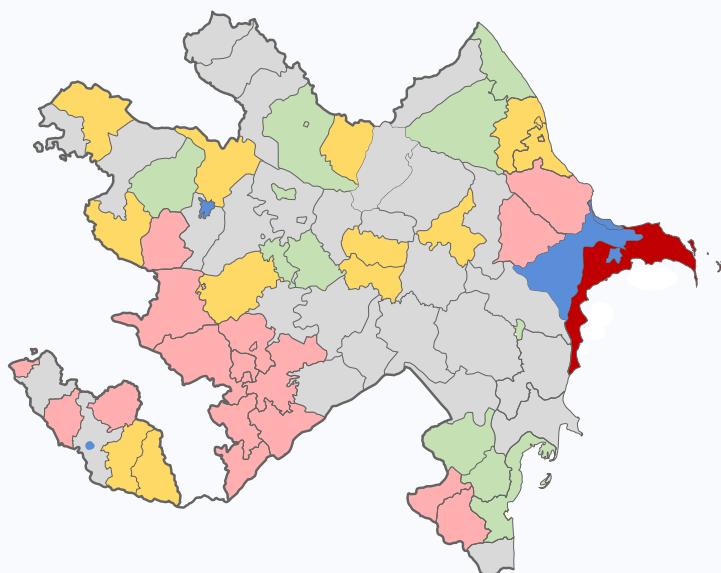




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COMPOSITE REGIONAL INDEX FOR AZERBAIJAN



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WEglobal

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ABBREVIATIONS

AD	Aggregate Demand
AgroGIS	Agricultural Geographical database
AS	Aggregate Supply
ASIS	Azerbaijan Statistics Information System
CF	Cohesion Fund
CLC	Corine Land Cover
DAIM	State Agricultural Development Center
EDO	European Drought Observatory
EEA	European Environment Agency
EKTIS	Electronical Agricultural Information System
ERDF	European Regional Development Fund
ESA 2010	European System of National and Regional Accounts (2010)
ESA	European System of Accounts
EU SEIS	European Union - Shared Environmental Information System
EU	European Union, formerly known as European Coal and Steel Community (ECSC), the European Economic Community (EEC) and the European Community (EC)
FDMS	Farm Data Monitoring System
GDP	Gross Domestic Product
GHG	Climate change, Greenhouse gas emissions
ICT	Information and Communication Technology
IPs	Investment Priorities
MoE	Ministry of Economy
MoE&NR	Ministry of Ecology and Natural Resources
NGO	Non-Governmental Organization
OECD	Organisation for Economic Co-operation and Development

PCA	Principal Component Analysis
PPP	Purchasing Power Parity
SDGs	United Nations Sustainable Development Goals
SEDI	Socio Economic Development Index (Composite Index)
SEIS	European Shared Environmental Information System
SMART	Specific Measurable Accepted Realistic Timely
SMEs	Small and Medium-Sized Enterprises
SNG	Sub-national Governments
SSC	State Statistics Committee
TL2	OECD Territorial Level Large (regional level)
TL3	OECD Territorial Level Small (province level)
TOs	Thematic Objectives
UN	United Nations
UNDP	United Nations Development Programme
VA	Value Added Account
VAT	Value Added Tax (Indirect Tax)
WoSIS	World Soil Information Service

1. INTRODUCTION

Regional development is a complex phenomenon that is inherently multi-dimensional in nature. Measuring regional development using single indicators like Gross Domestic Product (GDP) per capita does not capture the complexity of regional development which goes beyond economic growth. Even in the presence of strong economic performance, inequalities between regions and within regions can persist. A single indicator often does not correlate with development priorities of countries which encompass multiple dimensions aimed at improving the standard of living of citizens. Composite indices have emerged as an alternative to using a single indicator or even a portfolio of indicators, where the scattered information is difficult to grasp or utilize for policy decisions. Portfolios of development indicators are informative and necessary, however the information is scattered and so there is need for a summary measure that combines some of these indicators into a single number. This approach has given rise to the construction of composite indices of development. The CI reflects a 'complex system' that consists of numerous 'components', making it easier to understand in full rather than reducing it back to its 'parts'. relevance of composite indicators within this multidimensional approach • ability to integrate large amounts of information into easily understood formats and transform information into knowledge → both for analytical and policy purposes • are becoming widely used to assess territorial units' performance in various areas

Composite indicators are statistical models used to present complex data in a way that is useful for analysis and for policy makers to make decisions. composite indicators have gained astounding popularity in all areas of research. From social aspects to governance and the environment, the number of their applications is constantly growing at a rapid pace. The number of CIs in existence around the world is growing year after year. Moreover, their widespread adoption by global institutions like the UN, World Bank, EU for example has led to their popularity while their simplicity has further strengthened the case for their adoption in several practices.

Such composite indicators provide simple comparisons of countries that can be used to illustrate complex and sometimes elusive issues in wide-ranging fields, e.g., environment, economy, society or technological development. Some well-known composite indices are the UNDP's Human Development Index, the Gender Equality Index and the World Competitiveness Index.

Table 1: Pros and Cons of Composite Indicators

PROS	CONS
Effectively summarizes complex, multi-dimensional realities with a view to supporting decision making	Poorly constructed or misinterpreted indexes can lead to wrong policy messages
Enables comparison of complex dimensions effectively.	May invite simplistic policy conclusions.
Can assess progress of regions over time.	May be misused, e.g. to support a desired policy, if the construction process is not transparent and/or lacks sound statistical or conceptual principles.
Reduces the size of a set of indicators without dropping the underlying information	The selection of indicators and weights could be the subject of political dispute.

Composite indicators (CIs) which compare regional performance are increasingly recognised as a useful tool in policy analysis and public communication. Composite indices of regional development support policy makers in assessing the progress between countries and among regions within a country. They allow governments to have a more comprehensive and multidimensional view of regional development that goes beyond economic growth to socioeconomic development. Policies that are place based can be designed taking into account the level of development of different regions in a country. Many countries have introduced policies and programmes to support less developed regions that lag behind others. The indices can also be used to monitor and evaluate the impact of regional development policies over time. The results of these efforts, provide input for further policy adjustments and design, The policies that provide favorable outcomes are retained, while those that do not produce desired outcomes are either eliminated or redesigned.

1.1. The need for a CI to assess regional development in Azerbaijan

In looking at how data can be used to inform policy makers about the relative status of districts and regions of Azerbaijan, it was felt that the development of a Composite Regional Development Index (CRDI) would provide an effective policy tool for policy makers to gauge the level of development in the districts of Azerbaijan and among the 14 economic regions. It would allow for granular data to be used to identify the leading and lagging districts within an economic region and in the country. This would be an essential

step in designing appropriate policies taking into account the level of development of each district as opposed to broad policies of each region that do not factor in the various levels of development between districts. There are three indices that comprise the Composite Regional Development Index (CRDI). This includes the Social and Economic Development Index (SEDI), the Environmental Index (EI) and the Technology and Innovation Index (TII). Development of the districts and regions can thus be assessed on key development dimensions: socio-economic and environmental and also technology and innovation a key driver for future growth.

CRDI could be a valuable tool to monitor regional development to inform in an easily accessible manner, citizens and policymakers about the progress achieved with regard to regional development. The index could also support informed decision making in particular to develop programs for the development of the less development regions thus fostering more balanced growth. In Azerbaijan despite strong progress regional imbalances persist and the growth of Baku exerts a strong pull for people to migrate from the regions to the capital in search of better educational and economic opportunities. The starting point while developing the CRDI were the national priorities for socio-economic development as stated in Azerbaijan 2030 National Priorities for Socioeconomic Development and further elaborated in the Socioeconomic Development Strategy 2022-2026 of the Republic of Azerbaijan. Five national priorities for stressed in these documents:

1. A steadily growing, competitive economy
2. A dynamic, inclusive society based on social justice
3. Areas of modern innovations and competitive human capital
4. The great return to the territories liberated from occupation
5. A clean environment and country of “green growth”

The priorities thus cover socioeconomic development, technology and innovation and environmental protection. The CRDI comprises three separate indices that cover four of these priorities.

1. The Socioeconomic Development Index provides information at the level of regions and districts on the first two goals of a competitive economy with steady growth and an inclusive society.
2. The Environment Index provides data on the priority area of clean environment and green growth.
3. The Technology and Innovation Index or TII gives information to develop areas of modern innovations and competitive human capital

Table 2: Indices constructed by theme and region/districts of Azerbaijan

Region/District	CRDI	TII	EI	Education Index	Health Index
Economic Regions	✓	✓	✓		
District and Cities, without Baku	✓	✓	✓	✓	✓
Lankaran-Astara Region	✓	✓	✓		

Composite indices were generated using the Principal Component Analysis approach, which is a factor analysis method for both economic regions and districts. With the exception of Baku, Azerbaijan has 64 administrative districts besides cities, in addition to 14 economic regions which includes Baku. A total of three indices as stated were utilized for this analysis. The 57-indicator CRDI has been constructed incorporating three different dimensions socioeconomic indicators, technology and innovation variables and environmental data. Each of these indices was applied to each and every economic region and district of the country. The regions and districts are then ranked and also grouped based on their performance on the CRDI. Baku was found to be an outlier due to the fact that it is the commercial and economic core of the country, as well as the administrative, social, scientific and technology center. As a result, the CRDI, TII and EI were applied with Baku excluded from the analysis. The Annex also has additional education and health indices covering just districts. The three indices have been also developed for the Lankaran-Astara Economic area since its inception.

The ranking of districts using the index could be utilized for monitoring and evaluating regional development programs. It is a valuable tool that makes it possible to identify and compare the levels of development and trends that are present in districts, cities, and regions. Numerous institutions could make use of these indices as a reference point for a variety of policy applications.

2. METHODOLOGY

2.1. Principal Component Analysis Applied on the Basis of Region and Theme

The Principal Component Analysis approach was used as a component analysis method, to develop the indices for this analysis. There are several applications for principal component analysis (PCA), including the display of data, the reduction of noise, and the extraction of features. When working with datasets that contain a large number of linked variables, it enables a more condensed representation of the data while still keeping information that is important. Methods such as indexing and taxonomy were utilized in the initial research conducted to ascertain the degree of socio-economic development of regions and districts. In recent years, multi-criteria decision theory is being utilized more often for ranking and grouping. Despite the fact that decision theory permits the utilization of qualitative data, it is susceptible to subjective assessment regarding the weights assigned to variables. When using these methods, a subjective determination is usually made regarding the weights assigned to variables used to assess development or it is assumed that all variables are of equal importance. However such an approach may raise concerns regarding the objectivity and reliability of the analysis.

For ranking and classification, it is essential to ascertain the weights of variables in an objective manner for reliable results. The Principal Components Analysis is the method of choice utilized by a number of researchers. By using this method, it is possible to discover the fundamental meaning contained in data sets of varying sizes and types. The method is responsible for calculating the weights of the variables. To utilize principal component analysis, it is necessary for the variables to satisfy the conditions of continuity, symmetry, and normal distribution.

