due to quarantine. Parents who look after children in quarantine will be paid a 100% temporary disability benefit.

A number of *measures to support the population, especially its socially vulnerable categories*, have been identified. Assignment of social benefits to families with children, child care and material assistance, whose payment deadlines expire in March-June, is automatically extended by the Cabinet of Ministers to simplify the procedures for assessing the need of families to receive social benefits (№УП-5978, 2020). The expected result is an increase in the number of recipients of benefits by 123 thousand families.

In the context of the fight against coronavirus infection, food delivery was provided to needy families, single elderly people, people with disabilities and other vulnerable groups of the population.

A number of administrative and economic measures have been taken to *prevent the rise in prices for food and other consumer goods*, as well as the restructuring of commercial loans to business entities that have suffered from the current situation with coronavirus. Zero rates of customs duty and excise tax on the import of the most important goods - food (meat, fish, flour, sugar, dairy products, vegetable oil, eggs, onions and others) and hygiene products. Restraining the rise in food prices will ensure the availability of certain familiar foods for a very wide population, and will prevent a decline in the level and quality of life.

The outbreak of coronavirus has led to the fact that many countries have had a strict quarantine regime, companies sent their employees to work from home, schools and universities also transferred students to distance learning.

Quarantine has opened up many interesting distance learning resources to the world

and has significantly promoted networking in the development of edtech distance education. Digital platforms are being developed in schools that offer many options for lessons and independent work. Global MOOC platforms are growing rapidly (MOOC - massive open online courses).

Thus, countries that immediately quarantined not only limited the spread of infection, but also smoothed out the most unpleasant socio-economic consequences of the pandemic. The recession threatens massive unemployment and social instability. Therefore, Uzbekistan enjoys a number of measures, including large-scale social investments and strategies to support enterprises and the population, in order to prevent socio-economic instability.

Reference list:

"Всемирный банк прогнозирует самое масштабное сокращение объёма денежных переводов за последнее время" Пресс-релиз Группы Всемирного банка от 22 апреля 2020 г. https://www.vsemirnyjbank.org/ru/news/press-release/2020/04/22/world-bank-predicts-sharpest-decline-of-remittances-in-recent-history

Указ Президента Республики Узбекистан от 19 марта 2020 года УПN№-5969 «О первоочередных мерах по смягчению негативного воздействия на отрасли экономики коронавирусной пандемии и глобальных кризисных явлений»

Указ Президента Республики Узбекистан от 3 апреля 2020 года №УП-5978 «О дополнительных мерах поддержки населения, отраслей экономики и субъектов предпринимательства в период коронавирусной пандемии».

Economic Journal, Special Issue 1, 2022

The Concept of Reducing Poverty in Uzbekistan

R.R. Khasanov,
O.A. Kutliev,
G.A. Alimova,
Institute for Forecasting and Macroeconomic Research under the Ministry of the Economic Development and Poverty Reduction of the Republic of Uzbekistan DSc.

Abstract. In order to solve the problems of increasing the standard of living and quality of life in the country, the concept of eliminating the poverty of the working-age population is necessary. Taking into account the measures clearly stated by the President of the Republic of Uzbekistan in this regard, the authors try to substantiate this concept and clarify a number of measures and conditions for the independent exit of the working-age population from poverty on the basis of decent work.

Keywords: poverty, labor market, population income, subsistence minimum, vocational training, entrepreneurship training, poverty reduction.

The problem of poverty cannot be effectively solved today without the improvement of the labor market policy and labour remuneration policy in Uzbekistan. Recognizing the critical need to develop targeted social assistance programs for the population, it should be noted that in the current conditions, these programs in many respects struggle with a high level of poverty in the majority of the labour-intensive population. A real reduction in the level of poverty will be achieved if the policy of state regulation is aimed at increasing employment, the restoration of new jobs and the formation of the organizational and financial basis for the maintenance of existing ones.

Poverty has been a "closed topic" for many years in Uzbekistan. In the appeal to the Oliy Majlis on January 24, 2020, the head of the state spoke openly about this issue and for the first time in country's history the reduction of poverty was defined as a priority task.

In accordance with the Presidential Decree and Resolution dated from February 18, 2020, the Ministry of Mahalla and Family Support was established with the aim of supporting vulnerable and low-income families, effective involvement of the population in entrepreneurship. Positions responsible for business development and poverty reduction have been introduced at mahalla, district (city), regional and national levels, and a vertical system has been created.

As a result of the consistent policy of the President, the post of Deputy Prime Minister for Finance, Economy and Poverty Reduction has been introduced in the government, and a special secretariat has been established in the government, in addition to the establishing of the Ministry of Economic Development and Poverty Reduction.

The President of Uzbekistan Shavkat Mirziyoyev chaired a video conference on February 27, 2020 on measures to reduce poverty through entrepreneurship. "According to preliminary estimates, 12-15% or 4-5 million people are poor. This means that their daily income does not exceed 10-13 thousand soums. Or a family may have both a car and a pet, but if a person is seriously ill, at least 70 percent of the family income goes to treating him. Is it possible to call such a family self-sufficient? "As president, I am tormented every day by

the question of what is going on in the lives of our people, such as food, treatment, education and clothing for their children." At the meeting he further added: “Poverty reduction does not mean an increase in monthly or pension benefits, mass lending. To do this, first of all, it is necessary to introduce vocational training, financial literacy, entrepreneurship, infrastructure, education of children, quality treatment, targeted benefits”, - said the President.

Currently, there are about 1.4 million officially unemployed women and young people in Uzbekistan. The unemployment rate is 13 percent among women and 15 percent among young people. This figure is particularly high in Fergana, Samarkand, Andijan, Kashkadarya and Tashkent regions.

At the same time, taking into account the need for 104,000 specialists in construction, 71,000 in the utilities sector, 68,000 in the service sector and 46,000 in the light industry, it is necessary to develop measures and train unemployed specialists in these areas. The main direction of significant reduction of poverty in Uzbekistan is to follow the words of President Sh. Mirziyoyev: "We must give our people a hook, not a fish.". That is, it is essential to develop a comprehensive program of measures to implement job creation in the interests of vulnerable groups who are not protected from the social security policy in the labor market, by providing them with vocational training, entrepreneurship training and assistance in starting it.

A new category of poor - the emergence of working poor intensifies the role of the state for competitiveness of the national economy, the implementation of industrial policy and employment aimed at improving production efficiency, competitiveness of Uzbek enterprises and supporting domestic production as the basis of economic growth in order to conditions for policy support. Creating such circumstances is an important condition for the working population to earn enough money and thus provide opportunities to feed themselves and their families.

Therefore, all issues related to employment, wages and poverty reduction or poverty eradication in Uzbekistan can be addressed under the National Program for Poverty Reduction. The program should have two directions in overcoming the poverty of the population:

1. Development and improvement of the labor market, including employment, and labor incentives, improvement of the wage system and increasing its productivity, promoting vocational training and entrepreneurship among the population, creating all favorable conditions for people for good work and life will lead to a significant reduction in poverty of the economically active population in the short-term, and its complete elimination in the long-term. This is the main condition for the effective implementation of the country's labor potential and is the foundation of economic, scientific, technological and social development in society.

2. Government support for the able-bodied population who are unable to get out of poverty independently. Special measures should be taken in case of mass unemployment as a result of pandemics, man-made and natural disasters leading to bankruptcy.

It is necessary to avoid making the state social assistance to the employable population on a massive scale, and to refrain to the maximum extent from providing state social assistance to the working population in place. In this regard, the measures taken by the head of our state to determine the real living wage and the poverty line and set a real minimum

wage must certainly yield effective results. In the context of globalization of the economy and the growth of international competition, priority is given to creating an active society, helping enterprises and workers to adapt to the global economic environment, adapting the workforce to the ever-changing demands of the labor market, helping the economically active population to realize their potential.

Creating conditions for the population to emerge from poverty independently includes the following aspects:

1. Improving the quality of human resources:

- increase the competitiveness of the labor force and the formation of a labor market based on competition between employers;
- opening the economy to foreign trade and investment, the gap between the wages of men and women, which is available in all countries and cannot be explained by work experience or type of information - helps to reduce the gender gap;
- creation of an in-depth study of the conditions for the modernization of the system of vocational education and the organization of demand;
- the formation of admission quotas in the training of specialists in higher education institutions based on industry, sectors and regional requirements;
- the organization of teaching and advanced training complexes on the basis of regional employment centers, secondary special and higher education institutions;
- active involvement of non-governmental organizations in the establishment of vocational training centers;
- The Ministry of Employment and Labor Relations will establish mono-centers and vocational training centers in each region to teach the unemployed professional knowledge and skills, as well as foreign languages as needed;
- training of unemployed citizens and unemployed people on the basics of entrepreneurship in conjunction with business centers;
- 70% of the funds under family business programs to be directed to small and medium business projects aimed at creating jobs for the poor;
- provision of bank loans to enterprises that employ poor people;
- creation of interactive mobile applications, "business navigators" that answer all questions, understandable to those who want to be self-employed;
- increasing the number of shopping and entertainment centers and the development of mobile trade, the removal of unnecessary restrictions in this area;
- formation of an effective system of training highly qualified specialists in high-income activities;
- payment for the education of young professionals by employers: the inclusion in regional and sectoral agreements of employers of primary vocational, secondary special and higher education for young professionals and the terms of payment and working conditions of young professionals in organizations that finance education;
- payments for training of young professionals by employers: the inclusion in regional and sectoral agreements of the conditions of payment by employers for higher and secondary special education of young professionals and the conditions of work of young professionals in organizations where training is funded;
- introduction of the practice of long-term forecasting and programming of training in higher and secondary special education institutions, their distribution on the orders of the

state and other organizations;

- creating conditions for the population who want to solve their housing, education and health problems independently: assistance of young professionals in the purchase of housing by employers.

It is necessary to provide targeted assistance to the families of young professionals in the purchase of housing under mortgage lending programs and to include in legal and sectoral agreements on working conditions of young professionals in organizations that assist them in the purchase of housing.

2. Elimination of interregional disparities in the development of labor resources, labor market and employment:

- encourage the establishment of small businesses in rural areas (cooperatives, private farms);

- introduction of the principles of small mechanization in agricultural production;

- formation of living standards of the rural population, providing reproduction of the labor force by intensive type that meets the requirements of agricultural reform;

- creation of a developed consumer market in rural areas, which stimulates labor and entrepreneurial activity of the rural population;

- organization of centralized procurement of agricultural products from small production units (cooperatives, personal auxiliary plots);

- creating conditions for equal placement of wealthy citizens between urban and rural areas.

This action plan should mainly be aimed at encouraging the construction of cottage houses in recreational, suburban and rural areas of the country.

- more complete calculation of wages in the production environment;

- allocating one-time compensation to certain working groups and households in order to reduce the negative impact of the globalizing economy. A comprehensive reform program could hurt workers who make huge profits from protecting certain industries. While this group typically has an average income, it can become an open competitor to public policy.

3. Development of the labor market and promotion of effective employment:

- reduction of hidden unemployment by improving the organization of production and labor;

- development and implementation of measures to legalize the shadow economy and wages, to put an end to the practice of informal employment, including in the consumer market, education and medicine;

- elimination of structural unemployment, development of long-term assistance programs for those who lost their jobs: unemployment insurance;

- development of additional employment, creation of additional employment opportunities for the disabled;

- ensuring that the unemployed participate in various employment programs in close connection with the periods of unemployment and the level of skills. At the same time, in the development of measures to include the unemployed in employment programs, it should be taken into account that there is competition among the target groups of the population who apply to join these programs;

- pre-vocational training of employees of organizations at risk of dismissal,

internships for graduates of educational institutions in order to gain work experience;

- encouragement of enterprises that create jobs for people with disabilities;

- effective solution of existing problems in the prevention of poverty, stimulation of the work of local authorities, which are active in increasing the income of the poor, involvement in entrepreneurship or other labor activities;

-creation of new jobs in newly established enterprises, especially in the field of small business;

- social protection of youth from unemployment. Organization of targeted (on-demand educational specialties) vocational training for graduates in the field of continuing education;

- formation of socially responsible employers' institutions in the regions. To give structure and vitality to this process, we identify three priority areas:

a) training of entrepreneurs in proper social behavior in the labor market, this means promoting and popularizing the principles of social responsibility.

One of the main conditions for the creation of a "moral economy" is the formation of a new type of economic thinking and, as a result, the responsibility of business in the labor market. Modern business must think large-scale and forward-looking: it is necessary to understand that responsibility to society is not only necessary, but also profitable. In particular, directing investments in human capital (training, health care, etc.) is always preferable, because in the future, smart and healthy employees will benefit the employer.

b) creating a model of relations with all participants of the social partnership, the main goal is to develop technologies, criteria, motivation, incentives that contribute to the formation of a responsible business culture;

c) institutionalization of the concept of social responsibility of business, adoption of new laws establishing the norms of public-private partnership;

- development of codes of corporate responsibility, introduction of criteria of social responsibility of business;

- preparation of the Regulations on the organization and conduct of regional competitions that create new jobs, provide high wages, employ people with disabilities, provide financial assistance to war and labor veterans, direct funds to support vulnerable groups; organization and holding of regional competitions among employers;

- encouragement of honest employers and employees, development of a system of economic and social indicators that determine the level of economic and social integrity of employers to employees, the honesty of employees to their performance, the introduction of incentive mechanisms based on a system of indicators;

- exemption from personal income tax for citizens whose income is below the subsistence level in the region;

- eliminating the negligence of private enterprise owners who neglect the physical and mental health of the workforce;

- encouragement of enterprises that have improved working conditions;

- improving the actions of trade unions to strengthen the collective bargaining process;

- development of a mechanism for organizing trade unions in the private sector of the economy;

- expanding the base of taxpayers; increase tax revenues, including in the field of trade

and paid services (from private education and health services);

- registration of housing and real estate, keeping an annual mandatory declaration of luxury homes, cars, yachts, jewelry and other valuables belonging to civil servants and their families; taxation of luxury and valuable property;

- implementation of a policy of cost allocation in the financing of the education and health sectors through the provision of paid services between the budget and the rich;

- improving the composition of GDP (GRP), reducing the share of intermediate consumption and increasing the volume and share of resources and final consumption with a high share of value added, ensuring a corresponding increase in wages to workers in accordance with the growth rates of labor productivity;

- development of a program for the development of handicrafts and traditional crafts for the formation of the labor market and services;

- formation of a competitive position of women in the labor market, industrial policy should focus not only on the development of extractive industries, which are mainly focused on male labor, but also on the development of a concentrated processing industry (light, food, chemical, etc.) of women's employment;

- defining the nomenclature of public works (roads, construction, etc.), which are now more focused on men, taking into account the opportunities for women to work, care for the sick and elderly, child supervision, participation in sociological and other observations;

creating conditions for the realization of a woman's professional potential: ensuring the right to use children's institutions to care for children outside the home or at home, but with the use of special services;

- the development of the service sector, on the one hand, will create jobs for women, on the other hand, will allow working single mothers to combine production and domestic employment;

- changes in income policy: increase the level of wages and all types of income of the economically active population in the budgetary and commercial organizations. The conditions for the officially independent exit of the able-bodied population from poverty, the creation of well-paid and productive jobs due to the ability of citizens to provide themselves with decent living standards, should be the main focus of poverty prevention in society and pensions only for those who can not provide for themselves and benefits should be paid at a rate that allows the economy to grow.

Reference list:

Address of the President of the Republic of Uzbekistan to the Oliy Majlis. https://uza.uz/oz/politics/

Beglova E.I., “The concept of overcoming poverty of hard-working people”, Questions of economics and law. 2011. № 5, p.36-40.

We should give our people a fishing rod, not a fish - President https://kun.uz/news/2020/02/27/we need to give our people-fish-not-fishing-fishing-president.

Economic Journal, Special Issue 1, 2022

From the Strategy of Actions to the Development Strategy: Five Years of Efficiency and Priorities in the Economic Sphere

Eldor Tulyakov
Furkat Yunusov
Development Strategy Center, Tashkent, Uzbekistan

Abstract. Five years ago, Uzbekistan launched reforms critical to the development of its economic sphere. Based on the Strategy of Actions, the document responsible for outlining the priorities for the country's growth for the period of 2017-2021, as a metric we have arrived at initial finding, with several indicators demonstrating progress, most notably the areas of public administration, social and civic institutions, mass-media, economic advances, among others. The past five years have evidenced precise results and demonstrated more advanced methods to advance these priority areas.

Keywords: Development Strategy, Uzbekistan, liberalization, fiscal policy, monetary policy.

1. Openness and transparency

Using the priorities established by the Strategy of Actions as a guidepost, relations between Uzbekistan, partner countries, and international financial institutions have improved considerably. Uzbekistan understands that to become an active participant in global economic processes, the Republic needs to keep the international community, including foreign investors, international rating agencies, and financial institutions, informed about its macroeconomic reforms, including the monetary and banking sector reforms. In this regard, the government, all ministries and departments, and the Central Bank have established a practice of regular and open publication of all statistical and analytical data on macroeconomic indicators, state budget execution, money supply, and the state of gold and foreign exchange reserves.

In particular, experts from the IMF conducted a study to assess budget transparency, the quality of public finance statistics, and the accuracy of public sector data. For the first time in Uzbekistan, **starting from 2018**, the "Budget for Citizens" is regularly published for citizens to view (The Ministry of Finance of the Republic of Uzbekistan, n.d.). Now it is standard practice to publish all stages of the budget process through social media. Also, **starting from 2018**, statistics on the balance of payments and international investment position of Uzbekistan are posted on the Central Bank's website in Uzbek, Russian and English, and in the IMF's data distribution systems every quarter (The Central Bank of the Republic of Uzbekistan, 2018).

In 2019, Uzbekistan's page was present on the leading statistical data platform of the IMF - International Financial Statistics (International Monetary Fund, n.d.).

In 2020, Uzbekistan ranked 44th globally and 1st in Central Asia with 63 points in the **Open Data Inventory (ODIN)**. Uzbekistan has the most significant increase among Asian countries in the open data ranking, rising by 125 positions (Open Data Inventory, 2021)

In 2021, the reforms.uz portal was launched to provide information on the reforms for 2017-2021 carried out as part of the Strategy of Actions for Uzbekistan's five priority development area. So that every resident of the country can evaluate the implemented initiatives. All figures on the platform are given in a comparative form: for the periods from 1991 to 2016 and from 2017 to 2021, as well as the expected results by 2030 (Development Strategy Center, 2021).

2. International relations and cooperation

At the end of 2016, the country restored full-fledged relations with international financial institutions and the world community. As a result, the French Development Agency launched its first project in Uzbekistan (The French Development Agency, n.d.). **Since 2016,** 7 operations have been granted by AFD to the Government of Uzbekistan by financing projects in various sectors and public policy budgetary loans for a cumulative amount of commitments of more than € 630 million of sovereign loans. AFD plans to mobilize about one billion euros in the form of loans, technical assistance and grants to support the reform agenda of the Government of Uzbekistan by 2025 (The French Development Agency, 2021). Uzbekistan has also become a full member of the newly established Asian Infrastructure Investment Bank (Resolution of the President of the Republic of Uzbekistan, No. RP-2657, Lex.uz, 2016). Projects worth $ 930 million are being implemented with this Bank, and an agreement was reached on implementing new projects worth $ 2.1 billion in **February 2021** (Ernazarov, 2021).

Reforms implemented in the country **in 2017-2018** led to sharp advancements in the banking and financial sector, in particular, the liberalization of the foreign exchange market, development of financial markets, improvement of monetary policy, including its instruments, development of domestic money, and foreign exchange markets, the introduction of modern mechanisms for regulating commercial banks activities. In particular, Uzbekistan established active cooperation with the International Monetary Fund (IMF), the World Bank, the European Bank for Reconstruction and Development (EBRD), the International Finance Corporation (IFC), and other international financial institutions and organizations.

In addition, in October **2017**, the European Investment Bank (EIB) and the Republic of Uzbekistan signed an agreement in Washington D.C. on the legal framework for the EIB's activities in Uzbekistan, including financial and technical assistance (European Investment Bank, 2017). An agreement was reached with this Bank on implementing public and private sector projects in Uzbekistan in infrastructure, energy and energy efficiency, and projects to support small and medium-sized enterprises in the country. **In 2020**, the EIB committed €50 million to support the healthcare system in Uzbekistan, as well as an agreement was reached to further increase the EIB's portfolio of projects in Uzbekistan to € 500 million (Ministry of Investment and Foreign Trade of the Republic of Uzbekistan, 2020).