Multivariate statistical analysis examines "p" variables (features) associated with "n" individuals (objects). The fact that several of these characteristics are interdependent (dependent) and the "p" value is so high poses difficulties for the analysis. Dealing with a large number of variables not only increases processing load but could also violate the (approximate) independence rule of the variables. In addition, there may be difficulties in interpreting the outcomes. Although processing load is not viewed as a concern in today's technologically advanced society, it can be extremely challenging to analyze and present analysis results for a huge number of variables. PCA is the most essential approach employed in such situations (Principal Component Analysis). PCA, which is typically used to eliminate the dependency structure between variables and/or to reduce the size, i.e. to

collect the variables into a smaller number and certain basic components/factors, is not only an analysis in and of itself, but also a data preparation technique for other analyses.

Matrix of n persons (observations) and p variables. Considering X in the " p "-dimensional space, the data matrix (each individual represents a point) can be described as a collection of numerous points (point cloud). Since there cannot be complete independence between the variables, the axes of the geometric shape given in cloud form cannot be perpendicular to one another, and so its definition is impossible. However, placing these spots on an ellipsoid with perpendicular axes will provide more specific and explanatory data. In this transformation, the total variance of the points along the axes remains unchanged, and the new axes are perpendicular to one another.

A step-by-step explanation of how the principal component analysis (PCA) is done is below:

1. Standardization: First, the data is transformed so that it has a mean of zero and a standard deviation of one. This is the first step in the process of standardizing the data. All of the variables will then be on a scale that is comparable.

2. Calculation of the Covariance Matrix: PCA is used to compute the covariance matrix of the data that has been normalized. A representation of the relationships that exist between the various variables is provided by the covariance matrix. Annex 2 provides details on data normalization done.

3. Calculation of Eigen values and Eigen vectors: Next the eigenvalues and eigenvectors of the covariance matrix were calculated. Eigenvalues are a measure of the amount of variation that is captured by each principal component, and eigenvectors give an indication of the direction in which these components are moving.

4. Sorting and Selection: A descending order is used to sort the eigenvalues, and the accompanying eigenvectors are placed in accordance with this order. Among the variables included in the principal components those with the largest eigenvalues yield the most information.

5. Projection: Through the process of projecting the data onto the primary components that have been chosen, a new subspace is created. This leads in a new set of variables that are not connected with one another and are referred to as the principal component scores.

2.3. KMO and Bartlett's Tests

The Kaiser-Meyer-Olkin (KMO) and Bartlett test have been used to test the adequacy of the sampling. These tests evaluate all available data together. A KMO value

over 0.5 and a significance level for the Bartlett's test below 0.05 suggest there is substantial correlation in the data. Variable collinearity indicates how strongly a single variable is correlated with other variables.

3. DATA FOR ASSESSING REGIONAL DEVELOPMENT

3.1. Key Variables

The CRDI is a composite measure that combines various indicators to assess and compare the overall development status of different regions and districts. The choice of indicators can vary depending on the goals, context, and available data, but here are some commonly used indicators for comparing performance with regard to regional development.

Gross Domestic Product (GDP) per Capita:

GDP per capita is a key economic indicator that measures the average economic output per person. It provides insights into the overall economic well-being of a region.

Education Indicators:

Literacy Rate: The percentage of people who can read and write in the population.

Average Years of Schooling: The average number of years a person aged 25 or older has spent in formal education.

Health Indicators:

Life Expectancy at Birth: The average number of years a newborn can expect to live.

Infant Mortality Rate: The number of deaths of infants under one year old per 1,000 live births.

Employment and Unemployment Rates:

The percentage of the working-age population that is employed and the percentage that is unemployed.

Income Inequality Measures:

Gini Coefficient: A measure of income inequality within a population, where 0 represents perfect equality and 1 represents perfect inequality.

Poverty Rate: The percentage of the population living below the poverty line.

Infrastructure and Access:

Access to Clean Water and Sanitation: The percentage of the population with access to clean water and proper sanitation facilities.

Electricity Access: The percentage of the population with access to reliable electricity.

Technology Adoption:

Internet Penetration Rate: The percentage of the population with access to the internet.

Mobile Phone Usage: The prevalence of mobile phone ownership and usage.

Environmental Sustainability:

Carbon Emission Levels: The amount of greenhouse gas emissions per capita.

Forest Coverage: The percentage of land covered by forests.

Human Development:

Human Development Index (HDI): The HDI is a composite index developed by the UN that includes indicators related to life expectancy, education, and income, providing a comprehensive measure of human development.

3.1.1. Set of Variables used for Analysis

A total of 57 indicators under 8 different themes are used to create the CRDI. The data used is from 2020-2022. Availability of data was the primary constraint in the selection of indicators. Indicators of well-being, such as the GINI coefficient, are not produced at the regional level. The lack of a sufficient number of indicators, especially regarding the environment and innovation, limits the explanatory power of the analysis. Therefore, the most relevant indicators related to the key dimensions of regional development available in the State Statistical System were selected.

1. Demographic Indicators

Table 3: Demographic Indicators

	Var. Code	Theme	Variable Name	Source
1.	DEM1	Demography	Population	AZSTAT
2.	DEM2	Demography	Population density for 01.01.2021 (per 1 sq. km, person)	AZSTAT
3.	DEM3	Demography	Average Age - Tot	Calculated using age-group-specific population data.
4.	DEM4	Demography	Average Age - Men	Calculated using age-group-specific population data.
5.	DEM5	Demography	Average Age - Women	Calculated using age-group-specific population data from AZSTAT
6.	DEM6	Demography	Population Share In Country (%)	AZSTAT
7.	DEM7	Demography	Urbanization Rate (%) = Urban Pop/Total Pop	Calculated using data from AZSTAT
8.	DEM8	Demography	Unemployed receiving fixed social benefits by cities and districts of the country per 1000 population	AZSTAT

2. Economic Indicators

Table 4: Economic Indicators

	Var. Code	Theme	Variable Name	Source
9.	ECO1	Economy	Gross Domestic Product	Calculated using Regional Output, Regional Investment, Regional Income Data
10.	ECO2	Economy	GDP Per Capita	Calculated using Regional Output, Regional Investment, Regional Income Data
11.	ECO3	Economy	Ratio of output production in main branches of economy in the regions of the country, in percent	AZSTAT
12.	ECO4	Economy	Per capita volume of output production in main branches of economy in the regions of the country, in manats	AZSTAT
13.	ECO5	Economy	Government Investment	AZSTAT
14.	ECO6	Economy	Private Investment	AZSTAT
15.	ECO7	Economy	Income of population by economic regions of the country, %	AZSTAT
16.	ECO8	Economy	Labor force share of region %	AZSTAT
17.	ECO9	Economy	Distribution of employed population by economic activities - Agriculture, forestry and fishing	AZSTAT
18.	ECO10	Economy	Distribution of employed population by economic activities - Manufacturing	AZSTAT

	Var. Code	Theme	Variable Name	Source
19.	ECO11	Economy	Tax Payer- Legal Entities	AZSTAT
20.	ECO12	Economy	Tax Payer- Individual	AZSTAT
21.	ECO13	Economy	Number of newly established individual entrepreneurship entities	AZSTAT
22.	ECO14	Economy	Current Enterprises	AZSTAT

3. Health Indicators

Table 5: Health Indicators

	Var. Code	Theme	Variable Name	Source
23.	HEALTH1	Health	Number of diseases per 10000 population	AZSTAT
24.	HEALTH2	Health	Number of physicians per 10000 population	AZSTAT
25.	HEALTH3	Health	Number of paramedical staff per 10000 population	AZSTAT
26.	HEALTH4	Health	Number of hospital beds per 10000 population	AZSTAT
27.	HEALTH5	Health	Capacity of out-patient clinics per 10000 population	AZSTAT
28.	HEALTH6	Health	Infant mortality by economic regions and administrative cities and districts	AZSTAT
29.	HEALTH7	Health	Number of births by women by economic regions and administrative cities and districts	AZSTAT
30.	HEALTH8	Health	Average Age of Death	AZSTAT
31.	HEALTH9	Health	Life Expectancy at birth	AZSTAT

4. Education Indicators

Table 6: Education Indicators

	Var. Code	Theme	Variable Name	Source
32.	EDU1	Education	Utilization rate of sports infrastructure (People/Sport establishment)	AZSTAT
33.	EDU2	Education	Proportion of the population doing sports per thousand population	AZSTAT
34.	EDU3	Education	Share of students who completed secondary education and admitted to higher educational institutions - Men	AZSTAT
35.	EDU4	Education	Share of students who completed secondary education and admitted to higher educational institutions - Women	AZSTAT
36.	EDU5	Education	Average Schooling Year	Calculated using age-group-specific education data.
37.	EDU6	Education	Average Schooling - Men	Calculated using age-group-specific education data.
38.	EDU7	Education	Average Schooling - Women	Calculated using age-group-specific education data.
39.	EDU8	Education	Employment in the Education Sector	AZSTAT

5. Technology and Innovation Indicators

Due to limitations in the availability of technology and innovation indicators, at the regional level higher education variables were used as potential innovation indicators. This approach is based on the assumption that the main role of universities is to produce knowledge, science and technology and innovation.

Table 7: Technology and Innovation Indicators

	Var. Code	Theme	Variable Name	Source
40.	TECH1	Innovation, Technology & Education	Number of Higher educational institutions	AZSTAT
41.	TECH2	Innovation, Technology & Education	Number of New Higher Education Student	AZSTAT
42.	TECH3	Innovation, Technology & Education	Number of Registered Higher Education Student	AZSTAT
43.	TECH4	Innovation, Technology & Education	Number of Higher Education Graduates	AZSTAT
44.	TECH5	Innovation, Technology & Education	Employment of ICT Sector	AZSTAT
45.	TECH6	Innovation, Technology & Education	Employment in Professional, scientific and technical activities	AZSTAT
46.	TECH7	Innovation, Technology & Education	Employment in Financial and insurance activities sector	AZSTAT
47.	TECH8	Innovation, Technology & Education	Income of population from the ICT Sector by economic regions of the country, in thsd. Manats	AZSTAT
48.	TECH9	Innovation, Technology & Education	Distribution of employed population by economic activities - art, entertainment and recreation	AZSTAT

6. Environmental Indicators

Table 8: Environmental Indicators

	Var. Code	Theme	Variable Name	Source
49.	ENV1	Environment	Electricity Consumption of Region	AZSTAT
50.	ENV2	Environment	Use of water for domestic and drinking needs by economic and administrative region and towns of the country million m3 - Per Resident	AZSTAT
51.	ENV3	Environment	Irrigation and water supply for agriculture by economic and administrative regions and towns of the country (million m3)	AZSTAT
52.	ENV4	Environment	Discharger of waste water by economic and administrative regions and towns of the country (million m3)	AZSTAT
53.	ENV5	Environment	Air pollutant emissions from stationary sources by economic and administrative regions and towns of the country (thsd. ton)	AZSTAT
54.	ENV6	Environment	Water consumption by economic and administrative regions and cities of the country per capita	AZSTAT
55.	ENV7	Environment	Polluting substances released into the atmosphere, per sq km2	AZSTAT
56.	ENV8	Environment	Employment of Electricity, gas and steam production, distribution and supply sector	AZSTAT
57.	ENV9	Environment	Employment of Water supply; waste treatment and disposal sector	AZSTAT

4. UNIT OF ANALYSIS

Azerbaijan's 14 economic regions that includes Baku Economic Region and 64 districts excluding Baku city have been ranked on the CRDI, TII index and EI and the CRDI. The list of regions and districts subject to analysis is given in Table 9 below.