This new approach allowed the EBRD to resume operations in the country by opening a new office in Tashkent. It also allowed the EBRD Board of Directors to adopt a new country strategy **in September 2018** (The European Bank for Reconstruction and Development, 2018).

To obtain a global sovereign rating and increase the country's investment

attractiveness, the government carried out significant work to strengthen cooperation with international financial institutions and rating agencies such as Standard and Poor's, Moody's, Fitch, JP Morgan Chase **in 2018**. For the first time **in October 2018**, Uzbekistan received a sovereign credit rating. Fitch Ratings recognized it, saying: "Uzbekistan has embarked on a large-scale program of reforms aimed at improving macroeconomic stability and growth prospects, as well as overcoming institutional and managerial shortcomings in a state-controlled economy" (Fitch Ratings, 2018).

In 2019, Uzbekistan's first international euro bonds were placed on the London Stock Exchange (LSE), thus ensuring the country's access to global financial markets (Bond Radar, 2019). Uzbekistan was one of the best issuers of international bonds in the Commonwealth of Independent States (CIS) at the Bond Awards 2019, held in London by the Global Capital, a prestigious publishing house.

On 19th November, 2020, the Ministry of Finance issued $750 million sovereign international bonds in two tranches for $ 555 million - over ten years in USD. For the first time in three years, Uzbekistan successfully placed the national currency - 2 trillion soums in Uzbek soums - UZS on the LSE (Interfax, 2020). The JP Morgan Development Finance Institution granted the Development Finance Qualification to the first international bond transaction in the national currency of Uzbekistan issued **on 19th November, 2020**. The impact of trade on development was rated as "high" (J.P.Morgan Development Finance Institution, 2020).

From 31st August to 4th September 2021, the Islamic Development Bank (IsDB) Group held its 2021 Annual Meetings of its Boards of Governors in Tashkent. As a result, the meeting attracted more than 4,000 participants. It offered an ideal platform for decision-makers to discuss challenges and explore IsDB Group member countries' opportunities (Ministry of Investment and Foreign Trade of the Republic of Uzbekistan, 2021). In the conference framework, the President of Uzbekistan received the Chairman of IsDB Group, Muhammad Sulaiman Al Jasser. During the meeting, special attention was paid to the prospects for expanding a multifaceted partnership. In this context, the importance of the early adoption and implementation of a new cooperation program for 2022-2025 and the launch of a full-fledged representation of the IsDB Group in Tashkent, increasing the efficiency of financing instruments, was emphasized (Kun.uz, 2021).

3. Investment cooperation with international financial institutions

The "opening" of Uzbekistan to the international community and the strengthening of international cooperation, and the reforms carried out have led to an increase in the attitude and confidence of international financial institutions in Uzbekistan.

In 2020, Uzbekistan was included for the first time in the Organization for Economic Cooperation and Development (OECD) Index of Normative Restrictions on Foreign Direct Investment. It became a leader among Central Asian countries in economic openness to foreign direct investment (Ministry of Investment and Foreign Trade of the Republic of Uzbekistan, 2020).

As a result of this direction **in 2017-2020**, many projects in Uzbekistan surround cooperation with international financial institutions and foreign government financial institutions.

In particular, within the framework of 327 investment projects with international financial institutions and foreign government financial institutions **in 2017-2020**, $10.26 billion loans were allocated and directed to develop areas of particular concern, notably investments in the fuel and energy industry ($ 5.88 billion); communications and defence industry ($ 1.56 billion); agriculture and water management ($ 1.27 billion); financing ($ 0.95 billion); social sectors ($ 0.47 billion) and other sectors (Ministry of Investment and Foreign Trade of the Republic of Uzbekistan, n.d.).

By the end of **2021**, there were **23** free economic zones in Uzbekistan. 453 projects which had a total value of **$ 2.6 billion** and created about **36,000** jobs were implemented. It should be noted that special economic and small industrial zones are increasing the efficiency of using the country's economic potential and becoming a modern, convenient and effective way to develop entrepreneurship (Tulyakov, 2022).

4. Liberalization of currency

The government introduced a mechanism to set the national exchange rate in the economy based on supply and demand for foreign currency. Meanwhile, the government **in 2017** also abolished existing restrictions on the sale, purchase, and disposal of foreign currency by the population and businesses (Resolution of the Cabinet of Ministers of the Republic of Uzbekistan, No. 384, Lex.uz, 2020). Such policies benefitted corporations and citizens alike (Decree of the President of the Republic of Uzbekistan, No. DP-5177, Lex.uz, 2017).

In 2018, to facilitate banking services to the population, including foreign exchange transactions (Resolution of the President of the Republic of Uzbekistan, No. RP-3620, Lex.uz, 2018), a mechanism for cash withdrawal of foreign currency purchased by individuals on international payment cards in commercial banks was introduced by commercial banks. The government made automated currency exchange offices operating "24/7" at airports, railway stations, and markets available.

In 2019, the Law on Currency Regulation was developed based on best international practices in currency regulation, a considerable refinement from previous versions (Law of the Republic of Uzbekistan, No. LRU-573, Lex.uz, 2019). It consolidates the currency control system, the priority of economic measures in implementing state policy in this area, the inadmissibility of illegal interference of government agencies in foreign exchange transactions among residents and non-residents. To further strengthen the national currency "soum" and strengthen confidence in it, the law stipulates collecting state duties, fees, and other mandatory payments in the national currency to include prices for goods and services and minimum requirements for companies' charter capital.

Also, **in 2019**, business entities were allowed to write off and unjustifiably maintain creditor debts generated before 5th September, 2017, under foreign trade contracts and to the enterprise's income while not calculating the income taxes due to them (Decree of the President of the Republic of Uzbekistan, No. DP-5811, Lex.uz, 2019).

As a result of the liberalization of foreign exchange policy **in 2017-2021**, there was an increase in the volume of transactions for the purchase and sale of foreign currency by businesses and the population in the domestic foreign exchange market and the number of foreign exchange market participants. In particular, the total volume of foreign currency

purchased by businesses **in 2021** increased by 3.2 times compared to 2017. The importance of sold money increased by 3.5 times (The Central Bank of the Republic of Uzbekistan, 2022).

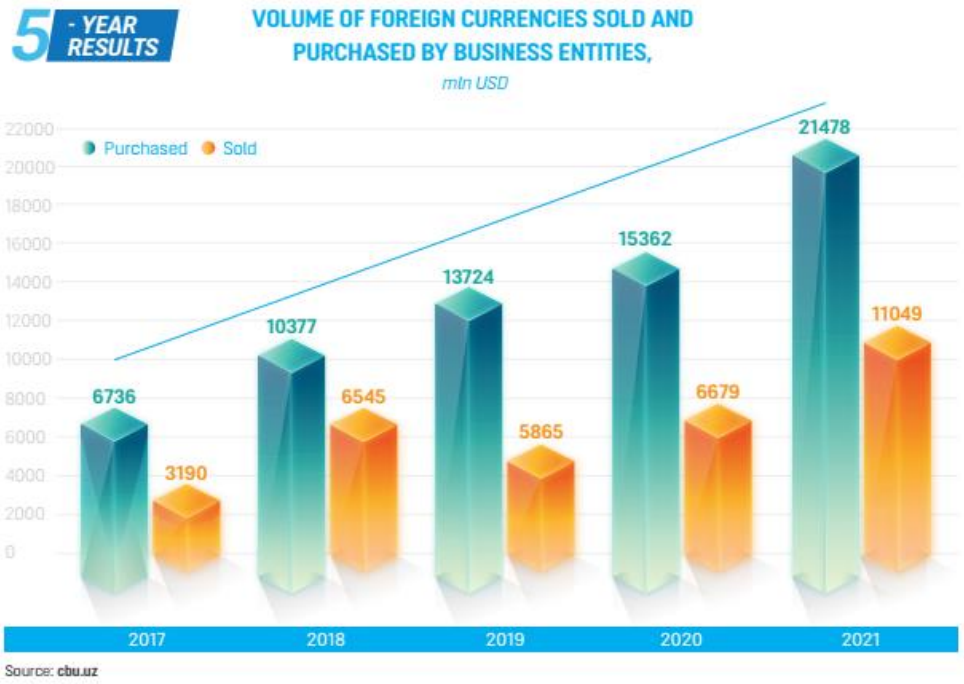


Figure 1.

5. Liberalization of foreign trade

The reforms in foreign trade have demonstrated significant transformations in the processes and procedures surrounding international commerce and opening new markets for exports. Uzbekistan has achieved this by the liberalization of foreign exchange and expanding the export potential of industries and regions within the country until recently left untapped. In particular, Uzbekistan has started taking practical measures to become a member of the World Trade Organization (The World Trade Organization, 2020). Thus, efforts to liberalize the foreign trade regime remain a high priority.

Uzbekistan's focused foreign trade activity continued **in 2017-2021** due to foreign trade liberalization and more efficient use of the country's export potential. In particular, the government abolished customs duties on all exported goods and services. It simplified the licensing and export system. The government set the level of customs duties a zero for more than 60% of goods. Additionally, Uzbekistan reduced the rate of customs duties to 6.45%.

Uzbekistan launched a national web portal to carry out export and import operations through a "single window" basis, which allows for submitting electronic requests and payment of various permits, including certificates of origin and phytosanitary certificates. With the introduction of these new mechanisms, the total time for processing export documents has decreased from 174 to 96 hours.

As a result, Uzbekistan's "International Trade" indicator in the "Doing Business" rating has improved from 44.3 points in 2016 to 58.2 points **in 2020** (World bank, 2021).

Figure 2.

Uzbekistan created conditions to further liberalization of foreign trade and increase the export of products in high demand on the world market. For example, to stimulate exports, the government abolished the obligatory prepayment procedure for products. Policymakers created a system of supplying products to foreign markets without a guarantee obligation. Outdated licensing practices were also cancelled, and tax incentives for exporters expanded. The period for calculating overdue receivables under export contracts was also extended to 120 days.

As a result of foreign trade liberalization, Uzbekistan's volume of foreign trade turnover in January-December 2021 amounted to $42.1 billion and increased by $5.8 billion, an increase of 16.0% compared to the corresponding period last year. Including exports of $16.6 billion (an increase of 10.0% compared to the corresponding period of the previous year), imports of $25.5 billion U.S. dollars (a rise of 20.4% compared to the corresponding period of last year), respectively (The State Committee of the Republic of Uzbekistan on Statistics, 2022).

Figure 3.

6. Tax reform

The main objectives of the ongoing tax reforms **from 2018** were to ensure economic stability and create favourable conditions for investors. The country's concept of improving tax policy was adopted to eliminate the existing shortcomings in taxation (Decree of the President of the Republic of Uzbekistan, No. DP-5468, Lex.uz, 2018).

According to the idea, **from 2019**, the government has implemented radical tax reforms, including reducing the personal income tax rate from 22.5% to 12%, the abolition of insurance premiums, and targeted allocations to state funds. Reducing the VAT rate from 20% to 15% has reduced the outflow of working capital from enterprises and reduced the indirect tax burden on the consumer.

Tabele 1. Changes in tax rates in 2018-2021 as a result of tax reforms

№	Types of taxes	Previously	Status	Currently
1.	Personal income tax	7,5-22,5%	lowered	12%
2.	Single social payment / Social tax	25%	lowered	12%
3.	Insurance fee	8%	-	abolished
4.	Mandatory contributions to state trust funds	3,2%	-	abolished
5.	Property tax	5%	lowered	2%
6.	VAT	20%	lowered	15%
7.	Income tax	7,5%	Merged	15%
	Landscaping and infrastructure development tax	8%		
8.	Additional income tax	50%	-	abolished

In 2020, the new Tax Code refined existing tax legislation to accommodate the newly reformed economic sector changes. In particular, the responsible ministries and lawmakers created new laws that improved the norms on specific fees (state duties, bonuses, levies), changed specific taxes (social tax, turnover tax) name and structure, and abolished tax benefits for some taxpayers (agricultural enterprises, family enterprises).

One can see that the results of tax reforms **in 2017-2021** reflect a positive outlook among international rankings and indices. In particular, on the indicator "Tax Burden" in the rating of "Economic Freedom" from 90.7 points in 2017 to 92.4 points (The Index of Economic Freedom, 2021), on the indicator "Tax payment" in the rating of "Doing Business" – from 52.9 points in 2016 to 77.9 points were achieved (World bank, 2022).

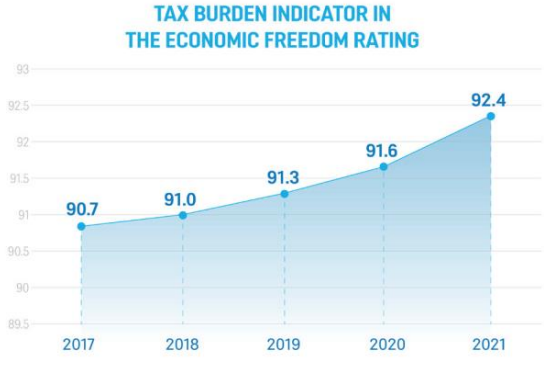


Figure 4.

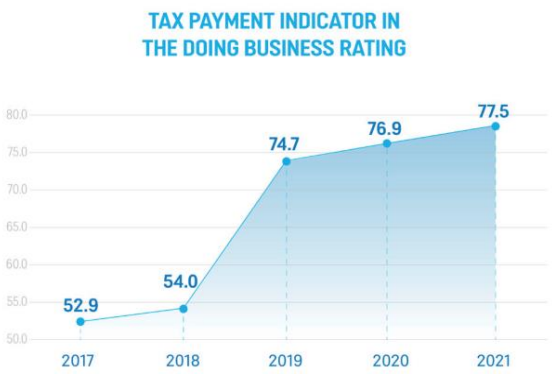


Figure 5.

7. Prospects for the future

The reforms initiated at the new stage are bearing fruit today. These achievements increase society's confidence in the strategy's ultimate success. These efforts align with the forecasts of international organizations and financial institutions on the country's economic growth. In particular, the IMF forecasts that **in 2022** Uzbekistan's GDP will grow by 5.4% (International Monetary Fund, 2022), whereas the World Bank forecasts 5.6% (World bank, 2022).

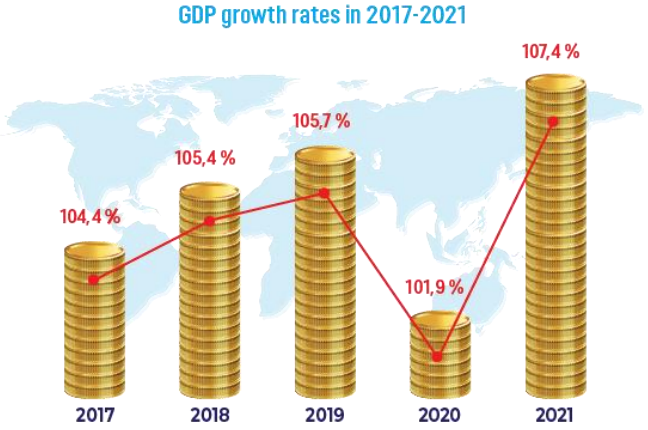


Figure 6.

According to the data of the Ministry of Finance of the Republic of Uzbekistan, economic growth is set at 6.0% **in 2022**, 6.2% in 2023, and 6.6% **in 2024** (The Ministry of Finance of the Republic of Uzbekistan, 2021). It also plans to increase GDP by 1.6 times over the next five years (Decree of the President of the Republic of Uzbekistan, No. DP-60, Strategy.uz, 2022). More ambitious milestones will subsequently ensure increased growth, improvement of fiscal policy, development of industrial sectors, energy, transport, agriculture, housing, and communal services.

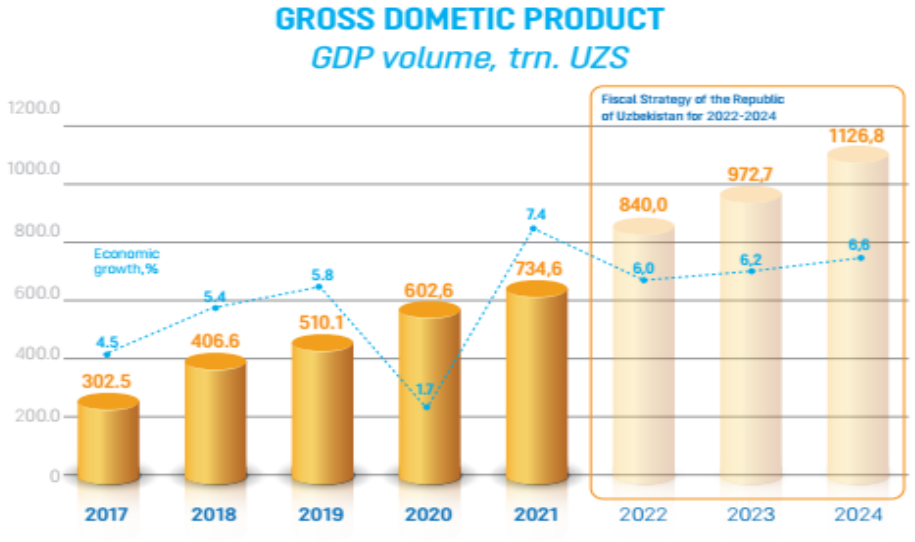


Figure 7.

In particular, the State programs adopted following the Strategy of Actions set out the

long-term concepts of almost all sectors and industries and the main directions and targets for these areas in short and medium-term. Including:

8. Monetary policy

The Central Bank has been pursuing a monetary policy in the inflation targeting mode since 2020, and in the medium term continues to work to bring the mechanisms of monetary policy in line with the standards of this regime. As part of the transition to inflation targeting, the target indicators of monetary policy are to reduce inflation to 10% in **2021** and reach 5% in **2023** (The Central Bank of the Republic of Uzbekistan, 2020).

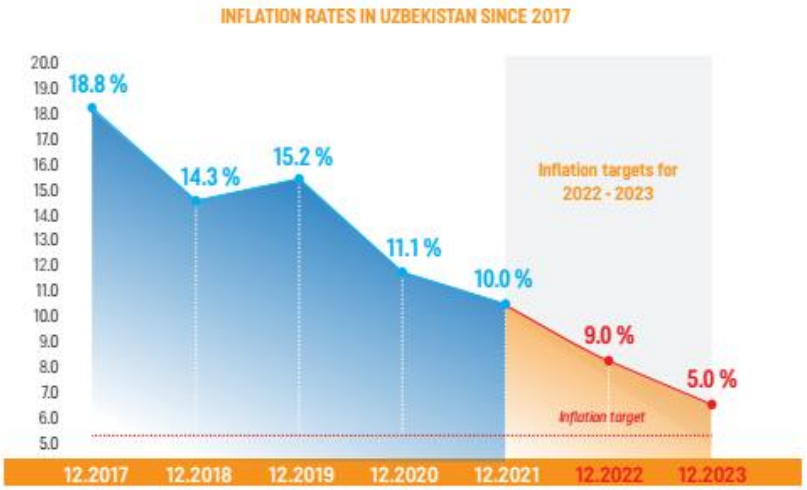


Figure 8.

9. Fiscal policy

The main goals of fiscal policy for 2021-2023 are to ensure macroeconomic stability. To this end, it is planned to ensure that the consolidated budget deficit does not exceed 1.9% of GDP **by 2023** and pursue fiscal policies aimed at social support, employment, poverty reduction and economic support. It is also intended to ensure that the maximum level of public debt does not exceed 60% of GDP to maintain the stability of public debt according to international standards (The Ministry of Finance of the Republic of Uzbekistan, n.d.).

10. Development of banking and financial markets

Under the Banking Reform Strategy, it is planned to:

- increase the share of non-state-owned banks in total assets of the banking system from 15% to 60% by 2025**;**
- increase the share of banks' liabilities to the private sector in the total liabilities of banks from the current 28% to 70% by the end of 2025;
- attract at least three strategic foreign investors with appropriate experience, knowledge and reputation in the capital of at least three banks with a state share by 2025;

- increase the share of non-bank credit institutions in total lending from 0.35% to 4%; and
- reduce the percentage of foreign currency liabilities of banks in total liabilities from 58% at present to 40% (Decree of the President of the Republic of Uzbekistan, No. DP-5992, Lex.uz, 2020).

Also, following the targets for the rapid development of the insurance market (Resolution of the President of the Republic of Uzbekistan, No. RP-4412, Lex.uz, 2019), it is planned to double the share of insurance services in GDP **by 2022**, to increase the total insurance premiums from the current 1.6 trillion to 5.2 trillion soums, and according to the capital market development program (Decree of the President of the Republic of Uzbekistan, No. DP-6207, Lex.uz, 2021), the ratio of the total value of free-floating securities to GDP is expected to increase from the current 0.3% to 5.0%.