Table 9: Economic Regions and Districts of Azerbaijan that form the basis of analysis

	Region		Region
1	Baku city -total		
2	Nakhchivan Autonomous Republic -total	49	Lankaran-Astara economic region -total
3	Nakhchivan city	50	Astara district
4	Babak district	51	Jalilabad district
5	Julfa district	52	Lerik district
6	Kangarli district	53	Lankaran district
7	Ordubad district	54	Masalli district
8	Sadarak district	55	Yardimli district
9	Shahbuz district	56	Central Aran economic region -total
10	Sharur district	57	Mingachevir city
11	Absheron-Khizi economic region -total	58	Agdash district
12	Sumgayit city	59	Goychay district
13	Absheron district	60	Kurdamir district
14	Khizi district	61	Ujar district
15	Daghigh Shirvan economic region -total	62	Yevlakh district
16	Aghsu district	63	Zardab district
17	Ismayilli district	64	Mil-Mughan economic region -total
18	Gobustan district	65	Beylagan district
19	Shamakhi district	66	Imishli district
20	Ganja-Dashkasan economic region -total	67	Saatli district
21	Ganja city	68	Sabirabad district
22	Naftalan city	69	Shaki-Zagatala economic region -total
23	Dashkasan district	70	Balakan district
24	Goranboy district	71	Gakh district
25	Goygol district	72	Gabala district
26	Samukh district	73	Oghuz district
27	Karabakh economic region -total	74	Shaki district
28	Khankandi city	75	Zagatala district
29	Aghjabadi district	76	Eastern Zangazur economic region -total
30	Aghdam district	77	Jabrayil district
31	Barda district	78	Kalbajar district
32	Fuzuli district	79	Gubadli district
33	Khojaly district	80	Lachin district
34	Khojavand district	81	Zangilan district
35	Shusha district	82	Shirvan-Salyan economic region -total
36	Tartar district	83	Shirvan city
37	Gazakh-Tovuz economic region -total	84	Bilasuvur district
38	Aghstafa district	85	Hajigabul district
39	Gadabay district	86	Neftchala district
40	Gazakh district	87	Salyan district
41	Shamkir district		
42	Tovuz district		
43	Guba-Khachmaz economic region -total		
44	Khachmaz district		
45	Guba district		
46	Gusar district		
47	Siyazan district		
48	Shabran district		

Table 10: Regions and Indicators for Analysis

[illegible]

5. RANKING OF REGIONS ON THE COMPOSITE REGIONAL DEVELOPMENT INDEX

In this section, CRDI, Innovation and Technology Index and Environmental Index have been prepared for the 14 economic regions. An overall comparison of the 14 economic regions may be useful in developing regional policies.

5.1. Composite Regional Development Index

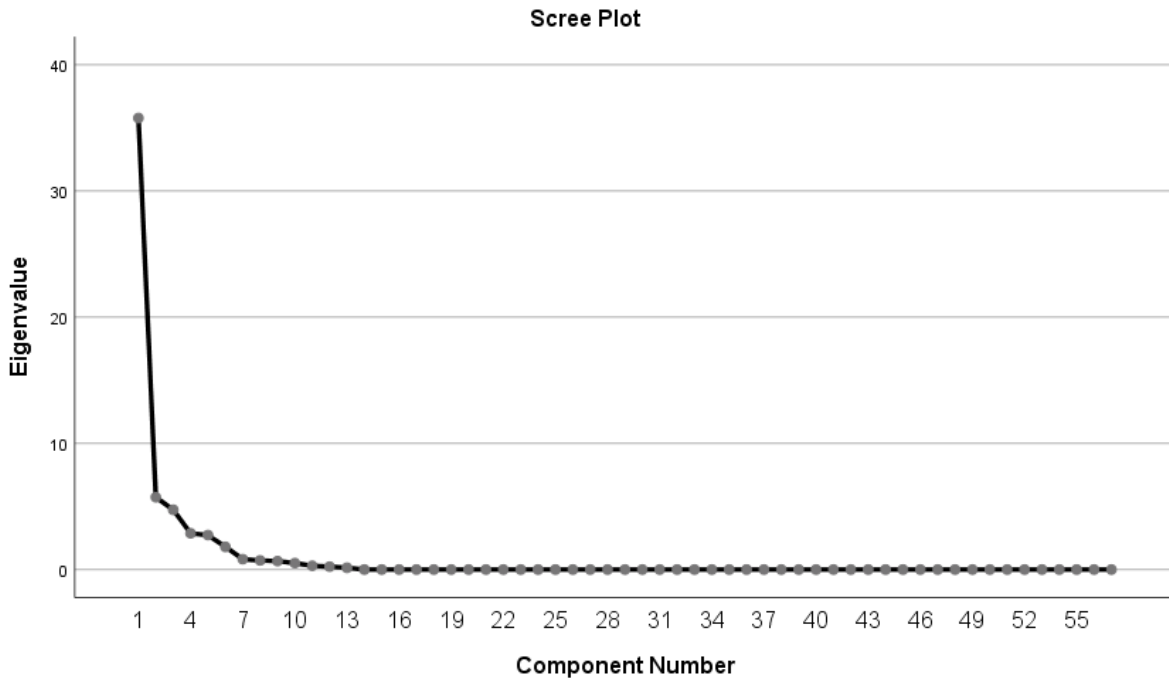
5.1.1. Eigen Values

Table 11: Eigen Values for CRDI Variables

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	35,771	62,756	62,756	35,771	62,756	62,756
2	5,726	10,045	72,801	5,726	10,045	72,801
3	4,735	8,307	81,108	4,735	8,307	81,108
4	2,868	5,031	86,139	2,868	5,031	86,139
5	2,727	4,785	90,924	2,727	4,785	90,924
6	1,794	3,148	94,072	1,794	3,148	94,072
7	0,823	1,443	95,515			
8	0,717	1,258	96,773			
9	0,669	1,174	97,947			
10	0,508	0,892	98,839			

As can be seen from the graph below, the first component has sufficient explanatory power. In a 14 x 57 matrix, a variance rate of 67.3% is quite sufficient.

Figure 1: Plotting of Eigen values of Components



5.1.2. Principal Components

Table 12 Principal Components for CRDI

Variable	1	2	3	4	5	6
DEM1	0,927	-0,328	0,081	-0,053	0,015	0,092
DEM2	0,981	-0,151	0,040	-0,047	-0,090	-0,027
DEM3	0,640	0,143	0,093	0,553	0,483	0,118
DEM4	0,661	0,142	0,051	0,496	0,516	0,099
DEM5	0,609	0,137	0,136	0,595	0,438	0,139
DEM6	0,919	-0,340	0,097	-0,024	0,047	0,089
DEM7	0,763	0,242	-0,472	0,115	0,069	-0,010
DEM8	0,305	0,576	0,411	0,286	-0,162	-0,066
ECO1	0,986	-0,120	0,045	-0,055	-0,063	-0,031
ECO2	0,958	0,122	-0,146	-0,182	0,012	-0,012
ECO3	0,988	-0,088	0,037	-0,051	-0,074	-0,046
ECO4	0,274	0,706	-0,187	-0,505	0,245	-0,076

Variable	1	2	3	4	5	6
ECO5	0,888	-0,020	0,148	0,344	-0,001	-0,069
ECO6	0,981	-0,043	0,099	-0,092	-0,073	-0,062
ECO7	0,981	-0,144	0,052	-0,067	-0,068	-0,038
ECO8	0,944	-0,280	0,097	-0,049	0,037	0,091
ECO9	-0,327	-0,589	0,341	-0,260	0,230	0,398
ECO10	0,974	0,016	-0,150	0,000	0,017	0,046
ECO11	0,981	-0,149	0,018	-0,027	-0,098	-0,042
ECO12	0,923	-0,348	0,000	-0,112	-0,005	0,084
ECO13	0,560	-0,738	-0,039	-0,091	0,161	0,243
ECO14	0,978	-0,126	0,070	-0,025	-0,100	-0,065
HEALTH1	0,219	0,278	-0,729	0,194	-0,034	0,475
HEALTH2	0,992	0,014	-0,097	-0,023	0,006	0,033
HEALTH3	0,892	0,080	-0,101	-0,094	0,312	0,163
HEALTH4	0,667	0,259	0,356	0,537	-0,113	-0,165
HEALTH5	0,480	0,446	0,409	-0,333	0,436	-0,116
HEALTH6	0,404	-0,025	-0,807	0,201	-0,023	0,147
HEALTH7	-0,376	-0,555	0,040	-0,155	-0,281	0,143
HEALTH8	-0,116	0,253	0,899	-0,011	0,015	0,182
HEALTH9	-0,116	0,253	0,899	-0,011	0,015	0,182
EDU1	0,173	0,206	0,176	0,661	-0,566	-0,281
EDU2	0,448	0,330	-0,686	0,175	-0,200	0,156
EDU3	0,427	0,745	-0,028	-0,343	0,203	0,211
EDU4	0,485	0,662	0,201	-0,299	0,216	0,023
EDU5	0,834	0,415	-0,004	-0,113	-0,001	-0,062
EDU6	0,826	0,379	-0,019	-0,178	-0,155	-0,133
EDU7	0,813	0,430	0,010	-0,059	0,111	-0,009
EDU8	0,939	-0,283	0,146	0,037	0,023	0,087
TECH1	0,985	-0,072	0,082	-0,061	-0,081	-0,049
TECH2	0,988	-0,070	0,070	-0,049	-0,083	-0,025
TECH3	0,989	-0,066	0,060	-0,040	-0,085	-0,026
TECH4	0,989	-0,061	0,062	-0,039	-0,081	-0,035

Variable	1	2	3	4	5	6
TECH5	0,984	-0,120	0,059	-0,030	-0,092	-0,041
TECH6	0,985	-0,108	0,053	-0,018	-0,092	-0,048
TECH7	0,978	-0,147	0,074	-0,030	-0,085	-0,051
TECH8	0,982	-0,095	0,065	-0,036	-0,099	-0,059
TECH9	0,900	-0,213	0,082	0,102	0,170	0,219
ENV1	0,979	-0,158	-0,094	0,000	-0,042	0,005
ENV2	0,748	0,414	-0,445	-0,056	0,075	0,026
ENV3	-0,304	-0,481	-0,037	0,184	0,682	-0,239
ENV4	0,175	-0,040	-0,204	-0,163	0,160	-0,694
ENV5	-0,973	0,134	-0,074	0,055	0,093	0,096
ENV6	-0,258	-0,476	-0,254	0,018	0,580	-0,516
ENV7	0,980	-0,111	0,054	-0,029	-0,104	-0,072
ENV8	0,976	-0,132	-0,043	-0,124	0,041	-0,047
ENV9	0,990	-0,079	0,026	-0,051	-0,053	-0,065

5.1.3. Ranking of Economic Regions on the CRDI

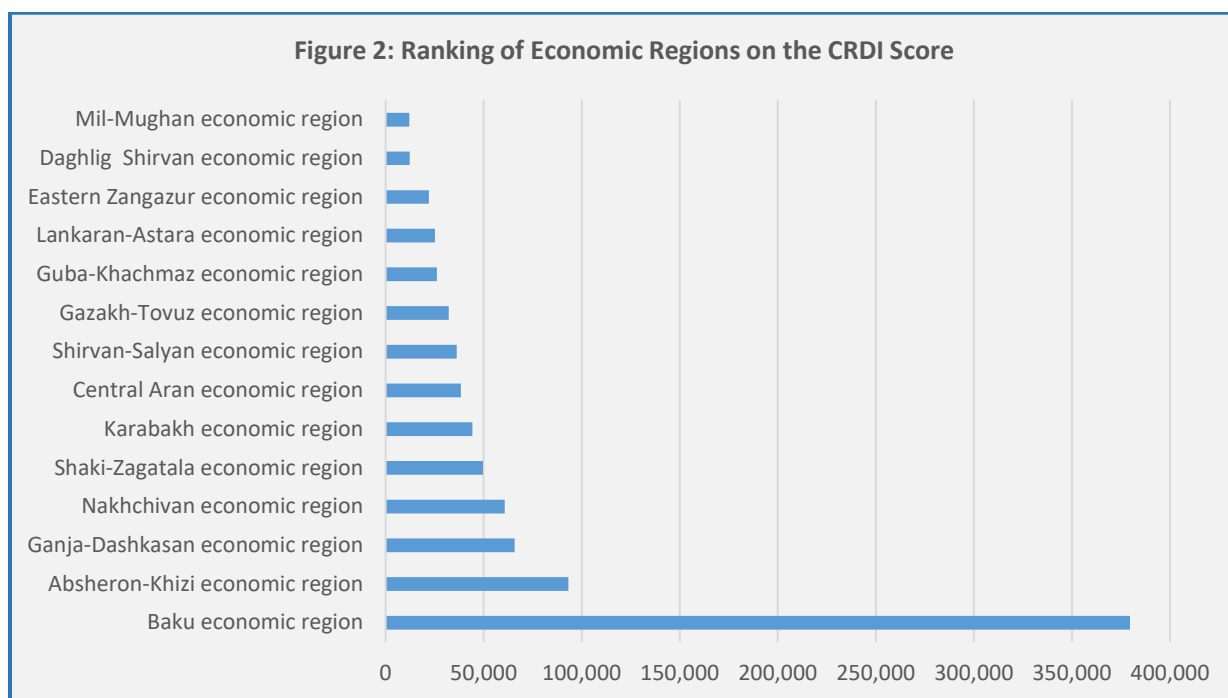


Table 13: Scores and Ranks of Economic Regions on the CRDI

<i>Region</i>	<i>CRDI Score</i>	<i>Rank</i>
Baku economic region	3,79,542	1
Absheron-Khizi economic region	93,183	2
Ganja-Dashkasan economic region	65,766	3
Nakhchivan economic region	60,728	4
Shaki-Zagatala economic region	49,658	5
Karabakh economic region	44,178	6
Central Aran economic region	38,299	7
Shirvan-Salyan economic region	36,256	8
Gazakh-Tovuz economic region	32,204	9
Guba-Khachmaz economic region	26,083	10
Lankaran-Astara economic region	25,208	11
Eastern Zangazur economic region	22,040	12
Daghligh Shirvan economic region	12,258	13
Mil-Mughan economic region	12,057	14

5.2. Innovation and Technology Index for the Economic Regions

5.2.1. Eigen Values

Table14: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8,779	97,548	97,548	8,779	97,548	97,548
2	0,202	2,245	99,794			
3	0,015	0,167	99,961			

Table 15: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,734
Bartlett's Test of Sphericity	Approx. Chi-Square	531,897
	df	36
	Sig.	0,000

5.2.2. Principal Components

Table 16 Principal Components used for the Analysis

Variable	Var. Code	Component 1
Number of Higher educational institutions	TECH1	0,997
Number of New Higher Education Student	TECH2	0,998
Number of Registered Higher Education Student	TECH3	0,998
Number of Higher Education Graduates	TECH4	0,998
Employment of ICT Sector	TECH5	0,998
Employment of Professional, scientific and technical activities Sector	TECH6	0,998
Employment of Financial and insurance activities sector	TECH7	0,997
35. Income of population by economic regions of the country, in thsd. Manats - ICT Sector	TECH8	0,996
9.8 Distribution of employed population by economic activities - Art, entertainment and recreation	TECH9	0,904

5.2.3. Ranking of Economic Regions on TII

Table 17: Ranking of Economic Regions on TII

<i>Region</i>	<i>TII Score</i>	<i>Rank</i>
Baku economic region	88,851	1
Ganja-Dashkasan economic region	0,8179	2
Absheron-Khizi economic region	0,6430	3
Shaki-Zagatala economic region	0,4633	4
Lankaran-Astara economic region	0,4378	5
Nakhchivan economic region	0,4344	6
Central Aran economic region	0,4022	7
Karabakh economic region	0,3939	8
Guba-Khachmaz economic region	0,2245	9
Gazakh-Tovuz economic region	0,1785	10
Shirvan-Salyan economic region	0,0903	11
Mil-Mughan economic region	0,0493	12
Eastern Zangazur economic region	0,0486	13
Daghlig Shirvan economic region	0,0224	14

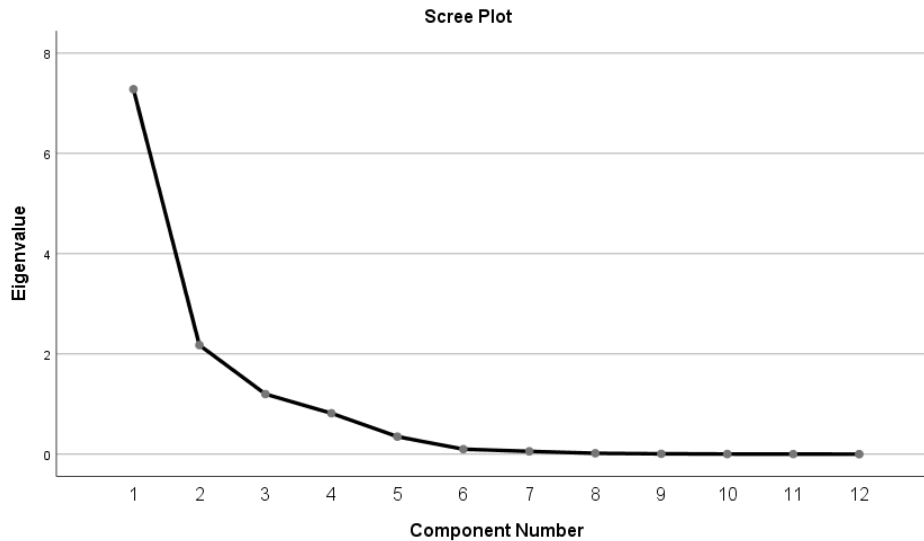
5.3. Environmental Index for Economic Regions

5.3.1. Eigen Values

Table 18: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7,280	60,663	60,663	7,280	60,663	60,663
2	2,175	18,129	78,791	2,175	18,129	78,791
3	1,199	9,988	88,780	1,199	9,988	88,780
4	0,816	6,798	95,577			
5	0,350	2,913	98,490			

Figure 3: Eigenvalues - Environmental Factors



Although the explanation rate in the Principal Component Analysis conducted with 12 environmental variables selected for 14 economic regions is at the level of 60%, the explanation level of the Environmental Index is not sufficient because the KMO and Bartlett's Test values are less than 0.50.

Table 19: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,299
Bartlett's Test of Sphericity	Approx. Chi-Square	329,728
	df	66
	Sig.	0,000

5.3.2. Principal Components

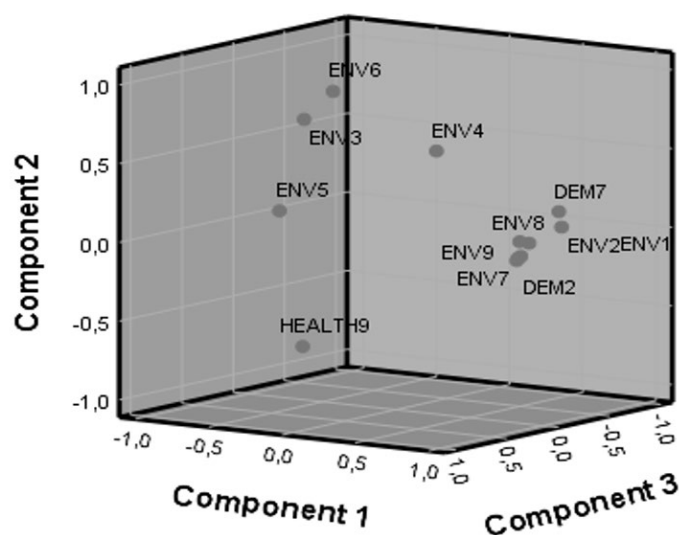
Table 20: Principal Components for Environmental Factors

	Component		
	1	2	3
ENV1	0,982	0,061	0,102
ENV2	0,792	0,059	-0,485
ENV3	-0,359	0,752	0,382
ENV4	0,235	0,547	-0,060

	Component		
	1	2	3
ENV5	-0,965	0,020	-0,243
ENV6	-0,258	0,920	0,244
ENV7	0,973	-0,035	0,211
ENV8	0,971	0,080	0,177
ENV9	0,982	-0,011	0,182
DEM2	0,975	-0,022	0,200
DEM7	0,806	0,165	-0,439
HEALTH9	-0,227	-0,648	0,585

Extraction Method: Principal Component Analysis. a. 3 components extracted.