11. Development of industry and energetics

It is planned to increase industrial production in GDP to 40% **by 2030** by reforming industrial sectors (Resolution of the Cabinet of Ministers of the Republic of Uzbekistan, No. 841, Lex.uz, 2018) and rising textile exports to $7 billion **by 2025** (Resolution of the President of the Republic of Uzbekistan, No. RP-4186, Lex.uz, 2019).

Development of energy production on the basis of renewable energy sources and increase the total electricity generation capacity to 29.2 thousand MW **by 2030**, in particular: TPP, (gas) - 13.4 thousand MW (45%); TPP, (coal) - 1.7 thousand MW (5.9%); HPP - 3.8 thousand MW (13.1%); WPP - 3 thousand MW (10.4%); SPP - 5 thousand MW (17.3%) NPP - 2.4 thousand MW (8.3%) (Ministry of energy of the republic of Uzbekistan, 2019).

As a logical continuation of the Strategy of Actions, Uzbekistan has adopted its five-year **Development Strategy for 2022-2026**. It consists of seven priority directions and one hundred goals Uzbekistan is willing to achieve within five years. This strategic document will serve Uzbekistan as a baseline for further reforms in all spheres.

The Strategy foresees the implementation of various measures that should create the basis for joining a number of “states with the above-average income”. The country has identified target goals in concrete numbers and introduced the mechanisms of reaching those goals. Further economic liberalisation, privatisation in most spheres, competition, elimination of monopolisation, the attraction of more foreign investment, price stabilisation, support of the development of “driver spheres of the economy,” and decentralisation that gives more authority to the regions are among many other priorities identified in the Development Strategy for 2022-2026.

For instance, a target goal for the country is a 1.6-time increase in the GDP per capita in the next five years and the per capita income to reach $4,000 by 2030 by ensuring stable high growth rates in all sectors of the economy, including energy, industry, machinery, mining, agriculture and others.

Another important goal is the transformation of the digital economy into the core “driver” sphere of the economy. Implementing work aimed at increasing the digital economy’s volume by at least 2.5 times is also a goal to strengthen the country’s potential in

this new sphere.

Planned reforms need a constant flow of investments that require an appropriate investment environment and the rule of law. Accordingly, taking measures to attract the necessary $120 billion over the next five years, including foreign investment of $70 billion, is another crucial goal for the government to realise. Moreover, the country is planning to reform its capital markets. Thus, it is planning to increase financial resources in the economy by bringing the capital market volume from $200 million to $7 billion over the next five years.

Uzbekistan plans to increase the Republic's exports by 2026 to $30 billion to maintain sustainable economic development. Hence, bringing the share of the private sector in exports to 60 per cent is a priority. Accordingly, by improving the system of providing organisational and financial assistance to exporting enterprises, the country is willing to increase the current number of exporting enterprises from 6,500 to 15,000. Expanding the geography of exports of goods from 115 to 150 countries is also expected.

To further support entrepreneurship, the government plans to reduce the tax burden on business entities by 2026 from 27.5 per cent to 25 per cent of GDP and decrease VAT from 15 to 12 per cent, as well as reducing profit tax for telecommunications, banking and finance sectors from 20 per cent to 15 per cent.

The government is planning to increase the economic potential of the regions by carrying out decentralisation reforms to support the development of the districts further. Keeping in mind that agriculture reserves a high volume in the state's GDP, the annual growth rate of agriculture is expected to be at least 5 per cent, which should lead to the increase of farmers' incomes by at least two times. Furthermore, Uzbekistan plans to implement a more differentiated approach in developing districts and communities. As such, depending on the main specialisations of communities, be it different types of farming, textile or other, government plans further support those driver areas in that community, addressing the peculiarities of each specific community separately.

Acceleration of the processes of Uzbekistan's accession to the WTO is also among the priorities of the Development Strategy of Uzbekistan. In the meantime, the expansion of exports of finished products to European countries within the framework of the GSP + system will remain a priority.

Overall based on positive results and achievments in the framework of the Strategy of Actions, Uzbekistan has identified several priorities for economic transformation in its Development Strategy 2022-2026. The realisation of all these measures requires high potential and substantial resources. As such, cooperation with its allies and integration into the world community have been prioritised in many of the goals set in the new strategy.

Reference list:

Annex 2 to the Resolution of the President of the Republic of Uzbekistan dated August 2, 2019 No. RP-4412 "Targets for the accelerated development of the insurance market of the Republic of Uzbekistan in 2019-2022" https://www.lex.uz/docs/4459812#4461060

Based on the information provided by The Ministry of Trade and Investment of Uzbekistan https://mift.uz

Bond Radar. (2019, February 14). *Uzbekistan debut USD1bn sees aggressive tightening* https://www.bondradar.com/em/articles/11536025-uzbekistan-debut-usd1bn-sees-aggressive-tightening

Decree of the President of the Republic of Uzbekistan "On amendments and additions to some documents of the President of the Republic of Uzbekistan", No. DP-5811 of 05.09.2019 https://lex.uz/ru/docs/4499380

Decree of the President of the Republic of Uzbekistan "On priority measures to liberalize foreign exchange policy", No. DP-5177 dated 02.09.2017 https://lex.uz/docs/3326421

Decree of the President of the Republic of Uzbekistan "On the concept of improving the tax policy of the Republic of Uzbekistan", DP-5468 dated 29.06.2018 https://lex.uz/docs/3802374

Decree of the President of the Republic of Uzbekistan "On the strategy of reforming the banking system of the Republic of Uzbekistan for 2020 - 2025", No. DP-5992 dated 12.05.2020 https://lex.uz/docs/4811037

Decree of the President of the Republic of Uzbekistan “On the Development Strategy of New Uzbekistan for 2022-2026”. No. DP-60 dated 28.01.2022 https://strategy.uz/index.php?static=o_strategii&lang=ru

Decree of the President of the Republic of Uzbekistan No. DP-6207 dated April 13, 2021 "On measures to further develop the capital market" https://www.lex.uz/ru/docs/5371145#5378595

Development Strategy Center. (2021, October 6). *The strategy of actions: five year results are summed up*. https://strategy.uz/index.php?news=1382

Ernazarov G. (2021, February 23). New perspectives of cooperation between Uzbekistan and the Asian Infrastructure Investment Bank. *New Uzbekistan newspaper*. https://yuz.uz/uz/news/ozbekiston-va-osiyo-infratuzilmaviy-investitsiyalar-banki-ortasidagi-hamkorlikning-yangi-istiqbollari

European Investment Bank (EIB). (2017, October 13). *EIB launches operations in Republic of Uzbekistan*. https://www.eib.org/en/press/all/2017-272-eib-launches-operations-in-republic-of-uzbekistan

Fitch Ratings. (2018, December 20). *Fitch Assigns Uzbekistan 'BB-' IDRs; Outlook Stable*. https://www.fitchratings.com/research/sovereigns/fitch-assigns-uzbekistan-bb-idrs-outlook-stable-20-12-2018

Interfax. (2020, November 19). *Uzbekistan placing $750 mln of int'l bonds in two tranches*. https://interfax.com/newsroom/top-stories/70407/

International Monetary Fund. (2022). *Republic of Uzbekistan*. https://www.imf.org/en/Countries/UZB

International Monetary Fund. *Uzbekistan country page*. https://data.imf.org/?sk=4C514D48-B6BA-49ED-8AB9-52B0C1A0179B

Morgan J.P.Development Finance Institution. (2020). *2020 annual report. Uzbekistan local Currency bond issuance.* https://www.jpmorgan.com/content/dam/jpm/cib/complex/content/investment-banking/development-finance-institution/DFI-Annual-Report.pdf

Kun.uz. (2021, September 2). *The President received the head of the Islamic Development Bank.* https://kun.uz/ru/news/2021/09/02/prezident-prinyal-glavu-islamskogo-banka-razvitiya

Law of the Republic of Uzbekistan "On amendments and additions to the Law of the Republic of Uzbekistan" On currency regulation ", LRU-573 dated 22.10.2019 https://lex.uz/docs/4562834

Ministry of energy of the republic of Uzbekistan. (2019, August 1). *Concept note for ensuring electricity supply in Uzbekistan in 2020-2030*. https://minenergy.uz/en/lists/view/28

Ministry of Investment and Foreign Trade of the Republic of Uzbekistan. (2020, April 24). *European Investment Bank will support Uzbekistan to fight the economic effects of the pandemic.* https://mift.uz/en/news/european-investment-bank-will-support-uzbekistan-to-fight-the-economic-effects-of-the-pandemic

Ministry of Investment and Foreign Trade of the Republic of Uzbekistan. (2021, August 17). *2021 IsDB Group Annual Meetings in Uzbekistan to Focus on Resilient Economic Recovery through (Respond, Restore, Restart).* https://mift.uz/en/news/2021-isdb-group-annual-meetings-in-uzbekistan-to-focus-on-resilient-economic-recovery-through-respond-restore-restart

Ministry of Investment and Foreign Trade of the Republic of Uzbekistan. (2020, September 24). *Uzbekistan became the leader among Central Asian countries in terms of openness of economy for foreign direct investment*. https://mift.uz/en/news/uzbekistan-became-the-leader-among-central-asian-countries-in-terms-of-openness-of-economy-for-foreign-direct-investment

Open Data Inventory. (2021, July 21). *Open Data Inventory — Uzbekistan's place in the open data ranking 2020*. https://odin.opendatawatch.com/Report/rankings

Resolution of the Cabinet of Ministers of the Republic of Uzbekistan "On making changes to certain decisions of the Government of the Republic of Uzbekistan, as well as considering some of them as having lost their validity (Law of the Republic of Uzbekistan "On State Duty")" No. 384 dated 16.06.2020 https://lex.uz/docs/4857432

Resolution of the Cabinet of Ministers of the Republic of Uzbekistan "On measures to implement national goals and objectives in the field of sustainable development until 2030", No. 841 dated 20.10.2018 https://lex.uz/docs/4013358

Resolution of the President of the Republic of Uzbekistan "On additional measures to increase the popularity of banking services", No. RP-3620 dated 23.03.2018 https://lex.uz/docs/3593541

Resolution of the President of the Republic of Uzbekistan "On measures to further deepen the reform of the textile and clothing industry and expand its export potential", No. RP-4186 of 12.02.2019 https://lex.uz/docs/4199423

Resolution of the President of the Republic of Uzbekistan "On membership of the Republic of Uzbekistan in the Asian Infrastructure Investment Bank" No. RP-2657 dated 15.11.2016. https://lex.uz/docs/5009733

The Central Bank of the Republic of Uzbekistan. (2018, October 1). *Balance of payments and international investment position of Uzbekistan.* https://cbu.uz/en/statistics/bop/?arFilter_DATE_ACTIVE_FROM_1=&arFilter_DATE_ACTIVE_FROM_2=&arFilter_ff%5BSECTION_ID%5D=3501&year=2021&month=03&set_filter=&set_filter=Y

The Central Bank of the Republic of Uzbekistan. (2020). *The main directions of monetary policy for 2021 and the period 2022-2023.* https://cbu.uz/upload/medialibrary/ad1/Osnovnye-napravleniya-DKP-TSBU-2021_2022_rus.pdf

The Central Bank of the Republic of Uzbekistan. (2022, January 20). *Brief overview of the domestic foreign exchange market for 2021.* https://cbu.uz/ru/press_center/reviews/584766/

The European Bank for Reconstruction and Development. (2018, September 19). *The new strategy of the European Bank for Reconstruction and Development on Uzbekistan.* https://www.ebrd.com/where-we-are/uzbekistan/overview.html

The French Development Agency (AFD). (2021, May 11). *AFD to extend its cooperation with Uzbekistan by 2025.* https://www.afd.fr/en/actualites/communique-de-presse/afd-extend-cooperation-uzbekistan

The French Development Agency. *Uzbekistan/building sustainable and inclusive economic and political models.* https://www.afd.fr/en/page-region-pays/uzbekistan

The Index of Economic Freedom. (2021). *2021 index of "Economic Freedom"* https://www.heritage.org/index/explore?view=by-region-countryyear&u=637567469176251443

The Ministry of Finance of the Republic of Uzbekistan. *"Budget for Citizens".* https://www.mf.uz/ru/?option=com_content&view=article&id=250

The Ministry of Finance of the Republic of Uzbekistan. (2021). *Budget for citizens 2022.* https://mf.uz/media/file/state-budget/2022/budget_dlya_grajdan/proekt-2022.pdf

The Ministry of Finance of the Republic of Uzbekistan. *Main forecasts of the state budget for 2021-2023.* https://www.mf.uz/media/file_uz/state-budget/2021/2021-2023_uz.pdf

The State Committee of the Republic of Uzbekistan on statistics. (2022, January). *Socio-economic situation of the Republic of Uzbekistan for January-December 2021.* https://stat.uz/images/uploads/reliz2021/ijtimoiy-iqtisodiy__holat_yanvar_en_2021.pdf

The World Trade Organization. (2020, July 07). *Uzbekistan resumes WTO membership negotiations.* https://www.wto.org/english/news_e/news20_e/acc_uzb_07jul20_e.htm

Tulyakov, E. Development Strategy Centre Executive Director. (2022, February 7). Five years with action strategy: result of the reforms. *Development Strategy Centre.*

https://strategy.uz/index.php?news=1478&lang=en

World bank. (2022). *"Doing Business" Uzbekistan.* https://www.doingbusiness.org/en/data/exploreeconomies/uzbekistan

World Bank. (2022, January). *Global Economic Prospects.* https://openknowledge.worldbank.org/bitstream/handle/10986/36519/9781464817601.pdf

Worldbank (2021). *"Doing Business" 2020 Uzbekistan.* https://www.doingbusiness.org/en/data/exploreeconomies/uzbekistan

Economic Journal, Special Issue 1, 2022

Uzbekistan on the Path of Digitalization

Khakimov Farrukh, khakimov@strategy.uz
Head of Department,Development Strategy Center, Tashkent, Uzbekistan

Abstract. The role of digital technologies and the importance of effective informatization policy have been well actualized since the beginning of the global COVID-19 pandemic. Especially, for developing countries, like Uzbekistan digitalization has a potential to modernize and integrate national economy into the global economy, overcome major constraints, ensure digital upgrade and build information society for the benefit of population in post-pandemic recovery period. Under these circumstances, Uzbekistan intends to improve its digital capacity and policy reforms in order to prevail over current and future challenges. In this regard, the current processes of digital transformation and achievements in the country have been analysed by focusing on national digitalization strategy of Uzbekistan in the context of digital responses to the global pandemic and recently adopted Development Strategy of New Uzbekistan for 2022-2026.

Keywords: Uzbekistan, digitalisation, development, digital, e-government, Internet

Introduction

The importance of digital technologies and effective digitalization policy have been well actualized since the beginning of the global COVID-19 pandemic. Indeed, during the pandemic state, society and businesses are able to function mostly with the help of digital technologies. For developing countries like Uzbekistan digital transformation has a potential to further modernize society and integrate national economy into the global processes. In this vein, in the framework of the ongoing reforms and in the new Development Strategy of Uzbekistan for 2022-2026 special attention is being paid to digitalization of major spheres and to build a true information society in the country.

Certainly, "beyond ensuring continuity and connectivity, digitalization sets the foundation for a more resilient and inclusive economic transformation" (Tang, & Begazo, 2020). Consequently, most countries both advanced and developing countries are improving their digitalization and digital transformation policies to overcome challenges and recover from the negative effects of the global pandemic. According to the World Bank estimates strong connectivity infrastructure can mitigate up to 50 % of the negative economic impacts of the pandemics. In addition, 10 % increase in broadband connectivity can add at least 1 % to economic growth of the country, and a 1 % increase in internet connectivity can boost exports by 4.3 % (Burunciuc, 2021).

1. Literature review

Existing literature concerning digitalization and digital transformation in countries of Central Asia mostly focuses on analysing the public administration reforms and electronic government initiatives. In fact, E-Government is considered as the main tool of digital transformation and the United Nations E-Government Survey[3] is the effective criteria to

[3] The UN E-Government Survey, published by the UN Department of Economic and Social Affairs is prepared over a two-year period following an established methodology. It looks at how digital government can facilitate integrated

assess current readiness of a country for digitalization and digital transformation (ElMassah, & Mohieldin, 2020). The United Nations E-Government Survey is also recognized as a key ranking, mapping and measuring tool of the digitalization processes in any country across the world (UN DESA, 2020).

Indeed, the global pandemic renewed and anchored the role of E-Government – "both in its conventional delivery of digital services as well as new innovative efforts in managing the crisis". The global "pandemic has not only reinvigorated the role of digital government in its conventional delivery of public services and in ensuring business continuity, it has also brought about innovative ways in managing the crisis, such as in contact tracing, e-health, online learning, and remote working" (UN DESA, 2020). In addition, "the adoption of digital solutions has been a key factor underpinning the post-pandemic economic recovery, and the trend for rising digital inputs in manufacturing and services is expected to continue in the years ahead" (Beirne, 2022).

Regarding digital government transformation dynamics of in the region, it should be noted that overall, Uzbekistan and other Central Asian states have made serious commitments to adopt the path of a democratic civil society. E-government reforms in the region made significant steps toward open governance, participatory democracy, and an inclusive society, firstly moving these elements to the agenda of administrative reforms (Kuldosheva, 2021).

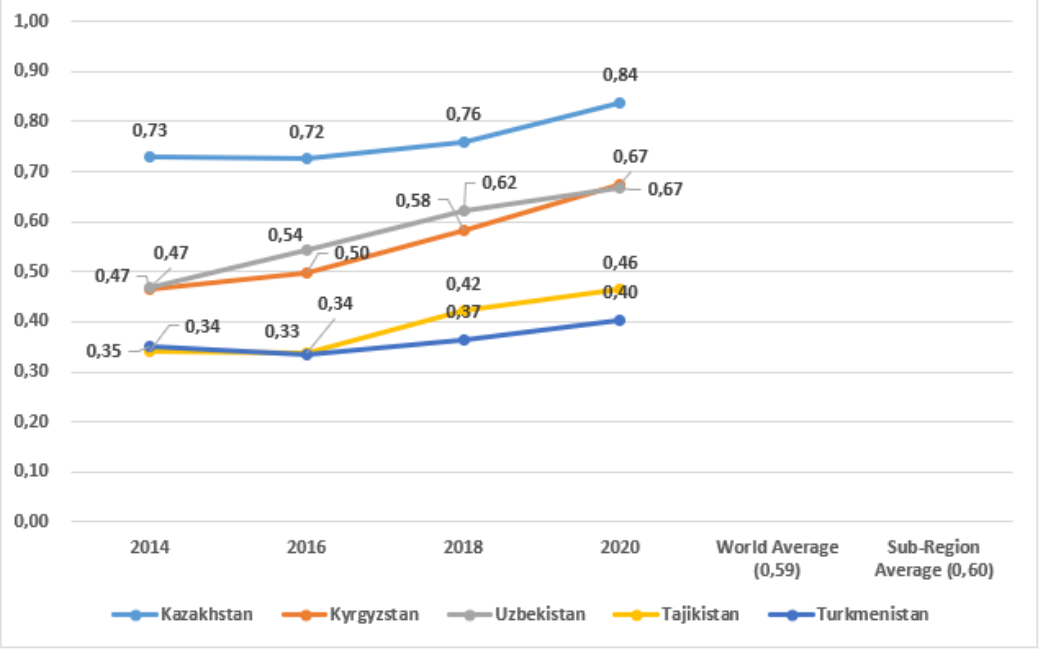


Figure 1. Digital Government Transformation Dynamics in Central Asian states
Source: Compiled by author based on data from "The UN E-Government Survey" for 2014-2020

In the recent E-Government Survey-2020 ranking of Central Asian states Kazakhstan is in 29th place with a very high EGDI - 0.8375, Kyrgyzstan was given 83rd position with a

policies and services across 193 UN Member States. The Survey supports countries' efforts to provide effective, accountable and inclusive digital services to all and to bridge the digital divide and leave no one behind.

high EGDI - 0.6749, Uzbekistan 87th position also with a high EGDI - 0.6590 and the two trailing countries are Tajikistan 133rd with an average EGDI of 0.4649 and Turkmenistan 158th with an average EGDI of 0.4034.[4]

As a result of the analysis, a clear division was revealed according to the levels of development of digitalization in the Central Asian countries into three clusters:

1. Very high (EGDI> 0.75) - Kazakhstan.
2. High (EGDI from 0.5 to 0.75) - Kyrgyzstan and Uzbekistan. Achievement
3. Medium (EGDI from 0.25 to 0.5) – Tajikistan and Turkmenistan.