Figure 4: Component Plot



5.3.3. Ranking of Economic Regions on EI

Table 21: Ranking of Economic Regions by Environment Index

Region	EI Score	Rank
Eastern Zangazur economic region	11,923	1
Karabakh economic region	11,407	2
Mil-Mughan economic region	10,448	3
Gazakh-Tovuz economic region	0,9645	4

<i>Region</i>	<i>EI Score</i>	<i>Rank</i>
Daghlig Shirvan economic region	0,7946	5
Shaki-Zagatala economic region	0,7037	6
Central Aran economic region	0,6861	7
Guba-Khachmaz economic region	0,6778	8
Lankaran-Astara economic region	0,5864	9
Nakhchivan economic region	0,3822	10
Shirvan-Salyan economic region	0,2764	11
Ganja-Dashkasan economic region	0,2131	12
Absheron-Khizi economic region	-12,174	13
Baku economic region	-63,779	14

5.3.4. Findings and Recommendations

Baku is undoubtedly the most developed economic region of Azerbaijan and the main growth pole of the country. It is outlier as it performs far above other regions. Next comes the Absheron-Khizi region, followed by Ganja-Dashkasan and Nakchivan economic regions. They form the top tier. The middle tier are the regions ranked from 5 to 9. The last tier includes those with scores below 30,000 and this includes the Lankaran-Astara economic region (LAER). The last two regions Dagliq Shirvan and Mil-Mugan have scores much below the others in the same tier. On the TII score Ganja-Dashkasan comes in second after Baku and LAER is fifth. This is due to the presence of institutions of higher learning in these regions. On the EI the position is reversed with the returned territories of East Zangazur and Karabakh on the top. The two regions which placed last on the CRDI score are in the top five of this tier. LAER is 9th and the top regions on CRDI have the lowest ranks on this index.

This index does not capture granular data within each region. For instance the Absheron-Khizi region includes Khizi one of the least developed districts in the country as seen in Table 25. Similarly Ganja-Dashkasan region has Dashkasan district which is among the lower ranked districts on CRDI in the country. To design policies that are appropriate based on the level of development it is better to use the district as the unit for comparison.

6. COMPOSITE REGIONAL DEVELOPMENT INDEX FOR 64 ADMINISTRATIVE DISTRICTS AND CITIES (EXCLUDING BAKU)

In this section, all economic regions were removed from the data set and only district level CRDI is produced. Some cities are also included as a sample. The Baku region was excluded from the analysis as it is an outlier. Regions newly liberated from occupation were included in the analysis conducted. AZSTAT continued to keep statistics for the population registered in these regions, and data especially on social variables were found to be sufficient. It will be beneficial to include these regions in the CRDI in the policies to be developed regarding regional development and will contribute to the appropriate policy steps and investments for these districts.

6.1. Composite Regional Development Index for Districts

6.1.1. Eigen Values

Table 22: Eigenvalues of Components CRDI for Districts and Cities

Component	Total Variance Explained					
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	19,609	34,402	34,402	19,609	34,402	34,402
2	7,361	12,914	47,316	7,361	12,914	47,316
3	4,620	8,106	55,422	4,620	8,106	55,422
4	3,765	6,605	62,027	3,765	6,605	62,027
5	2,729	4,787	66,814	2,729	4,787	66,814
6	2,440	4,280	71,095	2,440	4,280	71,095
7	2,082	3,652	74,747	2,082	3,652	74,747
8	2,045	3,588	78,334	2,045	3,588	78,334
9	1,806	3,169	81,503	1,806	3,169	81,503
10	1,503	2,637	84,141	1,503	2,637	84,141
11	1,143	2,005	86,146	1,143	2,005	86,146
12	1,003	1,759	87,905	1,003	1,759	87,905

6.1.2. Principal Components

Table 23: Principal Components used for CRDI

Var Code	1	2	3	4	5	6
DEM1	0,814	-0,509	0,092	0,179	-0,032	-0,023
DEM2	0,377	0,221	0,606	-0,236	-0,128	-0,270
DEM3	0,075	0,461	0,725	-0,293	-0,050	0,069
DEM4	0,083	0,468	0,698	-0,299	-0,052	0,063
DEM5	0,063	0,439	0,738	-0,282	-0,046	0,076
DEM6	0,808	-0,500	0,184	0,147	-0,028	-0,018
DEM7	0,561	0,445	0,142	-0,454	-0,080	0,058
DEM8	-0,137	0,594	0,492	0,169	-0,153	-0,010
ECO1	0,939	-0,134	0,004	0,041	0,064	-0,164
ECO2	0,517	0,344	-0,540	-0,032	0,283	0,014
ECO3	0,862	0,070	-0,049	-0,028	0,096	-0,251
ECO4	0,294	0,408	-0,338	-0,116	-0,396	0,122
ECO5	0,380	0,170	0,220	0,156	-0,231	-0,067
ECO6	0,544	0,440	-0,220	0,237	0,175	0,139
ECO7	0,925	-0,247	0,022	0,044	0,047	-0,017
ECO8	0,840	-0,456	0,124	0,184	-0,006	-0,002
ECO9	0,274	-0,741	0,001	0,273	0,131	0,165
ECO10	0,902	0,013	0,139	0,034	-0,084	-0,248
ECO11	0,895	-0,224	0,044	-0,107	-0,093	-0,140
ECO12	0,767	-0,577	0,011	0,010	0,038	0,076
ECO13	0,397	-0,724	-0,044	-0,080	0,170	0,084
ECO14	0,759	0,024	0,095	-0,080	-0,231	0,173
HEALTH1	0,228	0,067	0,083	-0,168	0,321	0,277
HEALTH2	0,736	0,326	-0,137	-0,127	0,419	0,156
HEALTH3	0,488	0,309	-0,121	-0,113	0,608	0,212
HEALTH4	0,174	0,382	0,222	0,166	0,272	0,299
HEALTH5	0,065	0,425	0,038	0,268	0,555	0,272

Var Code	1	2	3	4	5	6
HEALTH6	0,158	0,106	-0,278	-0,496	-0,328	0,308
HEALTH7	-0,016	-0,619	-0,026	0,017	-0,011	0,103
HEALTH8	-0,243	0,148	0,246	0,708	0,171	-0,341
HEALTH9	-0,243	0,148	0,246	0,708	0,171	-0,341
EDU1	-0,018	0,077	0,205	0,114	-0,150	0,038
EDU2	0,484	0,047	-0,512	-0,080	-0,012	0,220
EDU3	0,066	0,541	-0,418	0,238	-0,074	-0,148
EDU4	0,117	0,467	-0,386	0,377	0,042	-0,046
EDU5	0,427	0,408	-0,381	0,259	-0,328	-0,170
EDU6	0,384	0,342	-0,405	0,287	-0,326	-0,170
EDU7	0,434	0,440	-0,336	0,223	-0,311	-0,159
EDU8	0,750	-0,476	0,188	0,227	0,004	0,027
TECH1	0,722	0,345	0,075	0,236	0,152	0,330
TECH2	0,796	0,252	0,147	0,241	0,075	0,272
TECH3	0,809	0,240	0,165	0,226	0,021	0,258
TECH4	0,807	0,259	0,156	0,225	0,044	0,244
TECH5	0,908	-0,064	0,100	0,015	-0,091	-0,205
TECH6	0,920	-0,006	0,159	0,018	-0,134	-0,133
TECH7	0,877	-0,183	0,077	-0,038	-0,157	0,036
TECH8	0,718	0,213	0,013	-0,003	0,030	-0,372
TECH9	0,777	-0,258	0,192	0,164	0,000	0,043
ENV1	0,819	-0,240	-0,026	-0,127	-0,241	0,144
ENV2	0,553	0,461	-0,383	-0,183	-0,089	0,166
ENV3	0,046	-0,557	-0,144	-0,124	0,017	0,093
ENV4	0,148	0,064	-0,109	-0,434	0,345	-0,395
ENV5	-0,424	-0,110	0,154	0,358	-0,458	0,374
ENV6	0,043	-0,180	-0,248	-0,491	0,174	-0,143
ENV7	0,575	0,242	-0,052	-0,354	0,193	-0,543
ENV8	0,764	0,043	-0,040	-0,217	0,104	-0,204
ENV9	0,590	0,179	-0,192	-0,140	-0,357	0,206

6.1.3. Ranking on CRDI of Districts and Select Cities in Azerbaijan

Table 24: Ranking of Districts and Cities based on CRDI

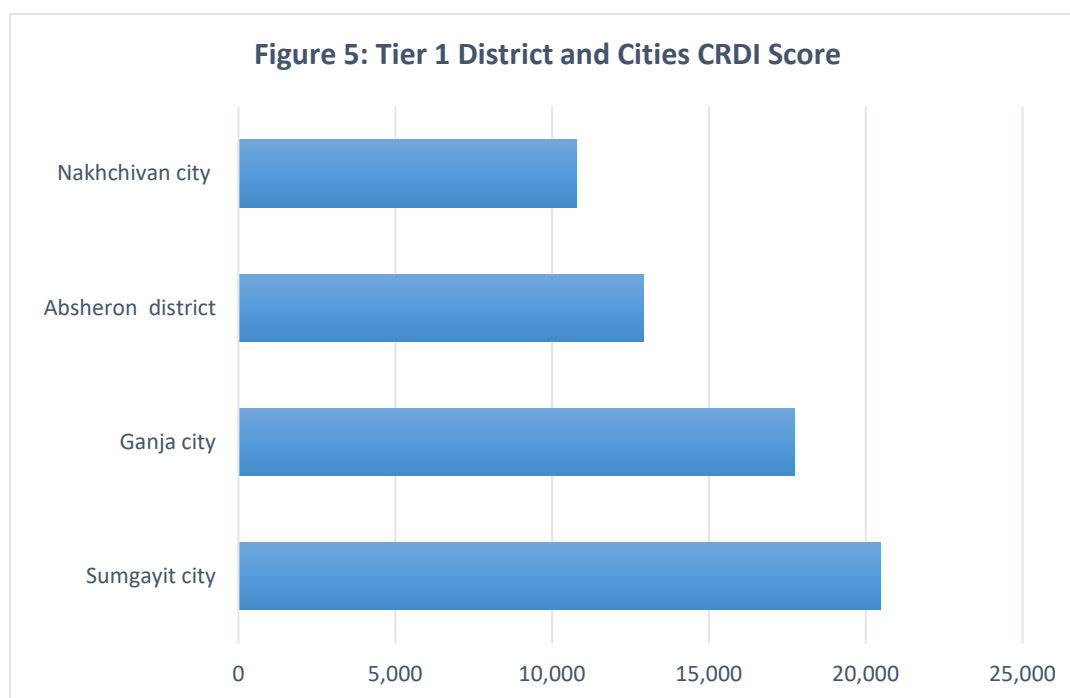
<i>Region</i>	<i>Index Score</i>	<i>Rank</i>
Sumgayit city	20,470	1
Ganja city	17,731	2
Absheron district	12,927	3
Nakhchivan city	10,783	4
Lankaran district	8,512	5
Mingachevir city	8,401	6
Shaki district	7,983	7
Shirvan city	7,464	8
Shamkir district	7,165	9
Barda district	6,745	10
Khachmaz district	6,617	11
Guba district	6,288	12
Masalli district	6,188	13
Jalilabad district	6,183	14
Tovuz district	5,875	15
Salyan district	5,509	16
Sabirabad district	5,195	17
Aghjabadi district	5,149	18
Gazakh district	5,086	19
Zagatala district	5,032	20
Imishli district	5,023	21
Gabala district	5,002	22
Yevlakh district	4,964	23
Sharur district	4,878	24
Aghdam district	4,768	25
Goychay district	4,690	26
Goranboy district	4,621	27
Beylagan district	4,449	28