Table 1. Central Asian countries in the UN E-Government Development Index 2018-2020

№	Country	Level of EGDI	Rank EGDI 2018	Rank EGDI 2020	Change
1	**Kazakhstan**	Very High	39 (0.7597)	29 (0.8375)	-10
2	**Kyrgyzstan**	High	91 (0.5835)	83 (0.6749)	-8
3	**Uzbekistan**	High	81 (0.6207)	87 (0.6665)	+6
4	**Tajikistan**	Middle	131 (0.4220)	133 (0.4649)	+2
5	**Turkmenistan**	Middle	147 (0.3652)	158 (0.4034)	+11
	World Average			**0.5988**	
	Region average			**0.6373**	
	Sub-Region Average			**0.6094**	

Source: Compiled by author based on data from "The UN E-Government Survey" for 2018-2020

Several scholars such as E.Johnson, B.Kolko, S.Maerz, M.Kneuer, and S.Harnisch assess critically e-government initiatives of Central Asian states. They drew attention to expanding internet facilities (including e-government) in the Central Asian region, meanwhile, were sceptic that it could improve transparency and foster democratization. In contrast, these researchers proposed the hypothesis that in Central Asia "regimes set up e-government as a response to globalization pressures and to demonstrate modernity and legitimacy to the international community" (Maerz, 2016).

According to Maerz e-government and/or e-participation indicators in the UN Surveys does not reflect real intentions and strategic motives of Central Asian governments mainly because of methodological and conceptual problems.

However, along with requirements of current trend at global level and economic benefits the necessity of introducing e-government in the Central Asian countries derived also from the high corruption levels in Central Asian states where implementing "e-government systems can decrease the level of corruption and improve the openness of governments for better service delivery to citizens" (Brimkulov & Baryktabasov, 2018).

Brimkulov and Baryktabasov has also pointed out several issues which "affect the result

[4] The assessment of values reflected in the E-Government Development Index (EGDI) composite with three components: The Online Services Index (OSI), the Telecommunications Infrastructure Index (TII) and the Human Capacity Index (HCI). Countries in the low EGDI group have EGDI values of between 0.0 and 0.25, those in the middle EGDI group have values in the 0.25-0.50 range, countries in the high EGDI group have values of 0.50 to 0.75, and those in the very high EGDI group have values of 0.75 to 1.00

of e-government implementation initiatives such as the level of development of ICT infrastructure, citizen's literacy in general and ability to use ICT in particular, the level of economic development, the level of legal framework development, political leadership etc." (Brimkulov & Baryktabasov, 2018).

According to the experts all of Central Asian states have very similar obstacles and challenges at the implementation stages of e-government programs. The first category of barriers of e-government defined as "the digital divide, lack of qualifications and specific knowledge of civil servants, and citizens' lack of IT skills". In point of the experts, "low levels of income, insufficient development of ICT infrastructure, high price of Internet access, and insufficient education in IT skills" are main reasons of above-mentioned factors. In addition, corruption, the insufficient development of ICT infrastructure, ineffective coordination between state bodies for e-governance, low-lying accountability and transparency, absence of evaluation and monitoring of ongoing projects, adequate financing of e-government projects, low level of information security and privacy were mentioned as main factors of hindering e-government projects in Central Asian region.

Table 2. Internet penetration rate in Central Asian states 2020-2021

№	Country	The UN E-Government Survey 2020	DataReportal 2021	Official statistics of region 2021
1	Kazakhstan	**78.9**	**81.9**	**84,2**
2	Kyrgyzstan	38	50.4	**70**
3	Tajikistan	21.96	34.9	**40**
4	Turkmenistan	21.25	33.2	**35**
5	Uzbekistan	**55.2**	**55.2**	**78**

Source: Compiled by author based on data from "The UN E-Government Survey 2020", "DataReportal" and Official data from the Governments (The Ministry for Development of Information Technologies and Communications of the Republic of Uzbekistan, Ministry of economic development and trade of the Republic of Tajikistan, Electronic government of the Republic of Kazakhstan, State committee on Information and Communication Technology of the Kyrgyz Republic)

2. Research Methodology

The research design of the paper applies mixed methodological approaches such as qualitative and quantitative.

Qualitatively, secondary sources like books, journal articles, previous research works and primary sources like national legislation (national strategies and programs), official statements, speeches, international and governmental publications have been utilized.

Quantitatively, in order to assess current digital readiness of Central Asia, their national digitalization strategies have been comparatively studied based on statistical data derived from a large panel dataset from the United Nations E-Government Survey 2020, including E-Government Development Index, Telecommunications Infrastructure Index, E-Participation Index. In addition, several reports and charts from the "DataReportal" – open-source informational platform have been applied to evaluate capacity for digital transformation in given countries of the region.

3. Analysis and results

In fact, digitalization and development of information-communication technologies (ICT) were prioritized in Uzbekistan yet in early 2000es. For instance, Uzbekistan has been implementing an integrated program of National Information and Communication System Development 2013-2020, the National Action Strategy on Five Priority Development Areas 2017-2021, the "Digital Uzbekistan – 2030" Strategy and the latest the Development Strategy of New Uzbekistan for 2022-2026 to implement digital transformation in national economy, industry and society in general.

Consequently, in a relatively short period of time, Uzbekistan has achieved visible results in the sphere of digitalization and ICT development. In particular, substantial progress has been observed in introducing e-government and ICT in public sector for the last few years, when in 2013 was launched "Single portal of interactive government services" – central e-government service of the country.

Moreover, digital and IT infrastructure of the country has remarkably improved, considerable amount of resources were invested which built solid foundations for better ecosystem of the ICT.

As a result, "in the field of digital economy and e-commerce in Uzbekistan for 2016-2020, the gross value added increased 1.8 times and reached 8.8 trillion UZS (about 9 billion US dollars) in 2020. The volume of services rendered in the IT sector amounted to 12.9 trillion UZS in 2020, which is almost twice what it was in 2016" (Abidkhadjaev, 2021).

Since the creation of IT parks in the country, the industry's export volume has increased 50 times and reached 40 million US dollars. The number of park residents increased from 147 to 500, more than 300 new companies were opened and 8,500 highly paid jobs have been created. In continuation of this work, plans have been developed to bring the sphere to a new level of development. In particular, it is planned to increase the volume of exports of services in IT-parks to 80 million US dollars by establishing close partnerships with major exporters (President.uz, 2021).

The total length of fiber-optic communication lines in the country has been remarkably expanding since 2016. For instance, during 2017-2022 it has increased almost 6 times and reached 118 thousand kilometers as of January 2022 (Mitc.uz., 2022).

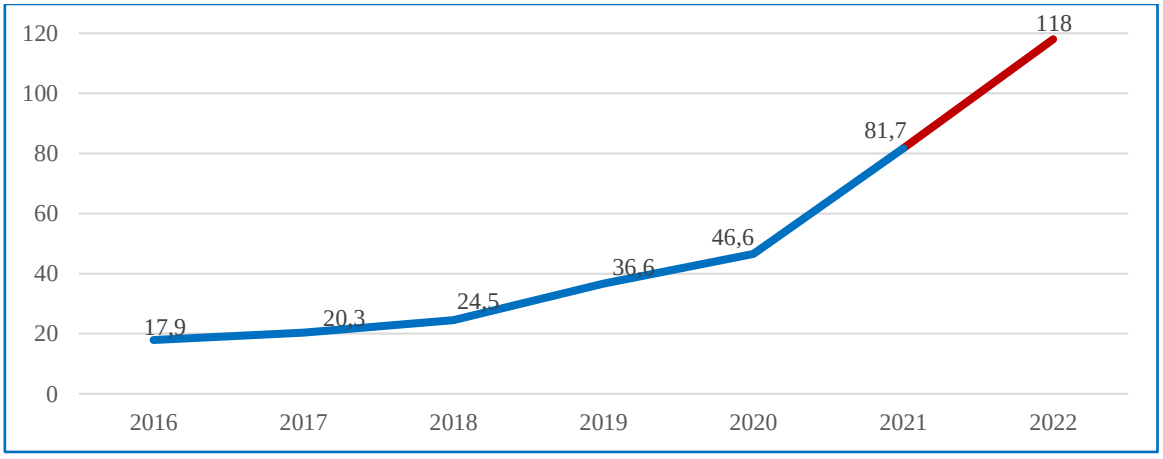


Figure 2. The total length of fiber-optic communication lines in Uzbekistan (thousand kilometrs)

Source: The Ministry for Development of Information Technologies and Communications of the Republic of Uzbekistan. https://mitc.uz/en/stat/6

Since 2017, the overall bandwidth speed of the international networks has been increased more than 28-fold – from 64.2 to 1800 Gbit/s in January 2022. (Mitc.uz., 2022).

As of January 2022, in Uzbekistan following the public administration reforms and digitalization of the sphere 56% public services provided through the portal of interactive public services (e-government portal). The number of public services on the e-government platform of the country (my.gov.uz) reached 307 and 1.3 million citizens are actively using such electronic public services (My.gov.uz, 2022). Whereas, the total number of Internet users in Uzbekistan reached 27.2 million (Mitc.uz., 2022).

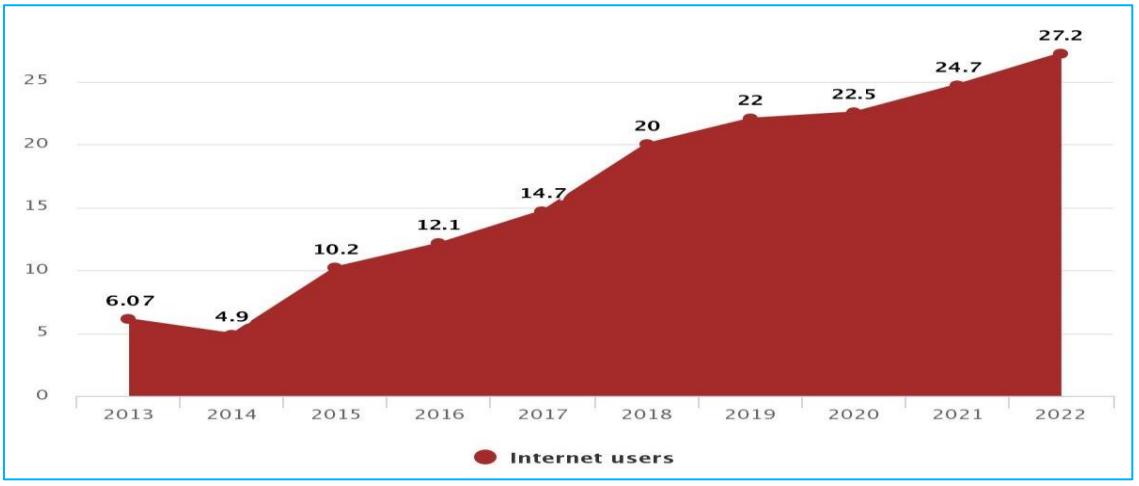


Figure 3. Total number of Internet users in Uzbekistan (thousands)

Source: The Ministry for Development of Information Technologies and Communications of the Republic of Uzbekistan. https://mitc.uz/en/stat/4

At the same time following the revealed vulnerabilities and challenges in the sphere, the government of the country has revised and upgraded its national digitalization strategy under the impact of the global pandemic.

Meanwhile Uzbekistan recognized the power of digitalization in transforming society, whereas the COVID-19 pandemic has made that transformation essential (Avliyokulov, 2020).

In this vein, the President of Uzbekistan Shavkat Mirziyoyev's Decree on October 5, 2020 has approved countries Strategy "Digital Uzbekistan – 2030" and "Roadmap" for its implementation. According to the document from the 1st August, 2021, all state obligatory payments such as fees and fines are being made through provided online payment-services. Furthermore, in line with the Strategy "Digital Uzbekistan – 2030" more than 400 information systems, electronic services and other software products in various areas of socio-economic development are being carried out automatically (Uzdaily, 2020).

Table 3. Target indicators of the "Digital Uzbekistan – 2030" Strategy

№	Indicators	Measures	2021 position	Targets by		
				2022	2025	2030
1.	The total length of fiber-optic communication lines in the country	thousand kilometers	41	70	120	250
2.	Broadband Internet coverage of country's territory	%	67	74	85	100

3.	Providing social infrastructure with broadband Internet	%	45	100	100	100
4.	Providing households with broadband Internet	%	67	74	85	100
5.	The level of Internet penetration	%	78	100	100	100
6.	Position of the country in E-Government Development Index of the UN	EGDI score (0-1)	0.66	0.70	0.75	0.86
7.	The share of digital public services provided through the portal of interactive public services	%	34	60	70	90
8.	The share of digital public services on mobile devices provided through the portal of interactive public services	%	5	30	42	60
9.	Transactions through the portal of interactive public services	%	25	45	60	75
10.	The share of business entities that have implemented an enterprise resource management system (ERP)	%	20	40	65	100
11.	Number of users of internet banking (individuals and business entities)	million	10	15	17	20
12.	Number of startup projects included in the incubation and acceleration programs of the software and information technology of the techno park.	piece	50	250	700	2300
13.	Number of quotas for admission to higher education and secondary special education institutions for training in the field of information technology	thousand	7	12	15	20

Source: Decree of the President of the Republic of Uzbekistan No. UP-60 "On approval of the Development Strategy of the New Uzbekistan for 2022-2026". January 28, 2022. https://lex.uz/docs/5030957 (In Uzbek)

Adoption of the "Digital Uzbekistan –2030" Strategy and the "road map" for its implementation in 2020-2022 creates, first of all, a legal basis for the transition to a digital economy. The document includes such priority areas as the development of digital infrastructure, e-government, the national digital technology market, education and advanced training in the field of information technology.

The strategy considers approval of two programs: digitalization of regions and digitalization of industries. Thus, two approaches are considered as territorial and industrial. Undoubtedly it will provide the most comprehensive coverage and effective implementation of the document.

Among expected results of "Digital Uzbekistan–2030" Strategy are high-quality and inexpensive Internet and mobile communications, the reduce of the digital divide between cities and villages.

The most important conditions and guarantees for the successful implementation of the Strategy is to ensure funding and increase the digital literacy of the population. So, according to the document, the Ministry for Information Technologies and Communications, together with other relevant governmental bodies will take measures to complete the digitalization of preschool education, health care and secondary schools by the end of first stage of the implementation period.

The implementation of the Strategy will ensure the provision of high-quality digital

services to the population, reduce corruption, increase the level of citizen involvement in government decision-making processes, modernize the system of higher and secondary education in order to ensure the competitiveness of citizens not only within the country, but also in the regional and global labour markets.

The Strategy contributes the implementation of other national strategic documents and programs and, first of all will be important for achieving the National goals and objectives in the field of Sustainable development for the period up to 2030 (UN SDG), as well as the Development Strategy of New Uzbekistan for 2022-2026.

The Development Strategy of New Uzbekistan for 2022-2026 which has been adopted on January 28, 2022 covers seven priority areas of further reforms regarding a good governance, public administration, the rule of law, economic development, social policy, spiritual enlightenment, security as well as an open, pragmatic and active foreign policy. In turn, the seven priority areas identify hundred target goals to be achieved by 2026.

Figure 4. Seven Priority Areas of the Development Strategy of New Uzbekistan for 2022-2026
Source: Development Strategy Center. February 1, 2022. https://strategy.uz/index.php?news=1469

Digitalization of several important spheres such as public services both at central and local levels by improving "e-government"; the judicial system; law enforcement; the traffic control system; healthcare system; social services as well as social protection, banking and agriculture sectors and other main spheres of the national economy have been targeted in the new Development Strategy.

In particular, improvement of the e-government of Uzbekistan and bringing the share of electronic public services to 100 %, implementation of "Mobile ID-identification" system of a person in the provision of public services, introduction of "digital passport of citizens" and "digital authority" project have been prioritized to digitalize public administration and optimize administrative procedures at central and local levels.

By maintaining stable growth rates of it is planned to reach 4,000 US dollars GDP per capita and join the group of countries with "upper-middle income" by 2030. In this regard, the development of the digital economy is also defined as the main "driver" with an increase in its share by at least 2.5 times by the end of 2026. Moreover, it is planned to expand the volume of the software products industry 5 times, and software export - 10 times, up to 500 million US dollars, the level of digitalization of production and operational processes in the

real sector of the economy, in the financial and banking sectors to 70% (Lex.uz, 2022). Moreover, digitalization of urban planning and construction, development of cities in accordance with the concept of "Smart City" has been prioritized.

Conclusion and Recommendations

The digital technologies as the driving locomotives during the global health crisis also accelerate digitalization progress in other areas such as public administration, education, medicine, employment and etc. Moreover, digitalization makes possible to maintain consistency in the functioning of the business activity of both public and private firms and companies, and also explores opportunities which must be used for the benefits and prosperity of nations across the globe.

Certainly, in the context of the global pandemic and in general digital technology and services play a central role in recovering from the pandemic and also building resilient economies. Therefore, expanded digitalization and digital transformation should be the main priorities for developing countries, like Uzbekistan.

Moreover, it is necessary to attract more international partners by diversifying their geography to ICT sector of the country. Introducing the right policy framework to enhance digitalization could strengthen not only legislative basis but also international cooperation for better information exchange and experience sharing. In turn, less developed ICT infrastructure and the legislative framework of the digitalization of hinder access to national legislature. In addition, privacy and data protection in the national legislative frameworks of the country should be reflected and guaranteed.

Enhancing affordability of and access to ICT, improving quality and cost of the Internet will not only contribute to narrow the digital divide within country and enhance digital learning platforms, but also increase digital literacy and competences among population. Investing in digital eco-system, ICT infrastructure and qualified IT services will facilitate modernize national economy and accelerate inclusive growth in all spheres.

Reference list:

Abidkhadjaev, U. (2021). *The Digital and Green Agendas of New Uzbekistan*. Available at: https://valdaiclub.com/a/highlights/digital-and-green-agendas-of-new-uzbekistan/

Avliyokulov, B. (2020). *Speeding up digital transformation to tackle COVID-19 in Uzbekistan*. UNDP Europe and Central Asia. Available at: https://www.eurasia.undp.org/content/rbec/en/home/blog/2020/speeding-digital-transformation-uzbekistan.html

Beirne, J. (2022). *Harnessing digitalization on the path to sustainable economic development in Asia*. Available at: https://www.asiapathways-adbi.org/2022/01/harnessing-digitalization-on-the-path-to-sustainable-economic-development-in-asia/

Brimkulov, U., & Baryktabasov, K. (2018). E-government development in the Central Asian states: best practices, challenges and lessons learned. In *International E-Government Development* (pp. 121-154). Palgrave Macmillan, Cham.

Burunciuc, L. (2021). *How Central Asia can ensure it doesn't miss out on a digital future*. The World Bank Group. Available at: https://blogs.worldbank.org/europeandcentralasia/how-central-asia-can-ensure-it-doesnt-miss-out-digital-future

ElMassah, S. & Mohieldin, M. (2020). "Digital transformation and localizing the Sustainable Development Goals (SDGs)". Ecological Economics, p. 169. https://doi.org/10.1016/j.ecolecon.2019.106490.

Kuldosheva, G. (2021). Challenges and Opportunities of Digital Transformation in the Public Sector in Transition Economies: Examination of the Case of Uzbekistan. *ADBI Working Paper 1248*. Tokyo: Asian Development Bank Institute.

Lex.uz. (2022). Decree of the President of the Republic of Uzbekistan No. UP-60 "On approval of the Development Strategy of the New Uzbekistan for 2022-2026" dated January 28, 2022. Available at: https://lex.uz/docs/5841077

Maerz, S. F. (2016). The electronic face of authoritarianism: E-government as a tool for gaining legitimacy in competitive and non-competitive regimes. *Government Information Quarterly, 33*(4), 727-735.

President.uz. (2021). *Presentation of plans for the development of information technologies*. Official web-site of the President of Uzbekistan. Available at: https://president.uz/uz/lists/view/4845

Single portal of interactive government services. (2022). *My.gov.uz in numbers*. Available at: https://my.gov.uz/ru/news/728

Tang, J. & Begazo, T. (2020). *Digital stimulus packages: Lessons learned and what's next*. The World Bank Group. Available at: https://blogs.worldbank.org/digital-development/digital-stimulus-packages-lessons-learned-and-whats-next

The Ministry for Development of Information Technologies and Communications of the Republic of Uzbekistan. (2022). *The total length of fiber-optic communication lines*. Available at: https://mitc.uz/en/stat/6

UN Department of Economic and Social Affairs. (2020). *2020 United Nations E-Government Survey*. Available at: https://www.un.org/en/desa/2020-united-nations-e-government-survey

Uzdaily. (2020). *Remote services provided during a pandemic in a few days went online*. Available at: https://uzdaily.uz/en/post/57109

Economic Journal, Special Issue 1, 2022

Proposals to the Economic Theory of Labor Migration

Saidnumon Mansurov,
Yulbarskhon Mansurov
Branch of REU them. G.V. Plekhanov in Tashkent,
University of World Economy and Diplomacy, Tashkent, Uzbekistan

Abstract. The article provides an overview of the evolution of economic theories of labor migration from the middle of the XIX century to the present day. The article considers several theoretical directions of migration: the laws of E.G. Ravenshtein, Everett Lee's push/pull model, neoclassical migration theory, neoclassical migration theory, M. Piore's dual labor market theory, I. Wallerstein's world-system theory, new economic geography and labor migration. Based on the study, it was concluded that there is no unified theory of labor migration and its driving factors. However, the existing theoretical approaches, as the analysis of the issue has shown, can be used to solve certain social and economic problems.

Keywords: migration laws, push and pull model, neoclassical migration theory, dual labor market theory, world systems theory, labor migration, new economic geography.

Introduction

Migration has always played an important role in shaping the population and, accordingly, the labor market of individual countries and territories. However, the main changes in the nature and direction of migration flows have occurred since the second half of the 19th century (Gurieva 2015; Harris & Todaro,1970; Krugman, 1998). First of all, this was caused by revolutionary changes in the living and working conditions of the population in the most developed countries, due to the rapid development of industry, transport and communications. The construction of factories, railroads, and mass production with division of labor and economies of scale have changed the nature of work, as well as the territorial possibility of its implementation. In search of a better life, people were cut off from their traditional place of residence.

Initially, the so-called countries of traditional immigration - Australia, Canada, and the USA were singled out as the final destination. However, in the post-war period, not only the volume of migration increased in the world, but also its structure changed: instead of Europe, the countries of Asia, Africa and Latin America became the dominant source of migrants in the world, and Europe itself began to actively accept migrants. At the turn of the 1970s and 1980s, even the countries of Southern Europe, Italy, Spain and Portugal, began to take workers from Africa, Asia and Eastern Europe.

In the 1990-2000s, labor migration increased many times and acquired a supranational institutional character associated with the collapse of the Soviet Union, the formation of fifteen new states and the change of political regimes in almost twenty countries of Eastern Europe, whose residents emigrated mainly for economic reasons, focusing on, at the same time, on mental, cultural and political factors.

In the XXI century, a new migration stage has begun, covering the entire countries of North Africa and the Asian macroregion (Krugman,1991; Lee,1966; Massey,1989; Massey & Arango & Hugo & Kouaouci & Pellegrino & Taylor, 1993). Largely caused by the military

threat, humanitarian and political factors, labor migration has acquired the character of a massive and poorly controlled phenomenon. Today, labor migration is on the rise, despite significant linguistic, cultural, religious and political differences between migrants and the populations of the countries they arrive in.

In recent years, the process of labor migration has significantly intensified; moreover, there is a tendency of its growth all over the world. According to the US Department of Labor, the share of labor migrants increased from 150.3 million people in 2005 to 231.5 million people in 2021 and reached 4.2% of the total world population (Piore, 1979; Ravenstein, 1885). In 2021, industrialized countries received 185.6 million labor migrants (10.8% of the population), and developing countries - 105.9 million people (1.6% of the population). This is almost 40% higher than similar indicators in the early 2000s. On the example of Uzbekistan, migration flows are shown with some quantitative indicators (1). For example, in Uzbekistan 75.4% of migrants are men and 24.1% are women. The main area of activity of migrants is construction (51.6%) and agriculture (12.3%) (table 1.).

Table 1. The main area of activity of migrants

Field of activity	%
Construction	51,6%
Agriculture	12,3%
Industry	9,2%
Trade	8,5%
other	18,4%

The main directions of labor migrants are Russia and Kazakhstan (table 2.). With the change in political and economic conditions, the direction of labor migration has changed. New directions for labor migration - Great Britain, Denmark, Lithuania, Poland, Germany, Czech Republic, France, Bulgaria, Singapore, etc.

Table 2. Main directions

Indicators	%
Russia	61,5%
Kazakhstan	16,9%
Türkiye	6,7%
Korea	2%
UAE	0,8%

In these changing conditions, the issue of theoretical understanding of the prospects for labor migration and forecasting its impact on the labor markets of developed and developing countries has become most acute. Currently, there is no single, coherent theory of migration. Existing theories have developed mostly in isolation from each other and describe only a few aspects (Gurieva & Dzhioev, 2015; Brezis & Krugman & Tsiddon, 1993; Gurieva, 2013). However, all of them can serve as a starting point for understanding contemporary migration processes and their impact on labor markets.

The aim of the work is to analyze the known economic theories of labor migration in order to develop practical proposals for enriching theories, the possibility of their application

in the practice of monitoring migration flows to and from Uzbekistan. To achieve the goal, the following tasks were solved in the work:

- analysis and evaluation of migration laws, migration models;
- the neoclassical theory of migration of macro- and microlevels is considered;
- based on the theory of dual labor market and microsystem theory, a new economic geography of labor migration is proposed.

1. Research methods

The methodology underlying the study of this topic is based on heterodox non-mainstream areas of modern economics, primarily the neo-institutional direction. In addition, an attempt was made to incorporate achievements from related fields of knowledge, economic sociology, demography, migration studies of various profiles. Also, for the development of models, the achievements of the theory of human capital were used, which proved to be most effective in studying some economic aspects of migration. Based on the combination of directions, a theoretical and methodological framework has been created that could most fully meet the tasks set in the study. Therefore, the study is based on the method of institutional analysis, which allows assessing the degree of influence of external and internal factors on the functioning of migration institutions of interest and analyzing the mechanisms of operation of specific institutions.

The work uses such methods of scientific knowledge as system analysis, grouping, induction and deduction, comprehensive assessment, logical and comparative analysis, statistical and econometric modeling, forecasting, and others.

2. Results and its discussion. From Ravenstein to New Economic Geography

The article considers several theoretical directions of migration: the laws of E.G. Ravenshtein, Everett Lee's push/pull model, neoclassical migration theory, neoclassical migration theory, M. Piore's dual labor market theory, I. Wallerstein's world-system theory, new economic geography and labor migration. Let's start to analyze the essence of these theories.

In 1885, the English and German geographer E.G. Ravenstein challenged the hypothesis proposed at the end of the 19th century by the English statistician and demographer W. Farr. According to W. Farr, the development of migration has no patterns. E.G. Ravenshtey formed migration laws that try to explain and predict internal and international migration (some laws are relevant in the modern world). Table 3 gives the essence of the basic laws in the theory of migration/

Table 3. The essence of the basic laws in the theory of migration

№	The content of the law in accordance with migration processes
1	there is a redistribution of the population between the territories
2	territories differ mainly in economic characteristics
3	most migrants move short distances
4	migration occurs in stages
5	each migration flow corresponds to a reverse flow

6	long-distance migrants migrate to large industrial and commercial centers
7	urban residents are less mobile than rural residents
8	women are more mobile than men when moving within the country
9	men are more mobile than women in moving long distances
10	big cities grow mainly due to migration
11	the volume of migration increases with the development of industry, trade and transport
12	the main reasons for migration are economic

In the 1960s, Everett Lee proposed an econometric model to the classical migration model. In this model, factors of influence on migration processes were indicated.

According to this model, in each territory there are different groups of migration factors: holding, pulling and pushing, which determine the arrival and departure. Some factors affect most people, and some affect only certain individuals.

Forcing factors (unemployment, low income, high taxes) may include some factors of an economic nature. These factors include: social and political (poverty, discrimination, restrictions on freedom of conscience and religion, war); adverse natural; climatic conditions, etc.

Attractors include a high level of economic development, higher income, security, the possibility of entering the labor market (including in the informal sector, which is especially important for illegal immigrants) and other factors.

Along with pushing and pulling, migration processes are influenced by intermediate factors. Intermediate factors increase with increasing distance between territories and can act as restrictions on migration flows. These include transportation costs, legislative regulation of movement, availability of information about the expected region of arrival, etc. Modulo Lee, migration is a selective process, and the same factors can affect different people in different ways.

An important characteristic influencing the migration trend is the stay at certain stages of the life cycle. In theory, much attention is paid to the econometric characteristics of a migrant and the stages of his life cycle.

Modulo, the author concentrates on the economic factors of migration, losing sight of non-economic factors. But these processes can be influenced by rational, irrational and personal reasons.

Another theory based on fundamental research of the second half of the XX century is Neoclassical migration theory. This theory is the basis for explaining labor migration in the process of economic development.

This theory characterizes migration processes both at the macro and micro levels.

Migration is the result of geographical differences in the supply and demand for work. The signal for migration is the difference in the level of wages (income) between the territories of departure and entry. According to neoclassical theory, the study of migration is akin to solving the problem of efficient allocation of resources, so this approach has found practical application in many countries of the world.

The direction of migration flows is determined by the economic characteristics of the territories: if they are attractive, immigration enters the territory, if negative - emigration. The direction of these flows (from regions with low wages to regions with high wages) and capital flows are opposite.

The disadvantage of this model is that the labor market cannot be perfect, and the balancing of demand takes time, while in an ideal market there would be no unemployment.

The provisions of this theory at the micro level include a number of conceptual assumptions (Table 4).

Table 4. Conceptual assumptions of neoclassical theory

№	Content of assumptions
1	international labor migration is driven by wage differences between countries
2	once the global wage gap is closed, labor movement will cease
3	flows of human capital in the case of high- and low-skilled labor can occur in different directions due to different driving forces affecting these processes
4	the labor market is the main mechanism through which international labor flows take place
5	other types of markets have much less influence
6	national governments can manage migration flows, mainly by influencing the labor market

Another theory is the dual labor market theory by M. Piore (1979). M. Piore developed a theory according to which international migration is the result of the labor market's own needs in a modern industrial society. According to this theory, international migration is due to the steady demand for immigrant labor inherent in the economic structure of developed countries. According to Piore, immigration in countries of origin is driven by factors such as low wages and high unemployment, and vice versa in host countries where there is a need for foreign labor.

Piore linked the demand for immigrant work to four fundamental characteristics of modern industrial society: structural inflation, motivational problems, economic dualism, and labor demographics.

Dual labor market theory neither asserts nor denies that factors perform rational and self-serving actions, as microeconomic models predict. The negative attitude of people in the developed industrial countries to low-paid jobs opens up opportunities for hiring foreign workers. The implications of the dual labor market theory differ from those of microeconomic models (Table 5).

Table 5. Dual labor market theory and its implications

№	**Consequences of the Dual Labor Market Theory**
1	international labor migration is based on the demand of employers in developed countries
2	since the demand for migrants is formed due to the structural needs of the economy, the level of wages is not a condition for labor migration, so employers can hire workers without raising wages
3	low wages in host countries will not increase due to a decrease in the number of immigrants
4	low wages in host countries may fall as a result of an increase in the number of immigrants
5	the possibilities of state influence on international migration are small, only serious changes in the economy can affect the demand for immigrants

The disadvantages of M. Piore's theory are that it deals exclusively with pull factors and loses sight of the push factor associated with demographic transformations in developing countries. Also, this theory does not consider the mechanisms for making decisions about migration.

Another theory is I. Wallerstein's World System Theory. considering migration in the context of the world-system paradigm. According to this theory, the world or country is

divided into periphery and center (Fig. 1). As a result of the expansion of capitalism, the structure of the periphery changes, peasants become dispossessed of land, and cities develop. Globalization accelerates migration processes, and emerging global cities create demand for immigrant labor.

According to Wallerstein, as economic relations penetrate the periphery, a non-capitalist society forms a mobile population that is disposed to migrate abroad.

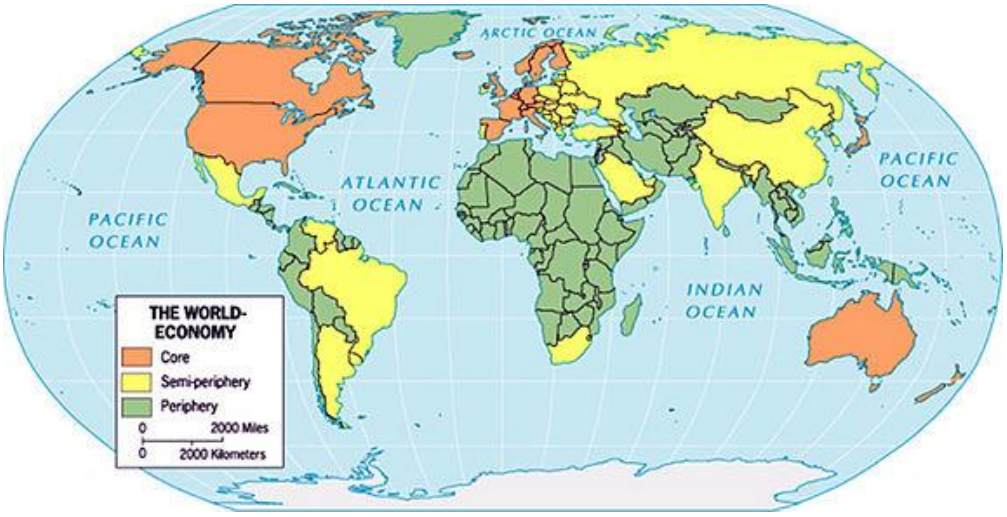


Figure. 1. Countries of the world according to I. Wallerstein's world-system analysis: center (core), semi-periphery (semi-periphery) and periphery (periphery)

The main theoretical views of I. Wallerstein can be reduced to the provisions (Table 6).

Investment and globalization are followed by the creation of a transport and communication infrastructure, the international movement of labor as a whole corresponds to the international movement of goods and capital in the opposite direction. The process of economic globalization is creating cultural ties between the major capitalist countries and the developing countries that border them. The global economy is driven by a relatively small number of urban centers that tend to concentrate banking, finance, management, professional services, and high-tech manufacturing.

Table 6. Main theoretical views of I. Wallerstein

№	The main provisions of I. Wallerstein and their semantic content
1	In order to achieve the greatest profit, capitalists strive to mechanize production, to use production resources.
2	Land integration and consolidation is leading to the destruction of traditional land use systems based on inheritance and common use. The mechanization of production reduces the need for manual labor, which leads to a redundancy of labor. It is a labor mobilization factor
3	The extraction of raw materials for sale on the world market requires industrial methods based on paid labor. The wage offer creates a labor market based on a new concept of individualism, self-interest, which leads to social change. These trends are driving geographic labor mobility in developing countries
4	Some people - as they penetrate into their spheres of market relations - move to cities, which leads to the urbanization of developing countries, many go abroad, as globalization creates material and ideological ties to the regions where capital originates. Foreign investment that drives economic globalization comes from a small number of the world's largest cities, whose structural features create a strong demand for immigrant work

The world-system theory argues that international migration follows the political and economic organization of an expanding global market, from which six different hypotheses follow (Table 7).

International migration, after all, has little to do with wages or differences in employment between countries; this follows from the dynamics of market creation and the structure of the global economy.

Another theory New economic geography is a type of economic analysis, the purpose of which is to explain the effects of agglomeration and the outstripping development of the region's economy by creating models of imperfect competition with increasing returns.

New economic and geographical models also describe the effects of skipping, the "great leap" - a mechanism that explains the phenomenon of changing leaders during periods of rapid technological change, when "the last become the first.

"Technologically and economically backward countries have less experience. New technology allows them to take advantage of lower wages to enter the market. If new equipment or technologies, institutions, structures are more productive than old ones, then there is a change of leaders. Often the factors that provided the country the opportunity to become a leader at one stage of technical and economic development, at the next stage they become a brake and impede its dynamic development. Initial success turns into a subsequent failure.

Table 7. Hypotheses as consequences of the world-system theory

№	Hypothesis and its interpretation
1	international migration is a natural consequence of the capitalist formation of the market in developing countries
2	the penetration of the global economy into peripheral regions is a catalyst for the international movement
3	the international flow of labor follows the international flow of goods and capital, but in the opposite direction. Capitalist investment causes changes that form a mobile population in peripheral countries, while at the same time strong material and cultural ties are established with the main countries, which leads to transnational movements.
4	International migration is especially characteristic of the former metropolises of the colonial powers and their colonies, since cultural, linguistic, administrative, investment, transport and communication ties were established long before that and allowed the development of free competition, which led to the formation of specific transnational markets. and cultural systems
5	International migration is linked to the globalization of the market economy; State regulation channels at the level of immigration are the regulation of corporate foreign investment activities and control over international flows of capital and goods
6	The political and military government interventions of the capitalist countries to protect their investments abroad and the support of foreign governments in their quest for expansion in the world market when they fail, cause a movement of refugees directed to specific key countries, creating a different form of international migration.

This mechanism of advanced innovative development works not only at the national, but also at the regional level. In order to create or maintain a competitive economy, the state power must support innovative firms and innovative development of regions based on a combination of scientific, industrial, technological, organizational, market, monetary and other factors.

Conclusions

Scientific approaches of the economic theory of labor migration serve to understand the causes and factors of not only previous, but also modern processes of international migration. In every territory there are factors of migration: deterrents, pulls and repels, arrivals and departures, with some factors affecting the majority of people, and some - only individuals. For this reason, the classical theories of migration do not lose their relevance today and are used to solve various goals and problems.

In our opinion, the analysis made in the paper explains more accurately than others the development of a spatial economy associated with an increase in the cost of innovative assets (the basis of these assets is human capital) located in the region and involved in the system of global exchanges.

The proposed hypotheses have different implications for the development of migration policy. Depending on which model is supported, policies can regulate international migration by changing wages and working conditions in host countries, by promoting economic development in countries of origin, creating a social insurance program, improving futures or capital markets in developing regions, or a combination of these actions.

Reference list:

Brezis, E., Krugman, P., & Tsiddon, D. (1993). Leapfrogging in international competition: a theory of cycles in national technologicalleadership. Amarican Economic Review, 83(5), 1211-1219.

Gurieva, L.K. (2013). New approaches to innovative region development. Humanitarian and social sciences. (5), 35-42.

Gurieva, L.K. (2015). New Economic Geography as the Theoretical Platform of Region Innovative Development. Mediterranean Journal of Social Sciences, 6(3), 19-26.

Harris, J., & Todaro, M. (1970). Migration, unemployment, and development: a two-sector analysis. American Economic Review, 60, 126-142.

Krugman, P. (1998). What's new about the new economic geography? Oxford Review of Economic Policy, 14 (2), 177-191.

Krugman, P.R. (1991). Increasing returns and economic geography. Journal of Political Economy, 99 (3), 483-499.

Gurieva, L.K. Dzhioev, A.V. (2015). Economic Theories of Labor Migration, Mediterranean Journal of Social Sciences, MCSER Publishing, Rome-Italy, 6 No 6 S7, 101-109

Lee, E.S. (1966). A Theory of Migration. Demography, 3(1), 47-57.

Massey, D. (1989). International migration and economic development in comparative perspective. Population and Development Review, 14, 383-414.

Massey, D., Arango, J., Hugo, G., Kouaouci, A., Pellegrino, A., & Taylor, E. (1993). Theories of International Migration: A Review and Appraisal. Population and Development Review, 19 (3), 431-466.

Piore, M. (1979). Birds of passage. Migrant labor and industrial societies. New York: Cambridge University Press.

Ravenstein, E.G. (1885). The Laws of Migration. Journal of the Statistical Society of London, 48 (2), 167–235.

Wallerstein, I. (1989). The Modern World-System, vol. III: The Second Great Expansion of the Capitalist World-Economy, 1730-1840's. San Diego: Academic Press.

Economic Journal, Special Issue 1, 2022

Is Outstaffing or Leasing of Specialists Justified?

Saidnumon Mansurov,
Yulbarskhon Mansurov,
University of World Economy and Diplomacy, Tashkent, Uzbekistan
Branch of Russian University of Economics named after Plekhanov in Tashkent,

Abstract. A feature and commonality of the modern stage of development of the economy of the CIS countries is the transition to the priorities of knowledge, the use of the results of science in the real sector of the economy. At the same time, a deficit of personnel potential is natural in all processes of the innovation economy - practically none of the countries in the post-soviet space trains specialists in the field of innovation management, limiting itself to training of innovation management. Despite the fact that the creation of science-intensive industries, spin-of companies is documentary approved, the issue of personnel ensuring remains relevant. The paper considers and shows the positive effect of the experimental use of the outstaffing variant in the real sector of the economy of Uzbekistan, the mechanism of which is not quite unambiguously perceived by managers. The results of the work are also relevant for migration, especially labor migration, when it comes to highly qualified specialists.