Agdash district	4,366	29
Fuzuli district	4,314	30
Shamakhi district	4,138	31
Bilasuvar district	4,103	32
Kurdamir district	4,091	33
Gusar district	4,072	34
Neftchala district	3,982	35
Astara district	3,970	36
Naftalan city	3,902	37
Babak district	3,841	38
Gakh district	3,793	39
Hajigabul district	3,689	40
Balakan district	3,662	41
Saatli district	3,658	42
Ismayilli district	3,586	43
Goygol district	3,517	44
Aghsu district	3,120	45
Gadabay district	3,110	46
Ujar district	3,069	47
Siyazan district	3,055	48
Samukh district	3,035	49
Shabran district	2,993	50
Tartar district	2,953	51
Julfa district	2,936	52
Oghuz district	2,897	53
Aghstafa district	2,872	54
Zardab district	2,822	55
Ordubad district	2,781	56
Shusha district	2,423	57
Khizi district	2,404	58
Dashkasan district	2,387	59
Yardimli district	2,351	60

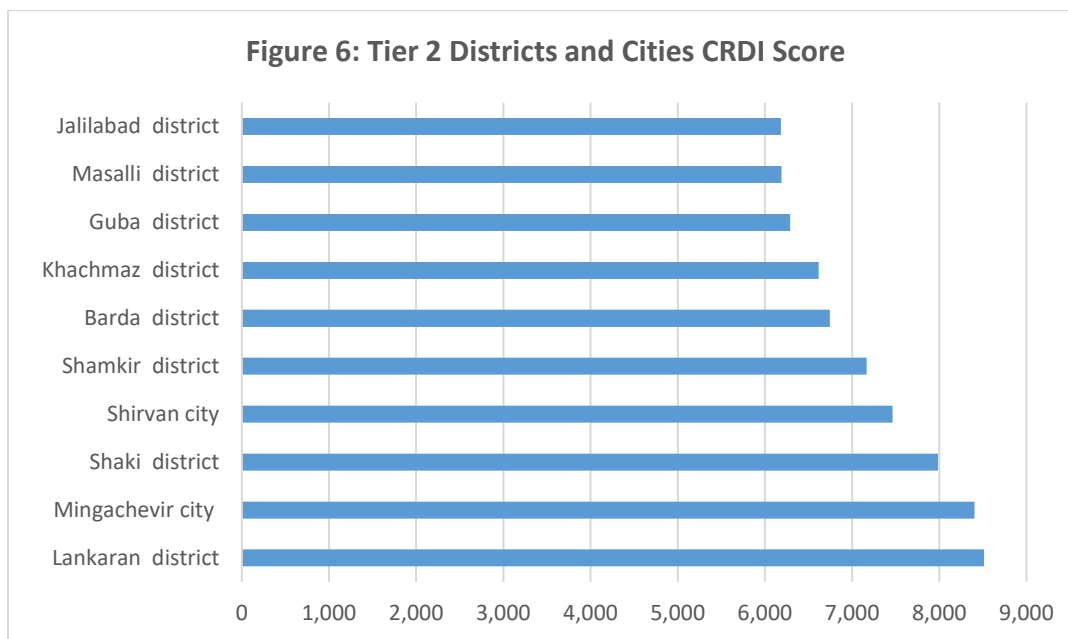
Kangarli district	2,343	61
Shahbuz district	2,281	62
Lachin district	2,218	63
Zangilan district	2,196	64
Lerik district	2,193	65
Jabrayil district	2,145	66
Gobustan district	2,134	67
Gubadli district	2,028	68
Kalbajar district	1,985	69
Sadarak district	1,919	70
Khojavand district	1,459	71
Khankandi city	0,848	72
Khojaly district	0,774	73

6.1.4. Grouping of districts and cities by level of development

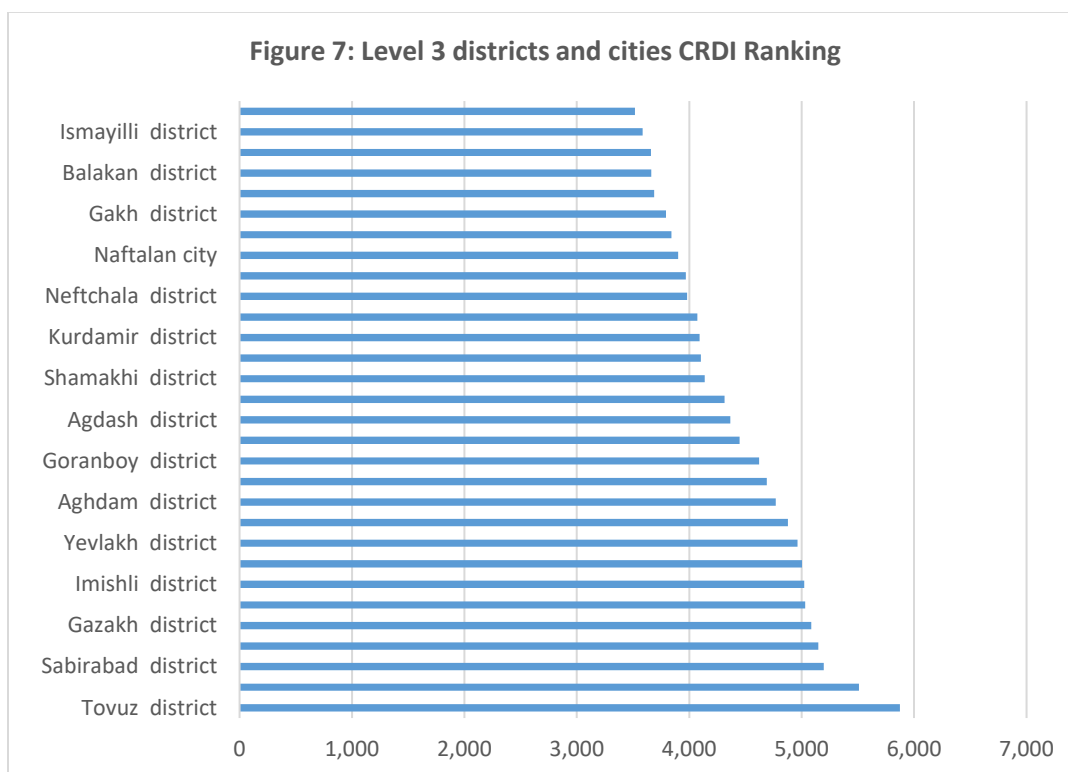
Tier 1 Districts and Cities-CRDI Ranking



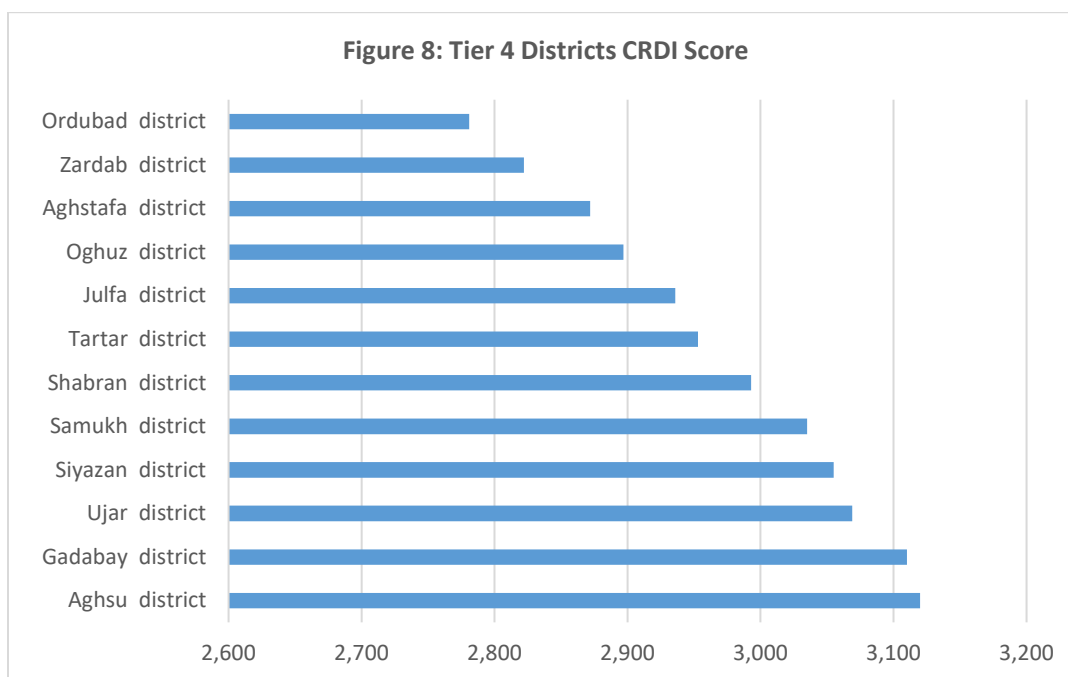
Tier 2 Districts and cities-CRDI Ranking



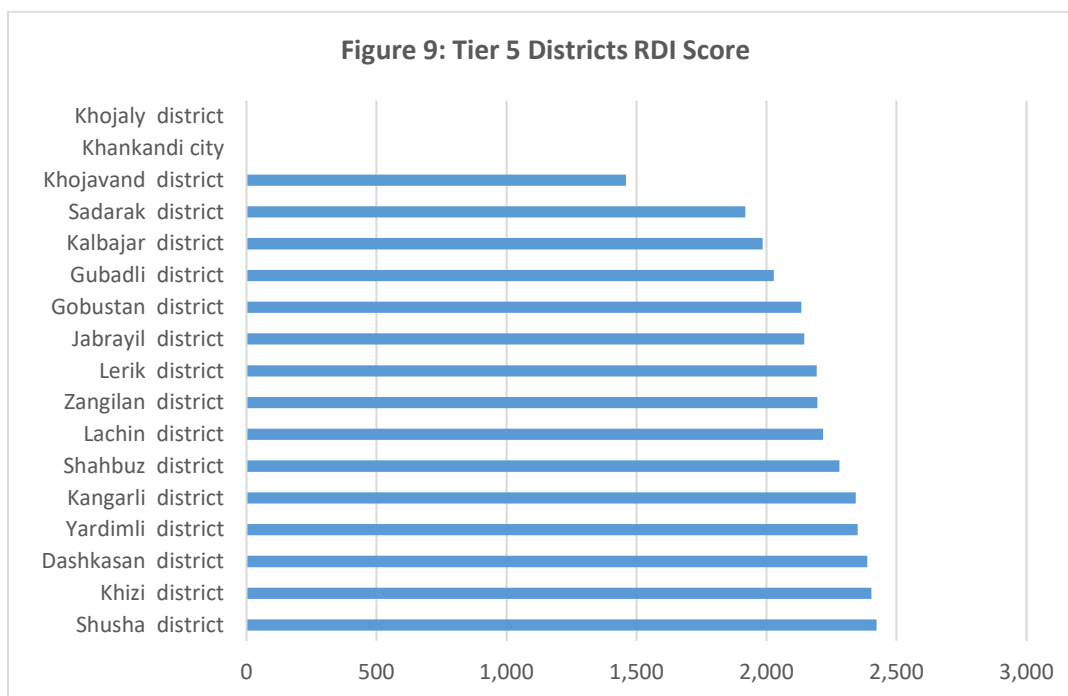
Tier 3 Districts and cities-CRDI Ranking