Keywords: knowledge economy, personnel, virtual organizational forms, outstaffing, leasing of labor resources in spin-off companies.

Introduction

A feature of the modern stage of economic development is the transition to a post-industrial economy based on the development of knowledge and science, which are fundamental production factors. The distinguishing features of the post-industrial economy are globalization and informatization. At the level of individual industries post-industrial trends are expressed in the increased variability of technologies as a result of constant innovation, in increasing the mobility of industry structures, strengthening intra-industry integration and global competition. At the level of organizations there is a virtualization of resources, the concentration of companies on their “core” competencies and the transfer of other functions to external contractors, the spread of network and virtual organizational forms (Кузнецова, 2009; Твисс, 1989; Якока, 2000; Ваганов, 2002).

In such conditions the pledge to the successful activity of the organization in the long run is its ability to change in accordance with changing market conditions, which is ensured by the presence of organizational-managerial mechanisms that control the need and ensure not only the implementation of changes, their adaptation within the organization, but also the improvement of novelties management, improvement of the newest quality of the innovative product. For a complete understanding of this process we will consider the mechanism of implementation of an existing innovative product, but adapted to the requirements and conditions of functioning of a particular organization, as well as a mechanism for improving its characteristics (Алехина,2000; Овчинникова, 2001; Басовский, 2005; Поддерегина, 2006).

As an example, let's consider the process of implementation a new mechanism of personnel interaction between a subsidiary and the mainstream societies based on the principles of outstaffing (Ваганов, 2002; Алехина, 2000; Мельник, 2010). Much attention has been paid to the issue in the scientific literature (Робертс, 2006; Мартынова, 2021;

Мельник, 2010), including in foreign scientific periodicals (ASS, Vol. 18, No. 8 (2022), p.20). However, since there is no consensus on the use of outstaffing, the relevance of this work becomes significant and is conditioned by the following:
- insufficient knowledge of the issue of implementation of novelties in the field of personnel management;
- lack of qualified personnel workers;
- irrational use of personnel resources at the enterprise;
- absence of perfection in the organization of personnel records management.

The aim of the study is to develop a system for improving the management of a new quality of an innovative product on the example of implementation of a mechanism of personnel interaction between a subsidiary and the mainstream societies based on the principles of outstaffing.

The main objectives of the study, ensuring the achievement of the goal are:
1) organization of outstaffing as an innovative product in personnel management;
2) analysis of the state of the enterprise in the real sector of the economy and the use of outstaffing with the relevant regulatory documents;
3) substantiation of the economic effect of using an innovative solution.

1. Theoretical-methodological base and methods of research

The theoretical and methodological basis of the study was the works of national authors on the problems of implementation of innovative technologies in the personnel service, personnel management in an organization, as well as the use of outstaffing mechanisms. Among the methods of research used:
- theoretical (analysis of scientific literature, legislative acts, articles of the Labor Code, Tax Code);
- study of statistical data on the research problem;
- the method of included observation of the development of the implemented system of personnel interaction between enterprises;
- analysis of the state of the general economic activity of the enterprise;
- retrospective analysis of own management activities;
- quantitative and qualitative analysis of the obtained results.

All of the above allowed us to obtain constructive conclusions.

The empirical base of the study is reports, data obtained from the analysis of the activities of the personnel department of the enterprise.

2. Results and its discussion

In the work on the example of a separately taken enterprise reviewed the process of implementation of such a new organizational-managerial mechanism of personnel interaction as outstaffing - or leasing of specialists (Робертс,2006; Мельник, 2010; ASS, Vol.18, No.8 (2022) p.27).

Benefits of using the outstaffing service:
- reducing the burden on personnel services and reducing the cost for their maintenance;
- delegation of responsibility (relationship of an employee with the tax and migration

services);
- increase in the number of employees without cancellation the simplified taxation system;
- increasing of investment attractiveness of the company.
Thus, personnel leasing is very often an effective substitute for labor relations.

3. SWOT-analysis of the company's activities

When implementing a construction project, the following key success factors can be identified:
- use of experience, knowledge, skills and technologies of one of the project participants;
- government support for oil and gas companies;
- equipping with equipment and technologies that allow to carry out a full production cycle and form a flexible production program;
- availability of unique equipment (crane equipment with large load capacity);
- formation of a highly qualified staff of specialists with work experience.

The results of marketing research, determination of trends in the development of the industry, as well as assessing the internal potential are presented in the form of a SWOT-analysis (Table 1).

Table 1. SWOT-analysis of the enterprise

Opportunities	Threats
The country has a significant number of gas and oil fields, the development of which requires a certain amount of specialized equipment. There is a demand for equipment that is difficult to satisfy in full. The state has declared active support for the processes of fundamental modernization of industry.	The difficult economic situation in the world, which leads to the difficulty of forecasting the consumption of hydrocarbons and, as a result, their production. The ongoing problems in the euro / dollar zone and the growing budget deficit in the USA do not allow forecasting the exchange rates of the main currencies (dollar, euro, yen, ruble). Technogenic accidents and natural anomalies make the forecasting of production volumes and prices for metal (steel) unpredictable.
Strengths	**Weaknesses**
Using the advanced experience of a strategic partner in the methods of planning and organizing production management, basic business processes. The possibility of using new modern technological equipment in the implementation of the Project. The presence in the staff of professional managers from the industry with extensive experience in implementing projects in russian and leading international corporations. Extensive experience of the main investor. Possibilities of cooperation with other enterprises in order to increase the efficiency of activities.	The need to use a large amount of import supplies: equipment, a number of components, etc. It is connected with the lack of relevant industries in the country or the low quality of their products. The threat of changing the construction time due to the postponement of the contract by the Customer. Insufficient amount of labor resources in local proximity to the place of implementation of Project. The threat of luring a highly qualified staff of specialists to competing organizations. High costs for the maintenance of invited top managers due to the mastering of the company's authorized capital.

Note: the name of the enterprise is not given due to the experimental nature of the work and private form of property

Taking into account the role of the state in modernizing the economy and solving the

problems of hydrocarbon production (this is important for Uzbekistan), it is possible to forecast with a high degree of confidence the continuation of the state course aimed at all-round support and development of the oil and gas industry. The state, realizing its responsibility and acting within the framework of the Development Strategy 2026, is ready to provide financial support in the modernization of the industry. In fact, such measures of state protection provide a plan of the sales of the enterprise. The analysis shows the possibility of practically full utilization of capacities for the production of modern equipment for the mastering of oil and gas fields.

The enterprise is created from scratch, which helps to reduce the unemployment rate and stimulates the growth of the need for highly qualified specialists: workers, engineering and technical workers.

Thus, the main objectives of the project can be formulated as follows:

- construction of a new type of enterprise (such as a Spin-off company), equipped with modern technological equipment, in accordance with the Strategy for the development of the country;
- formation of a science-intensive production center and achievement of a leading position in the production of equipment for the exploration and production of hydrocarbons;
- entering the world market with competitive products;
- creation of new jobs and increase in tax revenues to the budget, as a result of the creation of a highly efficient enterprise.

4. Development strategy of the enterprise in conditions of changing the timing of the implementation of project

Currently, the period of project implementation has been suspended due to a lack of own funds to support current financial business activities, so the company's management has two main tasks:

1. Reduce the cost of maintaining personnel by reducing the number of employees to the number necessary for the implementation of current general business activities;
2. Retain highly qualified specialists with extensive experience in large international companies invited for implementation of this project.

Despite the reduction in personnel, the main goals of the personnel policy of the enterprise were achieved:

- uninterrupted and high-quality provision of the new company with the necessary number of employees of the relevant profession and qualifications;
- rational use of personnel;
- formation and maintenance of the team's working capacity;
- development of criteria and methods for the recruitment, selection, training and placement of qualified personnel, increasing the qualification of employees;
- development of the theory of personnel management;
- development and strengthening of corporate culture.

The main principle of an active, open personnel policy at this stage is efficiency, i.e. attracting minimal costs to obtain the maximum result in the selection of highly qualified personnel (Fig. 1).

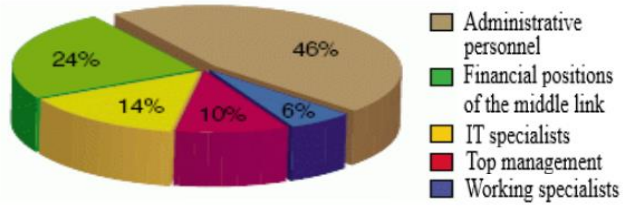


Fig. 1. The first results of outstaffing - the ratio of positions withdrawn from the staff

The priority direction of personnel policy is the formation of a structure at the first stage: the selection of employees with good organizational skills to solve primary tasks. The personnel policy is based on the principles of active communication with employees, due consideration of the needs of all departments, innovativeness, professionalism and transparency, and is also aimed at solving the following primary tasks:

• Design and construction of the production site;
• Participation in marketing activities to form a future package of orders;
• Formation of the company's development strategy for the long run, taking into account its own detailed analysis of the development of existing and prospective oil and gas fields;
• Analysis of the possibility of the company's entry into international markets;
• Formation of the brand.

Thus, by carrying out a number of measures in the field of personnel policy, management costs were reduced by 25%. Despite this, the issue of the company's unprofitability, as well as the retention of invited narrowly directed specialists in the field of hydrocarbon production, still remained open. In view of this, it became necessary to create a system that both simplifies the organizational and legal basis for personnel interaction and brings economic efficiency. To solve these tasks was developed a new system of personnel interaction, based on the principles of outstaffing.

5. Development of a scheme of application of outstaffing

In order to address issues related to optimizing the staffing table and operating the company's budget, as well as reducing the risks associated with resolving labor disputes, with minimal financial, organizational and time losses based on the principles of outstaffing, was developed a new algorithm for personnel interaction. The scheme of application of outstaffing is shown in fig. 2.

After the conclusion of the contract for the paid provision of services, the obligatory annex to which are the lists of withdrawn employees with their personal data, a description of the functions, responsibilities and compensations, the employees are registered at the provider. Each of them signed a separate labor contract. Actual working conditions, in particular, jobs, employees remain the same. In the course of work, all current documents, certificates, etc., employees withdrawn from the staff are transferred directly to the provider. Accordingly, he monthly pays wages to each employee, as well as all premiums, bonuses and additional payments determined by the company-customer. In addition, the provider monthly deducts established taxes from the payroll fund, payments to the pension fund and other payments determined by law. Periodically (weekly, monthly, quarterly), the provider sends the customer reports about the work done, on the basis of which an invoice is issued.

The bill for services includes the salaries of employees, taxes, payment of possible bonuses and the actual payment of services for outstaffing. The newly created department was staffed with employees. Thanks to this, it was possible to increase their employment and efficiency, being narrowly focused specialists, they could not be provided with a full-fledged workload at their previous place of work. The department at the moment meets all international requirements and standards.

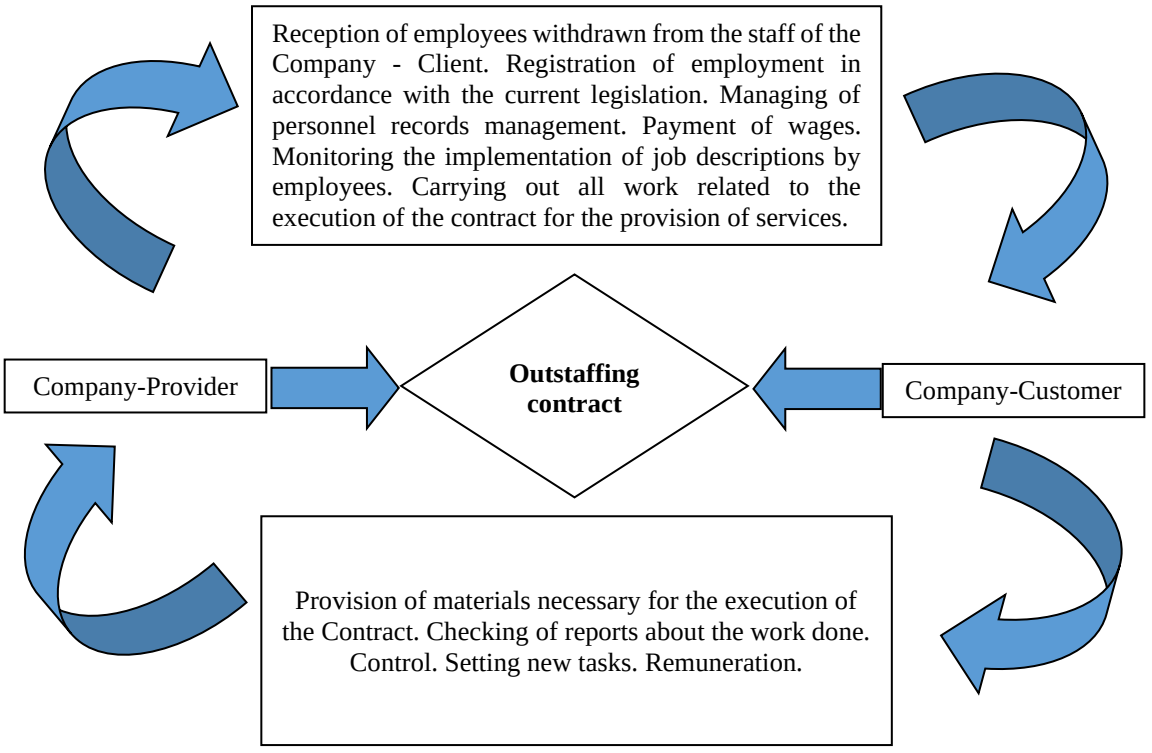


Fig. 2. The scheme of application of outstaffing

6. Creation of a normative basis for a new mechanism of interaction

In order to create a legal framework regulating the relationship between the subsidiary and the mainstream societies, the contract for the paid provision of services was originally developed, based on a standard outstaffing contract. Under the outstaffing contract (transfer under the "outstaffing" cotract for the lease of personnel to the customer), i.e. the provision of services of a peculiar nature, the terms of the contract regarding specifically the qualifications of the employees of the company-lessor, their number and deadlines of execution of certain functions by them on the instructions of the customer come out in first place. Exactly these parameters mainly affect the amount of payment under the contract for the paid provision of services. Therefore, the amount of work that the leased workers must perform is not specified in the contract, in some cases they are defined in general form as an additional agreement to the contract. Here it can be applied by analogy about rental contract of a vehicle with a crew. According to this agreement, the crew members are employees of the lessor. They obey to the lessor's orders relating to the management and technical

exploitation of the vehicle, and the lessee's orders relating to the commercial exploitation of the vehicle, which also has the right to make claims to the lessor in connection with malfunctions or poor execution by the crew of his orders. When outstaffing, as a similar type of contract, the customer can make similar claims to the firm-provider.

The results obtained (Fig. 3) allow us to assume that the development and improvement of this novelty will bring, first of all, economic efficiency to all parties of the process, and can also be further used in the process of interaction of the entire main society with enterprises included in its structure.

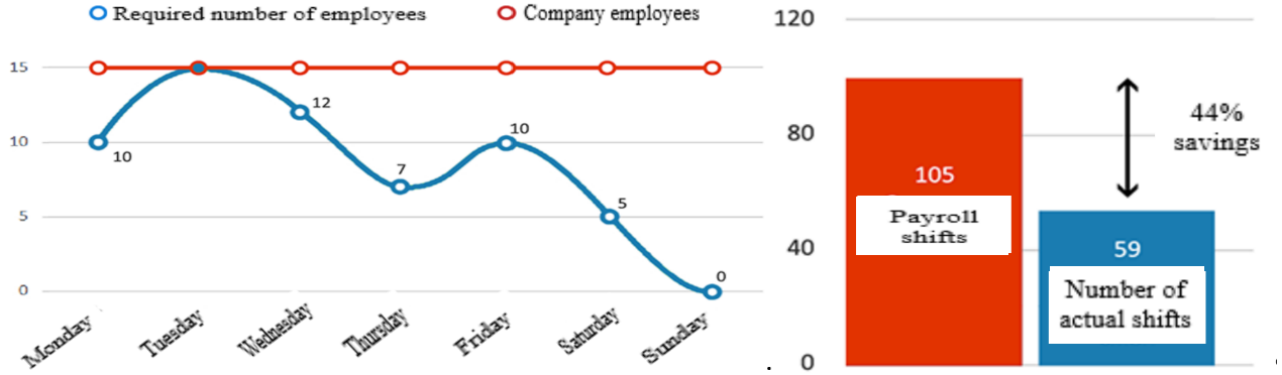


Fig. 3. The result of a flexible approach to the ratio of the scope of work and the personnel involved

The contract specifies: a list of provided employees, indicating their functions that they will perform, as well as the obligations of the customer to provide the leased employees with appropriate workplaces, providing for them the working conditions established by the Law, and observe labor protection and safety for life and health in accordance with labor law.

According to the acting mechanism of personnel relations, based on the principles of outstaffing, all responsibilities for the recruitment of employees, registration of their labor relations with them are borne by the firm-provider. It also carries out the search and selection of candidates according to the requirements and wishes of the customer, the provision of reserve specialists in case of illness or absence of key employees. Replacing employees if necessary, conducting mandatory medical examinations, training, insurance, etc., falls on the company-provider.

Conclusions

The priority of product quality issues and ensuring its competitiveness have increased the importance of a creative approach to work and high professionalism in management. This encourages to look for new forms of management, implement organizational-managerial novelties, develop the potential abilities of personnel, improve his qualification level, provide high motivation for the labor process, and, most importantly, constantly improve the management of new qualities of implemented innovative products. Human resource management is one of the most important directions of activities of many organizations and is considered the main criterion of their economic success, by importance even ahead of the technical process. You can have advanced, modern technology, but unskilledness of personnel will ruin it. Thus, a key component of business is the management and stimulation of personnel, and that is why the use of innovation in this area is essential. The continuous development of innovative thinking among the personnel is the

basis for the development of all innovative activities of the country as a whole.

The conducted research allowed to concretize the general conclusion:

1. At the present time, the demand for qualified specialists continues to grow on the part of large western and russian companies. It is expected that the practice of withdrawning senior and middle link employees from the staff will gain popularity, while a few years ago on the basis of outstaffing there was a selection of mainly auxiliary personnel.

2. At the present time, the CIS countries do not have much experience in the use and development of outstaffing as an organizational and managerial novelty. One of the reasons is that the relevant legal framework has not been developed for the wide use of this service. Legally, the term "outstaffing" is not fixed. Within the framework of personnel records management and the provisions of laws, employees of the firm-provider are considered to be seconded to the organization-customer. This is partly why the very concept of personnel leasing or outstaffing does not enjoy a very good reputation among medium-sized entrepreneurs, representatives of trade unions.

3. In the conditions of a dynamically developing market, such an indicator as the price of the provided service becomes of great importance. Based on this, often companies-client are looking for small firms that offer a flexible pricing system, original schemes that allow solving the problem of tax optimization, while providing all the guarantees of maintaining complete confidentiality.

4. In the process of research was studied the process of implementation the basics of outstaffing at a particular enterprise that is not ready to provide its requisites, although the use of a new mechanism of the interaction of personnel besides the improving indicators of efficiency (the ratio of profit to the number of employees in the company's staff), gave a lot of other advantages - was obtained an opportunity to develop a strategy for survival in conditions of temporary suspension of the project, thereby secure a revenue part for maintaining the current general economic activity of the enterprise, as well as retaining a staff of highly qualified specialists before the start of the project; the partner, being a company that has a strict competitive selection of employees, got the opportunity not to enroll in the state during the probationary period, to reduce the amount of work of the accounting and personnel departments, without enrolling in the state of additional.

Reference list:

Алгоритм разработки кадровой политики предприятия / А. Пожидаева // Кадровик. Управление персоналом. – 2006. – № 2. – С. 71.

Academic Adjustment in the UK University: A Case of Chinese Students' Direct-Entry as International Students JEL, Vol. 11, No. 5 (2022), p.131.

Assumptions on the Re-study of Textiles and Clothing in the Newspapers and Periodicals of the Republic of China ASS, Vol. 18, No. 8 (2022), p.20.