Tier 4 Districts and cities-CRDI Ranking



Tier 5 Districts and cities-CRDI Ranking



Map of Azerbaijan Districts by Level of Development on CRDI

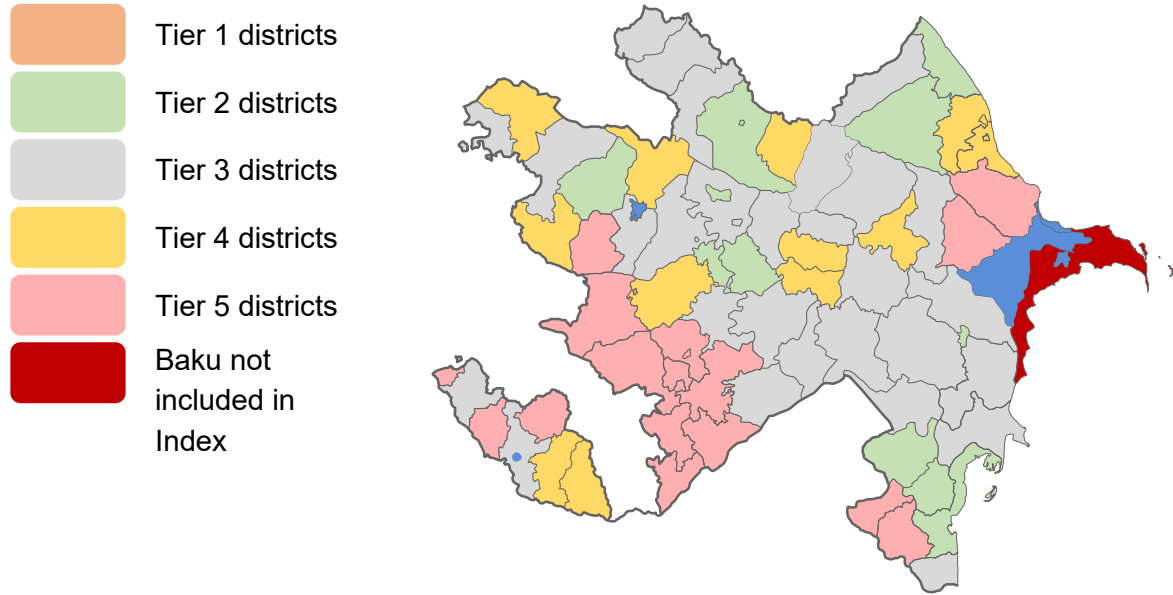


Table 25: Classification of Districts by Level of Development-CRDI

<i>Region</i>	<i>Index Score</i>	<i>Rank</i>	<i>Breaking Points</i>	<i>Level</i>	<i>Number</i>
Sumgayit city	20,470	1		1	4
Ganja city	17,731	2	15,5%	1	
Absheron district	12,927	3	37,2%	1	
Nakhchivan city	10,783	4	19,9%	1	
Lankaran district	8,512	5	26,7%	2	10
Mingachevir city	8,401	6	1,3%	2	
Shaki district	7,983	7	5,2%	2	
Shirvan city	7,464	8	6,9%	2	
Shamkir district	7,165	9	4,2%	2	
Barda district	6,745	10	6,2%	2	
Khachmaz district	6,617	11	1,9%	2	
Guba district	6,288	12	5,2%	2	
Masalli district	6,188	13	1,6%	2	
Jalilabad district	6,183	14	0,1%	2	
Tovuz district	5,875	15	5,2%	3	30
Salyan district	5,509	16	6,6%	3	
Sabirabad district	5,195	17	6,0%	3	
Aghjabadi district	5,149	18	0,9%	3	
Gazakh district	5,086	19	1,2%	3	

<i>Region</i>	<i>Index Score</i>	<i>Rank</i>	<i>Breaking Points</i>	<i>Level</i>	<i>Number</i>
Zagatala district	5,032	20	1,1%	3	
Imishli district	5,023	21	0,2%	3	
Gabala district	5,002	22	0,4%	3	
Yevlakh district	4,964	23	0,8%	3	
Sharur district	4,878	24	1,8%	3	
Aghdam district	4,768	25	2,3%	3	
Goychay district	4,690	26	1,6%	3	
Goranboy district	4,621	27	1,5%	3	
Beylagan district	4,449	28	3,9%	3	
Agdash district	4,366	29	1,9%	3	
Fuzuli district	4,314	30	1,2%	3	
Shamakhi district	4,138	31	4,3%	3	
Bilasuvär district	4,103	32	0,9%	3	
Kurdamir district	4,091	33	0,3%	3	
Gusar district	4,072	34	0,5%	3	
Neftchala district	3,982	35	2,3%	3	
Astara district	3,970	36	0,3%	3	
Naftalan city	3,902	37	1,8%	3	
Babak district	3,841	38	1,6%	3	
Gakh district	3,793	39	1,3%	3	
Hajigabul district	3,689	40	2,8%	3	
Balakan district	3,662	41	0,7%	3	
Saatli district	3,658	42	0,1%	3	
Ismayilli district	3,586	43	2,0%	3	
Goygol district	3,517	44	2,0%	3	
Aghsu district	3,120	45	12,7%	4	12
Gadabay district	3,110	46	0,3%	4	
Ujar district	3,069	47	1,3%	4	
Siyazan district	3,055	48	0,5%	4	
Samukh district	3,035	49	0,7%	4	
Shabran district	2,993	50	1,4%	4	
Tartar district	2,953	51	1,3%	4	
Julfa district	2,936	52	0,6%	4	
Oghuz district	2,897	53	1,4%	4	
Aghstafa district	2,872	54	0,8%	4	
Zardab district	2,822	55	1,8%	4	
Ordubad district	2,781	56	1,5%	4	

<i>Region</i>	<i>Index Score</i>	<i>Rank</i>	<i>Breaking Points</i>	<i>Level</i>	<i>Number</i>
Shusha district	2,423	57	14,8%	5	17
Khizi district	2,404	58	0,8%	5	
Dashkasan district	2,387	59	0,7%	5	
Yardimli district	2,351	60	1,5%	5	
Kangarli district	2,343	61	0,3%	5	
Shahbuz district	2,281	62	2,7%	5	
Lachin district	2,218	63	2,9%	5	
Zangilan district	2,196	64	1,0%	5	
Lerik district	2,193	65	0,1%	5	
Jabrayil district	2,145	66	2,2%	5	
Gobustan district	2,134	67	0,5%	5	
Gubadli district	2,028	68	5,2%	5	
Kalbajar district	1,985	69	2,2%	5	
Sadarak district	1,919	70	3,4%	5	
Khojavand district	1,459	71	31,6%	5	
Khankandi city	0,848	72	72,1%	5	
Khojaly district	0,774	73	9,5%	5	

6.1.5. Findings and Recommendations

The ranking of the Tier 1 cities and districts excluding Baku reveals that the most advanced Tier 1 has within it the main cities and the Absheron district which lies close to Baku. Since these districts are already doing well no policy response is recommended.

Table 26 Policy Responses based on level of Development of Districts

Tier	Policy Response-
1	Steady state
2	Amplify
3	Accelerate High
4	Accelerate Low
5	Activate

The ranking on the CRDI enables grouping of districts at similar stages of development. It allows a holistic understanding of the level of development of each district and what interventions and investments could help increase socioeconomic development of the districts. The ranking of districts on the index allows for more granular view of regional development than informed by looking at broad economic regions, that have districts grouped together into a statistical unit based on geographical proximity. Deciding on policy interventions at the level of the region when there is no administrative set up at that level leads to difficulty in implementing regional development programmes. This is because the functional units for all development interventions are the districts. All interventions thus have to be guided from the central level and do not follow the subsidiarity principle for local economic development.

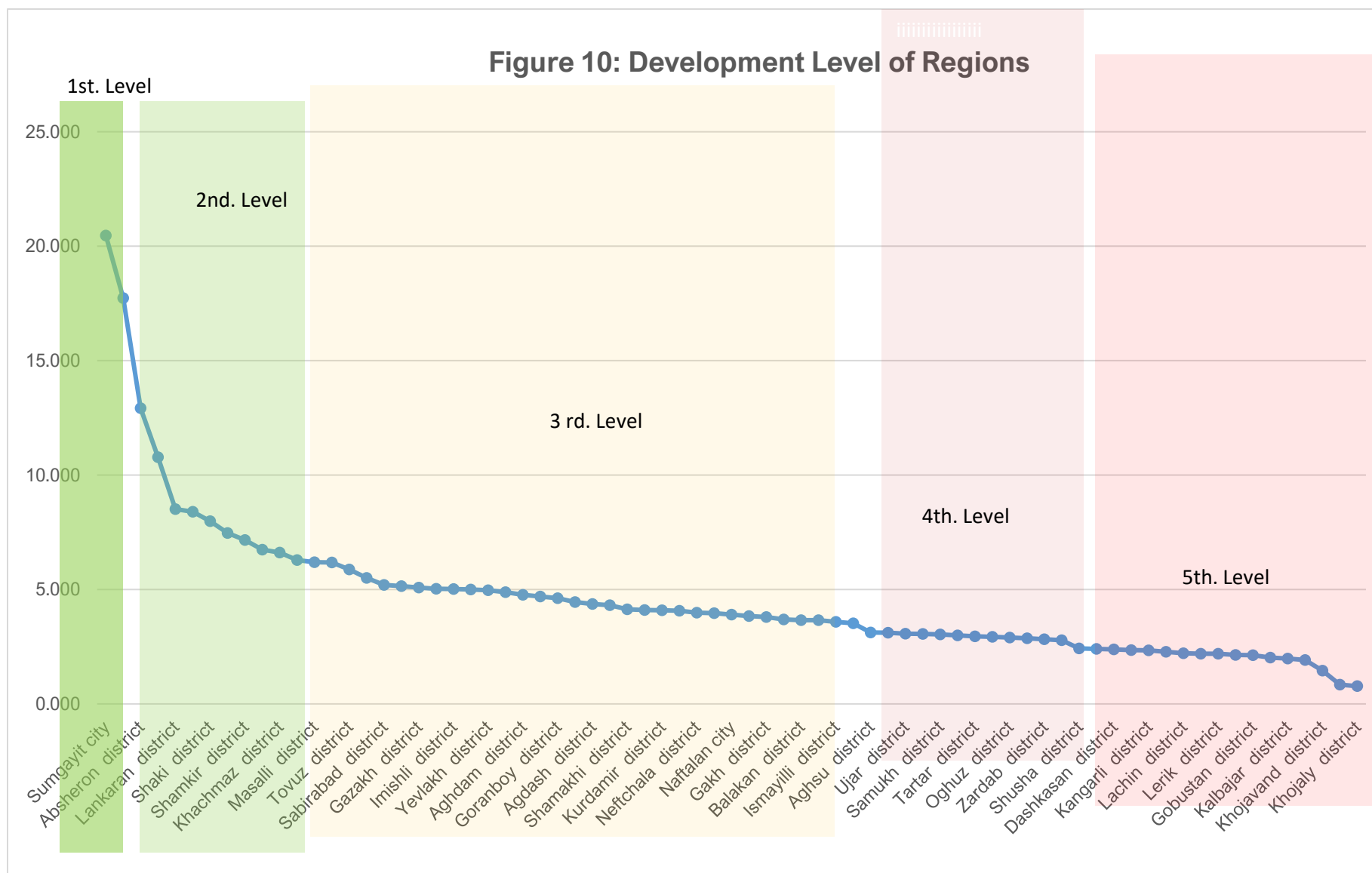
Depending on where the districts are on a continuum (excluding Baku) . five groupings have been created for all the districts along with some key cities. As can be seen from Figures 5 to 9, districts in the same grouping have scores within a similar range. For the top Tier 1 district and cities no further intervention is envisaged in terms of balanced growth. For the Tiers 2 to 5 groupings, different levels of intensity of policy responses are possible and are highly recommended.