Басовский, Л.Е. Экономический анализ (Комплексный экономический анализ хозяйственной деятельности) / А.Л. Басовский, А.М. Лунева. – М.: ИНФРА-М, 2005. – 222 с.

Do You Want This Double or Single Spaced? Transactional Versus Transformational Questions JEL, Vol. 11, No. 5 (2022), p.124.

Embracing One Note as an Online Pedagogy ASS, Vol. 18, No. 8 (2022), p.12.

Егорова, Н.Е. Малые предприятия: предпринимательские стратегии и кооперация / Н.Е. Егорова, М.А. Маренный. – М.: Кооперация Спутник+, 2004. – 199 с.

Ваганов, П.И. Методологические проблемы управленческих инноваций / П.И. Ваганов. – СПб.: Изд-во СПбГУЭФ, 2002. – 123с.

Внутрифирменное ценообразование в трансформационной экономике / Л.И. Поддерегина // Наука – образованию, производству, экономике. Материалы Третьей межд. научно-технической конференции в 2 т.: Сб. ст. – М., 2006. – Т.2. – С. 130-132.

Инновации на производстве / М. Мельник // Проблемы теории и практики управления. – 2010. –№ 4. – С. 23.

Кузнецова, Т.В. Кадровое делопроизводство. Традиционные и автоматизированные технологии / Т.В. Кузнецова, С.Л. Кузнецов. – М.: Издательство Альфа-Пресс, 2009. – 389 с.

Мартынова А. Н. Технологии аутстаффинга и аутсорсинга в деятельности организации. // Инновации, наука, образование, №29, 2021. – С. 1046-1051.

Новая парадигма управления персоналом в условиях переходной экономики / Т. Овчинникова // Управление персоналом. – 2001. – № 7. – С. 34-39.

Робертс, Г. Рекрутмент и отбор. Подход, основанный на компетенциях / Г. Робертс. – М.: Управление персоналом, 2006. – 78 с.

Research of Enhancing Business English Writing Skills Based on the Blended Learning Model in Vocational College ASS, Vol. 18, No. 8 (2022), p.27.

Служба персонала / О. Алехина // Управление персоналом. – 2000. – №11. – С. 56-59.

Твисс, Б. Управление научно-техническими нововведениями / Б. Твисс. – М.: Экономика, 1989. – 230 с.

Трудовая адаптация персонала / Б.А. Сычев // ЭКО. – 2003. – № 4. – С. 3.

Teacher Professional Qualification in Early Childhood Education and Its Influence on Promotion Rates in Public Primary Schools in Embu County, Kenya JEL, Vol. 11, No. 5 (2022), p.159.

Thai Language Curriculum to Enhance Creativity Thinking Skills for Primary School Students JEL, Vol. 11, No. 5 (2022), p.142.

The Use of 5 Step Technique (QSCCS) in Developing Grade 9 Students' Summary Writing Skills JEL, Vol. 11, No. 5 (2022), p.153.

Управление персоналом: исследование, оценка, обучение / Е.Б. Моргунов // Управление персоналом. – 2007. – № 4. С. 32-36.

Якока, Л. Карьера менеджера / Л. Якока. М. Прогресс, 2000. 270 с.

Economic Journal, Special Issue 1, 2022

Innompic Ecosystem as a Booster of International Socio-Economic Development

Vadim Kotelnikov, vadim@innovarsity.com
Chairman of Innompics World, United Nations consultant, Moscow, Russian Federation

Abstract. Global Innompic Ecosystem (Innompics) is a leading booster of innovation-driven socio-economic development in the World. Innompics is an official partner of United Nations sustainable development goals (UN SDG). Annual World Innompic Games, an intellectual "brother" of Olympic Games, are heartbeats of the global Innompic circulatory system. Innovators from several ECO countries, namely Afghanistan, Azerbaijan, Pakistan, Türkiye, and Uzbekistan, participated in World Innompic Games during 2017 – 2022.

Keywords. Innompics, ecosystem, innovation, development, international, Asia

1. Innompics Ecosystem

Launched in 2017, the global Innompic Ecosystem (innompics.com) is a harmonious mega-innovation that sets new trends, nurtures innovative entrepreneurs, and boosts growth of world-changing startups (ToI, 2017).

Innompic Ecosystem is a global Innompiology-powered network of people, events, countries, organizations, and enabling systems, programs and networks that inspires disruptive innopreneurs, nourishes entrepreneurial creativity, nurtures harmonious mega-innovations, helps build breakthrough partnerships, facilitates rapid growth of innovation-driven startups and larger businesses.

Innompiology is a new Innompics-born social science that examines and explains how to create harmonious mega-innovations and civilizational breakthroughs.

Innompic Ecosystem is an official partner of United Nations Sustainable Development Goals (UN SDG). It has been featured in various United Nations publications (UN APCICT, 2007). Leveraging diversities is a fundamental Innompic strategy that helps Innompic Games create great positive impact for centuries ahead. Differences in approaches, diversity of styles, and cross-cultural unity are celebrated.

The world "Innompic" means synergy of 3 things:

1. Disruptive innopreneurs, loving creators;
2. Outstanding entrepreneurial creativity 360;
3. Super-effective A to Z implementation of harmonious radical innovation projects.

The vision of the Innompic Ecosystem is to turn the Earth to a harmonious Planet of Loving Creators (Picture 1.).

Picture 1. 11 Essentials of the Innompic Ecosystem

The 8 essentials of the Innompinc Social System are the noble Purpose, unique Benefits, Shared Values, Brand Attributes, Leveraged Diversity, value-added Social Network, All-Win Games, and natural Harmony.

Annual World Innompic Games (IG) are heartbeats of the global Innompic circulatory system (Picture 2)

Picture 2. Innompic Ecosystem and Innompic Games

1.1 Trend Setter

Innompics Ecosystem is a global trend setter in its target areas. Innompic Games pioneered many exciting things including Innovation A to Z / 360 (Kotelnikov, 2018), Creation Show, Spoken Innovation, Learning 20-60-20, and sMusical-Inn.

1.2 Accelerated Learning

Innompic-style 20-60-20 accelerated learning system helps participants master their innovation and entrepreneurial skills by studying (20%), creating and playing (60%), and watching how others perform (20%). Innompic Games aim to unlock the potential of people and encourage them towards innovation and helping people globally. These are not merely Games, but can be looked at as an accelerated way of learning (Figure 1.).

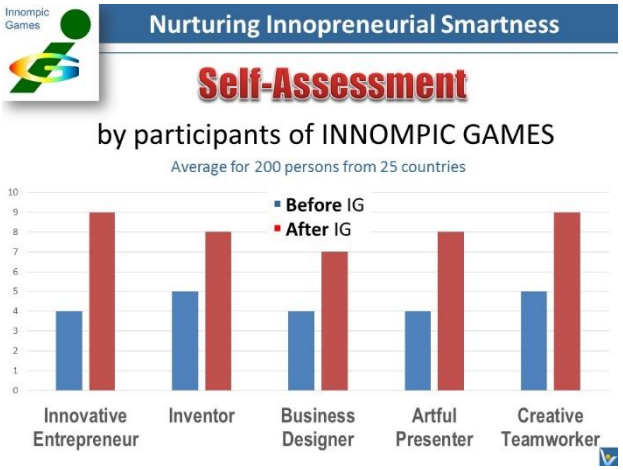


Figure 1. Learning Benefits of Innompic Games

1.3 Socio-Economic Value Created by Innompic Ecosystem

Innompic Games boost the desire to make a difference, entrepreneurial creativity and the can-do-attitude of the participants and help them grow as loving creators. Every challenge-based Innompic contest is an opportunity to hone your outside-the-box thinking and ideation skills, creativity, inventiveness, entrepreneurial flexibility, and – most importantly – value innovation capabilities.

Countries that conduct national Innompic Games accelerate social, intellectual and innovative development. They strengthen also both internal and external growth-oriented ties. (Figure 2.)

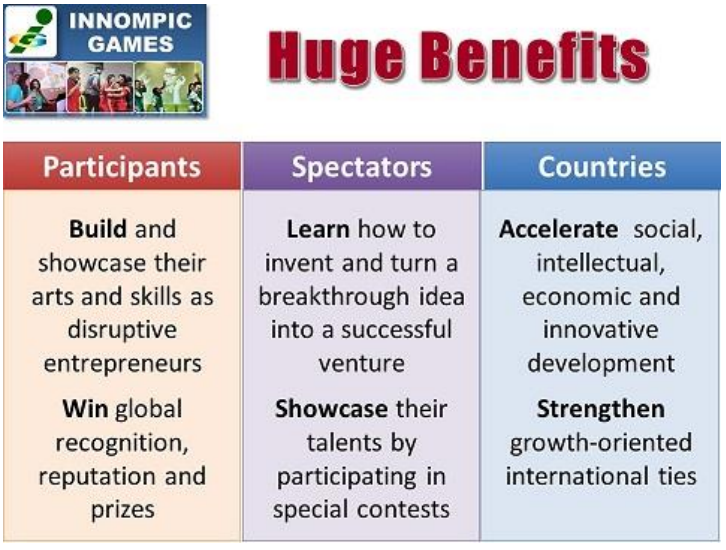


Figure 2. Socio-Economic Benefits of Innompic Games

2. Economic and Business Design of Innompic Games

The economic and business design of INNOMPIC GAMES harmonises radical World-changing mega-innovations, the Art of Innovation A-to-Z/360, and the Universal energies

of Love, Yin and Yang, and the 5 Basic Elements to turn the Earth to the Planet of Loving Creators.

The holistic models of the Innompic Tree, 6Ws of Innompic Games and balanced Yin-Yang Strategies are macro-components of the Innompic Business Design.

The from-roots-to-fruits Fruit Tree model (Figure 3.) of Harmonious Innovation was invented and applied to Innompic Games to create a holistic business design that would ensure natural growth and lasting success of IG.

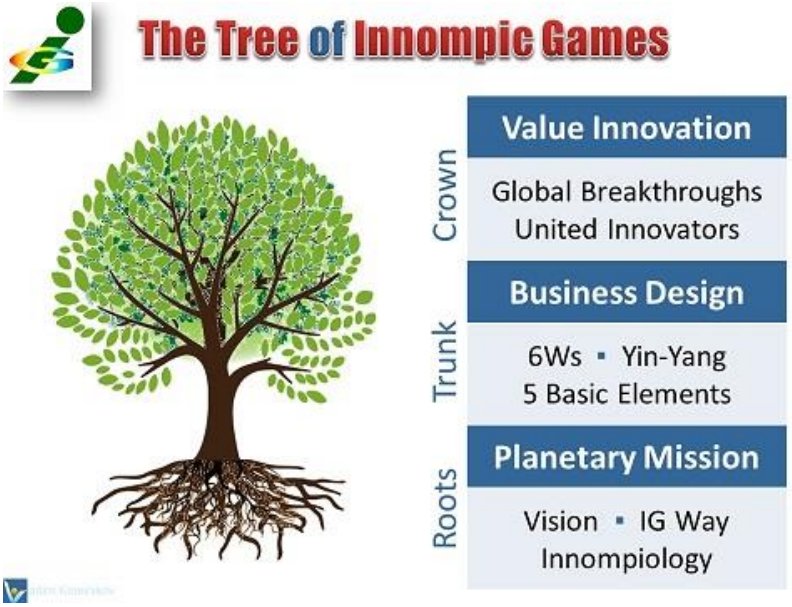


Figure 3. Fruit-Tree Model of the Business Design of Innompics

Being a radical innovation, Innompic Ecosystem disrupts often man-made things, but stays in harmony with the Universal Laws of Nature. 5 Basic Elements of the Universe (5 energies) are harmonised in the business design to ensure balanced and continuous growth of Innompic Games and their lasting success (Figure 3.).

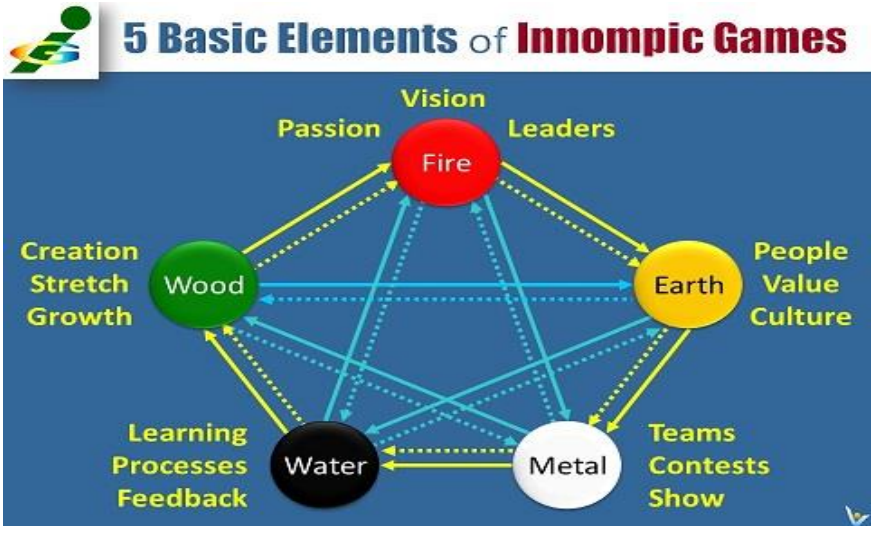


Figure 4. Harmonised Five Basic Elements of Innompics

3. What's Next

Six World Innompic Games conducted between 2017 and 2022 have allowed the business architects of Innompics to test all key components and start developing e-Innompics online platform that is to engage 1 billion people by 2025.

The e-Innompic Platform consists of two levels – Innompics Lite and Innompic Pro (Figure 5.).

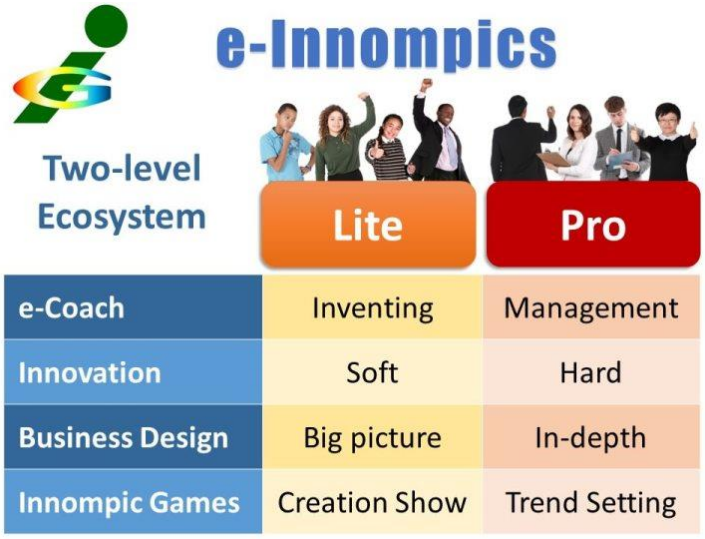


Figure 5. Design of e-Innompics platform

e-Innompics is a value-added two-dimensional social network. While traditional networks focus on helping their members communicate, e-Innompics focused on helping its members grow. e-Innnompics helps Innompians communicate as well – in a value-added way because joint creative activities connect people at deeper levels (Figure 5.).

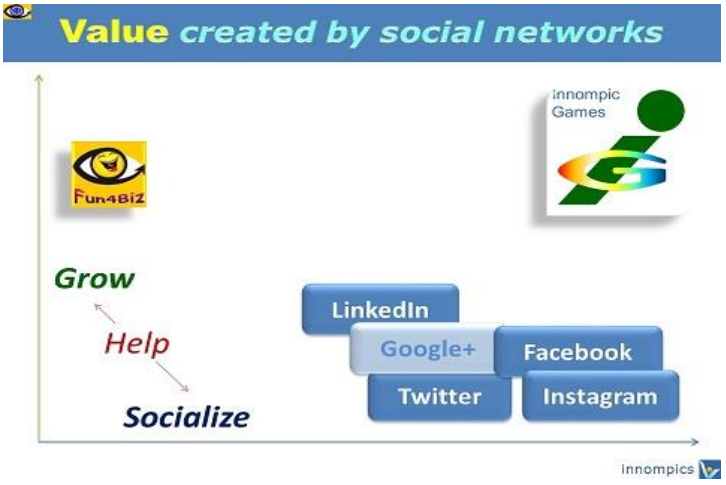


Figure 6. User Value Created by e-Innompics and Traditional Social Networks

Sectoral e-Innompics platforms and Innompic Games are to become global trend setters in their respective areas, starting with Energy, Finance, IT, Agroindustry, Tourism, and Harmonious City.

Conclusion

Below are some participant testimonials that conclude effectively the articles about the Innompic Ecosystem and Innompic Games.

"Innompic Games is an amazing part of my life journey. 1st Innompic Games was a great achievement for all of us, a hope to grow and to light up the best." ~ Javeed Akbari, Afghanistan

"Saving the world starts with you. Innompic Games are here to help." ~ Marziya Aghayeva, Azerbaijan

"Innompic Games help illustrate the various ways that participants can innovate and create breakthrough ideas worldwide." ~ Mustakeem Chaudhri, Pakistan

"Innompic Games have tremendous potential for boosting global economy, innovation, and business education." ~ Beytullah Tanhan, Türkiye

"Innompic Games make the World better and brighter." ~ Dildora Murtazaeva, Uzbekistan

Reference list:

Times of India, First innovation Olympics to be held in Pune, 4 teams to take part, Sept 13, 20017

Vadim Kotelnikov, *Outstanding Innopreneur*, BPMC Malaysia, 2018

Vadim Kotelnikov, *Small and Medium Enterprises and ICT*, UN APCICT, 2007

Summaries of Completed ECO Projects

Economic Management Modeling in the ECO Region

Pakistan Institute for Emerging Economics (PIDE)

Effective macroeconomic management promotes macroeconomic stability and unleashes productive forces in the economy for sustainable economic growth. Macroeconometric models are important tools that can help in devising appropriate fiscal and monetary policies to achieve growth and development objectives. This study has developed a set of macro-econometric models for the Economic Cooperation Organization (ECO) member countries that provide a rigorous macroeconomic framework for conducting policy simulations and forecasting. The models have been specified based on latest research while widely used time series techniques have been employed for estimations and forecasting.

The simulation results for Afghanistan's economy show that the economy is beset by an adverse security situation which continues to hamper economic growth. The results show that while the economy will grow at a moderate rate in the medium term, the high rate of population growth will offset any gains in the real sector thereby reducing per capita income. This has important implications for macroeconomic policy in Afghanistan. In particular, there is a need to tackle the security challenges to prepare the ground for an economic revival that focuses on boosting the commodity producing sectors while at the same time maintaining macroeconomic stability.

For Azerbaijan, the estimated models and projections show that while the economy exhibits a robust trend for economic growth, there is a need to diversify the economy and promote non-oil manufacturing and services sectors for sustained economic growth.

Currently the macroeconomic environment in the economy depends on fluctuations in oil prices which determine government revenues and hence the level of fiscal deficit. A more diversified economy will lead to a more stable revenue stream thus enabling the government to undertake crucial development spending to enhance productivity and boost economic growth.

The model for Iran's economy has highlighted key macroeconomic relationships in the long run as well as their short run dynamics. The results show that the economy will grow at a sluggish rate not least because of continued sanctions that may impede international trade and investment. Macroeconomic stability in Iran is expected to prevail on the back of low fiscal deficit and prudent monetary management to contain inflationary pressures. The economy continues to rely largely on the oil sector and there is a need to achieve greater diversification for broad-based growth. The current economic reforms program can be instrumental in encouraging private investment through improvement in business climate and provision of better physical infrastructure.

Like many other economies in the region, Kazakhstan also relies heavily on the energy sector though it has managed to establish a significant industrial base along with a

services sector. Though Kazakhstan's recent economic performance has been lackluster, our projections show a positive growth outlook in the medium term as the non-oil economy is expected to grow on the back of policies aimed at greater economic diversification.

The estimated model for Kyrgyz Republic highlights important macro-economic relationships that dictate the performance of the Kyrgyz economy. The performance of the Kyrgyz economy significantly depends on its trade relations with Russia and remittances from its migrant labor working in Russia. Weak economic growth in Russia have led to sluggish economic growth in the Kyrgyz Republic. On the other hand, while currency depreciation added to the inflationary pressure initially, inflation has subsided in recent years due mainly to low international prices of food. The medium-term outlook for the economy is moderate growth with a stable macroeconomic environment.

A comprehensive macro-econometric model of Pakistan's economy covers all the major building blocks including production, aggregate demand, fiscal and monetary framework, and foreign trade and capital inflows. The model has been used to generate forecasts of key macroeconomic variables in the medium term. The results show that while the economy will remain vulnerable on account of rising external imbalances, the manufacturing and services sector are likely to post robust growth in the medium term. Also, prudent macro-economic management is expected to help reduce fiscal deficit through increase in direct and indirect revenues and targeted expenditure towards productivity-enhancing spending. Pakistan needs to urgently tackle its ballooning current account deficit that is threatening macroeconomic stability and may pose a significant risk to economic growth in the short to medium term.

Dynamic simulations in the case of Tajikistan's economy reveal that aggregate demand plays an important role in the expansion of services sector which accounts for more than 40 percent of Gross Domestic Product (GDP). Whereas public investment helps attract private investment in the economy, public consumption responds to the level of domestic economic activity to cater to the growing demand for public goods and services. The medium-term economic outlook is moderate for Tajikistan though high fiscal deficit may pose a risk to macroeconomic stability. There is thus a need for the government to rationalize public spending and generate more revenues to reduce fiscal deficit to a more sustainable level.

Like Pakistan, a detailed macro-econometric model for the Türkiye's economy focuses on major commodity producing sectors on the supply side along with major components of aggregate demand, fiscal and monetary variables and foreign trade sector. While economic growth in the medium term is projected to remain modest, the macroeconomic environment is expected to be characterized by relatively high inflation. On the external front, both exports and imports are likely to show robust growth. Despite this, however, the Türkiye's economy is vulnerable to external shocks as its firms are leveraged with external debt and recent currency depreciation has worsened their balance sheets. These developments could hamper the growth momentum and raise the risk of macroeconomic destabilization. The immediate policy concern for Türkiye is thus to bolster its currency and help its troubled firms to restructure their loans. The Türkiye's economy has demonstrated resilience in the past and given prudent macroeconomic management, it is expected to

effectively deal with the emerging challenges and recharge the process of economic growth.

For Turkmenistan, the study has conducted simulation and forecasting of major segments of the economy including production, demand, fiscal and monetary framework and foreign trade. Like many other economies in the region, Turkmenistan' economy is driven by hydrocarbons and consequently its macroeconomic environment depends heavily on international developments in hydrocarbons. While the economy is expected to grow strongly in the medium term, the growth would likely be concentrated in the energy sector making the economy vulnerable to international shocks. Turkmenistan needs to diversify its economy for a more broad-based sustainable growth.

Uzbekistan's macro-econometric model consists of simulation and forecasting of supply and demand aggregates as well as fiscal and monetary variables and external trade. Over the years, the economy has diversified and all the productive sectors including manufacturing, agriculture and services play an important role. The Uzbekistan's economy has a robust growth outlook in the medium term though macro-economic stabilization may pose a challenge as inflation remains high and this trend may persist in the medium term. However, the strong fiscal position may allow the government to pursue a tight monetary policy to curb inflationary pressures in the economy. The government's economic reforms program is expected to boost private investment leading to job creation and sustained economic growth.

The macro-econometric models developed in the present study can form the basis of economic policies that are based on a complete understanding of the underlying macroeconomic structures and dynamic properties of the relevant macroeconomic variables. Furthermore, the ECO member countries can develop coordinated policy responses to external shocks duly taking into their specific macroeconomic structures and the level of regional integration as shown by the intra-regional trade and investment flows. Macroeconomic stabilization efforts based on a sound macro-econometric model are expected to be more effective in promoting a macroeconomic environment that is conducive to private investment, job growth and prosperity for the citizen of the ECO member countries.

ECONOMIC COOPERATION ORGANIZATION
ECONOMIC JOURNAL

Analyzing Food Security in the ECO Region

Pakistan Institute for Emerging Economics (PIDE)

The project summary reflects the issue of food security in the ECO region and identifies the factors that influence the food security situation in the ECO member countries. The report also discusses implications of global price shocks on food security within the region and strategies for ensuring food security and reducing hunger and malnutrition in the region.

The locus of hunger and malnourishment within the region, as per criterion of non-fulfillment of MDG and WFS hunger targets, is primarily in three countries: Afghanistan, Pakistan and Tajikistan. These have been categorized as the high food deficit area of the region. Hence to eradicate undernourishment and malnourishment from ECO region require deep policy focus on these three countries primarily because of increasing incidence of undernourishment within their population and reduction of undernourished population to insignificant levels in rest of the seven countries that have been categorized as low food deficit countries.

The countries which are categorized as hunger free or low food deficit countries in the region can be grouped into one of three categories; those that maintained level of undernourished below 5 percent since 1990-92 (Türkiye and Kazakhstan), those that were able to meet the MDG 1C target by 2015 (Iran and Uzbekistan), and those that fulfilled both MDG 1C and WFS criterion in 2015 (Azerbaijan, Kyrgyzstan and Turkmenistan).

Hunger and malnourishment within Afghanistan, Pakistan and Tajikistan is more a problem of access to food for the poor and vulnerable groups than it is one of availability. This can be inferred from the fact that these countries have high level of undernourishment both in terms of size of the undernourished population and its prevalence rate while there is adequacy of food supply. Probable factors responsible for lack of access include poor distribution and low purchasing power of the poor and vulnerable.

In the context of food access, the countries that have successfully fulfilled their MDGs have on average relatively more pro-poor growth processes than those that could not meet these targets by 2015. This emphasizes not only the fundamental role of poverty alleviation policy efforts in tackling hunger issues, but also reinforce the recognized pathway within MDG 1a and 1c targets, that there is a link between reduction of extreme poverty and reduction in hunger incidence. However, another pattern that emerges is that the degree of hunger reduction is much more responsive to poverty eradication in low than high food deficit countries. Therefore, it is important to go beyond the mere connection between reduction in extreme poverty and hunger alleviation to structural differences within society and an inclusive and sustainable growth mechanism.

Regarding targeted policy analysis in ensuring food security within the region, not only have the low food deficit countries that have been successful in controlling undernourishment within their population to negligible levels as per MDG 1c target, but they have progressed in the fight against chronic hunger. Not only are average percentages of children with wasted, stunted and under-weight growth in low food deficit area

comparatively less than high food deficit area, but there is also a higher rate of decrease and hence progress within these countries towards SDG hunger targets. However, obesity and stunted growth remain a problem for countries within the low food deficit area. Therefore, there is a need to have proactive policy focus to counter such tendencies. All countries (except for few anomalies) are investing in their food base to secure the domestic food supply especially in terms of staple food and non-staple food items like vegetables and fruits, roots and tubers, meat, livestock and milk products. This is evident in the growth patterns since 2000 in all these food items within aggregation into low and high food deficit areas.

However, in the context of self-sufficiency and diversification food policy, we find that countries in the low food deficit area are on average following a policy of food diversification by relying on global markets for their cereal requirements and developing themselves as supplier of fruits and vegetable, whereas the reverse pattern is observed for high food deficit area countries. Such aggregation may mask country specific policy focus. In the context of country specific patterns, the report finds that overall, within two countries (Kazakhstan and Türkiye) evidence contrary to aggregate trends is observed as these two countries clearly practice food independence in meeting their home cereal requirements. Türkiye is unique in being able to deliver self-sufficiency in staple food requirement while also achieving status as a strong exporter of both fruits and vegetable and cereal in the world market. In Pakistan a policy of self-sufficiency in cereal is evident, while in Afghanistan and Tajikistan, contrary to their traditional focus of food independence policy, there is evidence of dependence on global markets for meeting cereal needs.

In the context of diversification away from cereal, roots and tubers towards food that are rich in protein, except for Afghanistan the pattern is evident in all countries, with the rate of decline being much higher in countries that have met the MDG 1C and WFS targets. There is clear increase in supply of protein products (both animal origin or otherwise) and this increase is again at a much faster rate among countries which have met their MDG 1C hunger target.

In terms of response of countries to this changing dietary preference, at aggregate level countries in the high food deficit area have an advantage in meat and fish production with positive and substantially higher trade surpluses. However, at a disaggregated level, it appears that except for Türkiye and Pakistan, the other countries are not yet secure in meeting their own local demand.

As a prime policy target of how a country can be protected from plausible international price shock as that have happened in recent past in 2007-08 and 2010-11, within our discussion through evaluation of food prices (actual and forecasted values), extent of cereal important dependency and status of stock of foreign reserves the report has attempted to identify which countries are at risk in their food security in the event of a price hike emanating from international markets.

Four countries are found to be totally at risk of being affected greatly by international price shocks; namely, Afghanistan, Kyrgyzstan, Pakistan, and Tajikistan. The countries that appear secure in all dimensions and not responsive to price shocks are Türkiye and Iran. The evidence suggests that Azerbaijan, Kazakhstan, Turkmenistan, and Uzbekistan are potentially at some risk, but the extent of such possibility is observed to be

much less that the four countries totally at risk.

There are policy lessons to be learned from the low food deficit countries regarding their successful attempts at removing hunger from within their borders. To be specific it is important to analyze in greater depth the policy processes through which these countries are showing evidence of greater food security, achieving nutrition targets and relatively more stability not only in domestic food generation processes but also in form of less vulnerability to external shocks.

The agricultural sector has been found to be more productive in low food deficit ECO countries than in countries which could not eliminate hunger from their boundaries. The agriculture sector and rural development are clearly an important piece of the puzzle of putting an economy in the hunger free domain.

In terms of demographic dynamics, a key to success in low food deficit area is that population growth rates have been lowered substantially. Population control is an important aspect in ensuring food security within an economy that needs to be highlighted especially in Afghanistan and Pakistan - the two high food deficit countries that have substantially high population growth rates along with rising population of undernourished population. Not only are poverty levels relatively higher in high food deficit area, but poverty is also centered in the rural areas, while agriculture sector is a major employer of labor. Within these countries poverty and hunger eradication cannot move forward positively unless the rural economy is strengthened.

Finally, not only have countries in the low food deficit area on average performed well in terms of eradicating hunger, but also in terms of their better overall performance of the agriculture sector and macroeconomic indicators. The policies followed within these countries were not just centered on hunger elimination through pro-poor strategies, but such an end was achieved in the face of well-rounded and comprehensive structural programs designed to improve and sustain overall internal economic stability. This highlights a holistic approach to tackling food security situation in the ECO region focusing on agricultural productivity, a stable macroeconomic environment through prudent monetary, fiscal and exchange rate policies, and regional economic cooperation including agricultural research and extension and measures to boost intra-regional trade and investment.

ECONOMIC COOPERATION ORGANIZATION
ECONOMIC JOURNAL

"Exchange of Experience and Strengthening of Interagency Cooperation on the Development of Ecologically Clean Agriculture model in ECO Member Countries"
(in short: Study on "Clean Agriculture" in the ECO region)

Institute for Scientific Research on Economic Reforms
of the Ministry of Economy of the Republic of Azerbaijan (İSRER)

Summary. One of the most ancient types of human activity are agriculture, in which are reflected - history, culture and social values. One of the modern global trends is Organic ("Ecologically Clean") Agriculture, which is rapidly developing around the world. Organic agriculture is an integrated production system that provides the improvement of the eco-system with the protection of human health, the use of large amounts of synthetic additives to prevent, maintain soil fertility based on the conversation of existing biological diversity by preventing the use of compounds that may be harmful to the environment following the local conditions and the ecological period. Organic Agriculture of traditional economic innovation technologies together with modern achievements of methods of scientific and technical progress is based on the use of land, thereby ensuring a positive impact on all forms of life and the environment.

Organic agriculture is defined as a management system that focuses on on-farm inputs and developing agro-practices by mimicking the biological cycles in nature. In organic production, use of genetically engineered inputs and propagation materials, irradiation and sewage sludge are not allowed. The inputs and methods that can be used are permitted by official and private standards. There could be slight differences among these standards, but all are based upon the same principles of health, ecology, fairness and care. According to the figures of 2015, 89 countries have legislation on organic agriculture. The whole production chain is inspected and in case of conformity to the reference standard, the products are certified as organic and labeled. Thus, labeling helps the consumer to better identify the production system and the legislation and certification provide harmony in the market. The growth and development of organic agriculture is based on 4 such basic principles as: (1) health; (2) ecology; (3) care and (4) fairness. These principles explain the basis for the development of Ecologically Clean Agriculture and contribution to humanity. These principles can widely apply in agriculture, include care of land, water, flora and fauna by human for production, processing, distribution of food and other products. In other words, these inspirational and ethical principles should be used together. It is not accidental that in these principles are seen the benefit, which Ecologically Clean Agriculture could bring to the humanity and the ways of improving agriculture. These IFOAM principles regulate the basis for the development of programs and standards and are prepared considering the possibility of application all over the world.

Global trends & ECO region: ECA as one of the modern global trends is actively gaining intensity over the world. Such as, the organic food market is estimated as 81.6 billion US dollars in 2015. The leading countries are USA, Germany, France and China. Most of the markets grew by double digits in 2015. The fast-growing markets are mainly in developing countries however; their production capacity does not increase at the same rate resulting in

imports and globalized markets**.** The International Federation of Organic Agriculture Movements launched **'Organic 3.0'** to promote organic agriculture both as a producer and as the domestic market in all countries and release organic products at affordable prices. The ECO countries have great potential for developing organic agriculture with diverse climates, wide product range and rich biodiversity. The compiled data display various cases among selected ECO countries where organic agriculture developed. It is hoped that lessons learned will help other member countries to develop organic food and non-food production, markets and capacity both at human and institutional levels.

Project Outcome: The Economic Cooperation Organization or ECO is a Eurasian political and economic intergovernmental organization founded by Iran, Pakistan and Türkiye in 1985 and further expanded to include seven new members; Afghanistan, Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan in 1992. It aims to provide a platform to improve development and promote trade and investment opportunities in the Region. It is formed by a group of countries ranging from Central Asian to the Mediterranean through Türkiye, to the Persian Gulf through Iran, and to the Arabian Sea via Pakistan. The ECO is in general composing of upper middle to low-income countries. They gain more importance due to their geographic location and natural resources capacity. Agriculture has a crucial role not only for water and food security but also for creation of employment and generating rural income. The topography of this region ranges from vast plains to high mountains surrounding fertile valleys with mild climate. This influence weather patterns in the region yielding to multiple types of climates e.g. steppes, humid continental, humid subtropical and desert. Despite agriculture's role as a driving force, it faces various challenges as low productivity, land degradation, loss of biodiversity, and land and water pollution. Climate change is a challenge in ECO countries more than ever. The Second Central Asia Climate Knowledge Forum organized in Almaty in May 2014 brought together all stakeholders to prepare a regional strategy for climate change mitigation and adaptation in Central Asia.

In ECO countries, the share of rural population and the role of agriculture are still high. With few regional exceptions, farms are mostly family farms facing problems of low productivity and having no access to the markets. Each country has different agricultural policies, priorities and support programs. The motto of ECO is **"Sustainable socio-economic development for the people of the region".** With this motto, the socio-economic development of the rural population through increased capacity and high value production in agriculture become crucial. This can be achieved through a better management of natural resources, improved capacity of farmers and easier access to markets with competitive products. In large-scale commercial farms increased off-farm input use under mono-cropping practices lead to residues in the products and/or soil and water pollution problems. The small family farms contribute to empowerment of rural women and food insecurity; however, the income generation and market access rates are low. Thus, there is an urgent need to change the current management systems to a more sustainable management and improve market access.

Submission Terms

Authors presenting articles agree to comply with the following terms:

1. The journal should be published in an electronic format.
2. Articles should be submitted through the electronic platform and follow the instructions.
3. By submitting an article, the author confirms that the article has not been published in any other journal.
4. Only original and completed research papers are accepted.
5. Articles must be written in the format given in the "Author Guidelines".
6. All articles should be submitted in English.
7. Before the review, the editor examines whether the article complies with the requirements. Non-complying articles will be immediately rejected and the authors will be informed about the reasons for rejection. The final deadline for the submission of the new version will be communicated to them.
8. Each article submitted to the journal will be checked by 2 reviewers.
9. The authors should take into account all the comments of the reviewers and make corrections. The third reviewer gives a reference to the objections of the author. The final decision on the publication of the article will be made by the editor-in-chief.
10. The published articles are copyrighted by the Editorial Board.
11. Modified or revised versions are not accepted after the deadline determined by the editor-in-chief. Any adjustments made after that date are not taken into account.
12. Articles, accepted for publication, will be checked by special anti-plagiarism software.
13. By submitting an article, the author confirms that he/she has obtained permission from the co-authors mentioned in the article.
14. All the used sources should be cited and the authors should guarantee that each and every reference is complete and accurate.
15. By uploading the article, the author gives the publishers the right to publish and retain the article.
16. Requests to withdraw an article are considered by the editor-in-chief. He/she may accept or reject the request.
17. Articles will be published under a Creative Commons Attribution License 4.0. This means that the journal is open to the public in electronic form, anyone can download and read the article for free. Besides, the article may be reprinted and quoted, provided that there is a reference to the originally published version.

Author Guidelines

Layout: Articles must be written following the guidelines in the 7th edition of the Publication Manual of the American Psychological Association. Articles must be in Microsoft Word format (21 cm x 29.7 cm), using 12-point Georgia font, with 2.5 cm margins, paragraphs left-aligned, pages numbered in the upper right, and double-spaced (except for tables and figures which may use single spacing).

First Page: It contains the title of the paper, the author's name, email address, organization and country, the abstract, keywords, and the introduction part of your article.

1. Title

The title should be in 12pt Georgia font (capitalize main words), bold and centered. After leaving one clear line space, the names, surnames, emails, and ORCID codes of the authors should be indicated from the right, in simple font size 12pt. After further omitting a line, the name, address (city), and country of the author's organization must be written in simple font size 11pt.

2. Abstract

The abstract must be no longer than 200 words, written in simple font size 10pt, and must cover the essential elements of the article such as the research topic, the methods used, and the main results and conclusions. It must be accurate, concise, and encompass the key points of the study.

3. Keywords

After the abstract, the author should provide a list of up to 6 keywords, separated by commas, that indicate the most important topics, methods and/or frameworks used in the article. Keywords must be written in a simple font size of 10pt.

Content: The main body of the article should be written in font size of 12pt following APA Guidelines.

1. Headings

Headings should be numbered with Arabic numerals, bold, left-aligned, and set in 12pt font size. There should be one complete line space between the sections and between the title and the main text. Paragraphs within the section should be indented 5-character spaces.

2. Subheadings

The subheadings (if any) should be bold, left-aligned, set in 12pt font size, and numbered with Arabic numerals (first indicating the section to which it belongs, then the sequence number) (for example: 2.1 or 2.1.1).

3. Equations

All equations must be clearly set and numbered consecutively from the beginning of the paper. They should be numbered simply (1), (2), (3), etc. Equations are centered on the page and labeled with Arabic numerals, right-aligned, in parentheses, and referred to only by those numbers in the text.

4. Tables and Figures

Tables and figures should be numbered with Arabic numerals consecutively from the beginning of the paper. Numbers are assigned based on the order in which tables/figures appear in the text and are bolded and left-aligned. All tables/figures must have a title, which should be written in 12-point Georgia font, left-aligned (over the table/below the figure), in italicized title case below the table/figure number, with a blank line between the number and the title.

All the tables and figures must be referred to in the text. The tables and figures should be inserted in the first appropriate place after being referred to. PNG and JPEG formats are considered suitable for figures.

References: The APA style should be used for in-text citations and the reference list.

1. In-text Citations

In-text citations must be given in parentheses, indicating the author and the year of the publication.

Examples:

- A work by one author – (Nielsen, 2017)
- A work by two authors – (Sadigzade & Nasibov, 2022)
- A work by three or more authors – (Huseynova et al., 2019)
- Two or more works by the same author in the same year – (Berndt 1981a; Berndt 1981b)
- Organization as an author – (Food and Drug Administration [FDA], 2019)
- For quotations – (Yanmaz, 2018, p. 12)

2. Reference List

Each source cited in the article must appear in the reference list. All lines after the first line of each entry in your reference list should be indented 1.27 cm from the left margin. The references should be arranged in alphabetical order and comply with the APA 7th edition guidelines.

Disclaimer

The opinions and views expressed in this publication belong solely to the authors of the articles and do not necessarily reflect the opinions, views or the official position of the ESRI or the ECO. As the ECO Economic Journal strives to promote knowledge sharing and scholarly dialogue, we acknowledge the value and importance of open discussions on economic and institutional matters. In doing so, we recognize that disagreements may arise, and contentious topics may be explored. The ESRI and the ECO do not hold any responsibility for the political statements or contentious issues reflected in the articles of this publication.