Four policy response stages are stressed. These are: Activate, Accelerate High, Accelerate Low and Amplify in ascending order. For districts that are lagging behind at the lowest tier Tier 5 the recommended action is for steps to Activate their development through a focus on basic needs, investments in infrastructure, connectivity both physical and digital and linkages to markets. There are 17 districts in this group. These include districts in the Karabakh and East Zangilan Economic Regions where the government is reconstructing infrastructure and housing to resettle internally displaced persons and to activate economic activity. For the remaining districts in the tier which include two districts from the Lankaran=Astara Economic Region (LAER) Lerik and Yardimli, it is clear that an intensity of effort is needed beyond what is required for districts in the other tiers. It is recommended that a special programme be designed for the districts beyond those in the newly returned territories. A number of these districts are border regions at the edges of the country with a mountainous terrain (Lerik, Yardimli, Khizi, Shahbuz, Dashkasan, Sadarak). For remoter regions connectivity is key as well as investments in basic needs and human capital development. Building good transport infrastructure is fundamental to activating the growth of these regions, providing connection to markets and education. Investing in good digital infrastructure and digital literacy can also help bridge distances virtually enabling online education and commerce. In the case of LAER, the districts of Lerik and Yardimli should be well connected to the districts of Lankaran, Jalilabad and Masalli which lead the region. The basic needs of the population for housing, energy,

health and education needs to be met on an urgent basis to avoid the depopulation of these regions through the migration of able bodied men in search of education and work. Human capital development is especially important for remote lagging regions. The districts that place in the bottom tier conversely score the highest on the EI. This is because they practice traditional regenerative agriculture and have low carbon emissions and air pollution. This could be due the fact that a lack of industrial activity also leads to less pollution. Lerik and Yardimli are the water tower of LAER with all major rivers originating from their mountains. They also offer other ecosystem services to the region with their reserves and forests serving as carbon sinks. For such regions green growth should be encouraged to preserve their unique biodiversity and environment which can also attract tourists.

Districts in Tier 4 and 3 need interventions which Accelerate their growth at different levels of acceleration. Tier 4 districts will be slower to accelerate since they lack the foundational steps needed for quick acceleration so they need to be supported to ensure that growth factors in these districts are accelerated by ensuring the infrastructure and human capital is in place. These districts are closer to Tier 5 districts and several share features with them. For instance many are mountainous districts on the borders of the country or the Caspian Sea. Some are contiguous with Tier 5 districts for instance hahbran and Siyazan are close to Khizi a Tier 5 district. An option would be to design a special programme for the development for lagging mountain districts. For Tier 3 districts which sit in the middle of the regional development spectrum their growth factors can be accelerated at a higher pace on an Accelerate High mode. There are 30 districts in this tier and they are a varied grouping that needs further study. Those at the higher rungs have greater prospects of accelerating their development while those at the lower end which also include again mountain districts will need more efforts.

Tier 2 districts are best placed to Amplify their development. Interestingly three of the six districts of LAER fall in this tier with Lankaran the top district on this list. This is also helped by the fact that Lankaran placed high on the TII as having the only university in the region. This is more of an indication of the potential for innovation than a testament to innovation. Two other districts Jallabad and Masalli also make this tier with the two last spots. These findings show that if growth in these districts is amplified then all other districts which place lower in LAER will benefit. With Astara which lies in close proximity to Lankaran likely to benefit the most. In the case of Lankaran city which is the regional center it could be developed as an agritech and logistics center given its proximity to the North South and East West Transport Corridors. These districts also have higher rates of urbanization and many of their suburbs could be further developed to attract investments.



6.2. Innovation and Technology Index

6.2.1. Eigen Values

Table 27 Eigenvalues Innovation and Technology

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6,712	74,573	74,573	6,712	74,573	74,573
2	1,255	13,945	88,518	1,255	13,945	88,518
3	0,660	7,333	95,851			
4	0,219	2,436	98,287			
5	0,096	1,063	99,350			
6	0,035	0,386	99,737			

Table 28: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,737
Bartlett's Test of Sphericity	Approx. Chi-Square	1499,643
	df	36
	Sig.	0,000

6.2.2. Principal Components

Table 29: Technology and Innovation-Components

Var. Code	Component	
	1	2
TECH1	0,843	-0,496
TECH2	0,922	-0,378
TECH3	0,936	-0,339
TECH4	0,936	-0,332
TECH5	0,887	0,423
TECH6	0,916	0,349

Var. Code	Component	
	1	2
TECH7	0,854	0,206
TECH8	0,667	0,478
TECH9	0,772	0,264
Extraction Method: Principal Component Analysis.		

6.2.3. Ranking Technology and Innovation Index by Districts and cities

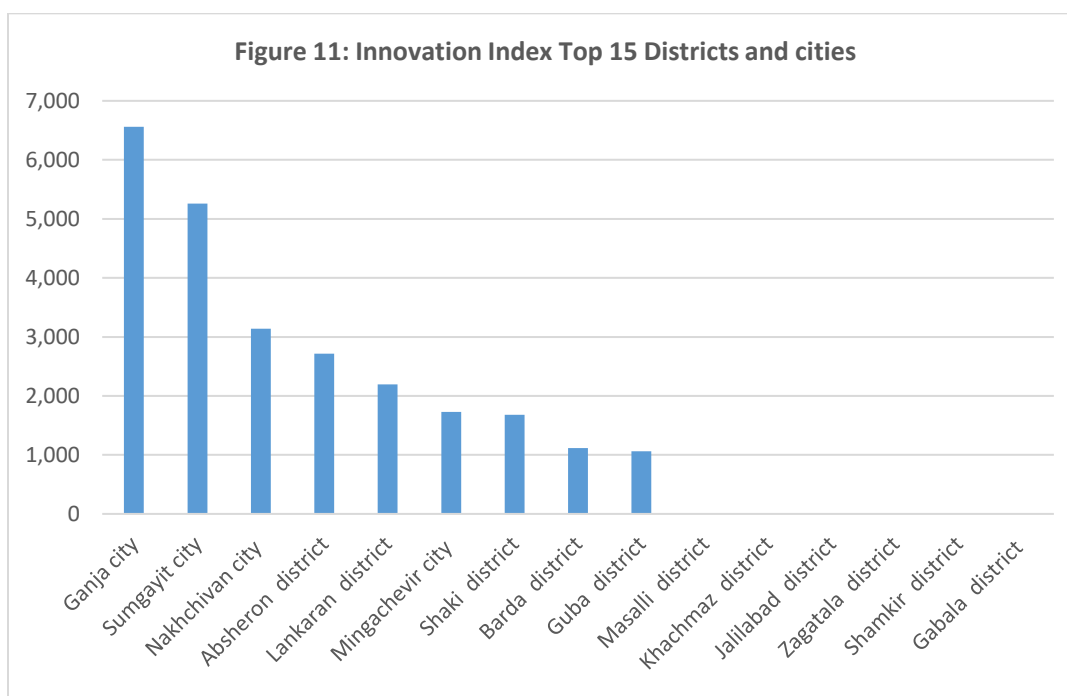


Table 30: Ranking of Districts and Cities – Technology and Innovation

Region	Index Score	Rank
Ganja city	6,560	1
Sumgayit city	5,260	2
Nakhchivan city	3,136	3
Absheron district	2,714	4
Lankaran district	2,196	5
Mingachevir city	1,728	6

Region	Index Score	Rank
Shaki district	1,680	7
Barda district	1,117	8
Guba district	1,059	9
Masalli district	0,856	10
Khachmaz district	0,850	11
Jalilabad district	0,821	12
Zagatala district	0,788	13
Shamkir district	0,723	14
Gabala district	0,679	15
Gazakh district	0,678	16
Yevlakh district	0,676	17
Aghjabadi district	0,671	18
Shirvan city	0,654	19
Sharur district	0,637	20
Goranboy district	0,629	21
Gusar district	0,573	22
Aghdam district	0,553	23
Shamakhi district	0,543	24
Agdash district	0,529	25
Tovuz district	0,523	26
Neftchala district	0,513	27
Fuzuli district	0,507	28
Sabirabad district	0,499	29
Goychay district	0,464	30
Goygol district	0,459	31
Salyan district	0,446	32
Imishli district	0,423	33

Region	Index Score	Rank
Kurdamir district	0,423	34
Astara district	0,414	35
Babak district	0,413	36
Ismayilli district	0,405	37
Bilasuvar district	0,401	38
Gakh district	0,394	39
Balakan district	0,390	40
Gadabay district	0,389	41
Samukh district	0,381	42
Saatli district	0,379	43
Lerik district	0,367	44
Zangilan district	0,363	45
Beylagan district	0,361	46
Tartar district	0,358	47
Ujar district	0,348	48
Aghstafa district	0,348	49
Zardab district	0,346	50
Shusha district	0,344	51
Dashkasan district	0,322	52
Aghsu district	0,305	53
Oghuz district	0,304	54
Yardimli district	0,303	55
Gubadli district	0,301	56
Shabran district	0,283	57
Jabrayil district	0,281	58
Ordubad district	0,268	59
Gobustan district	0,261	60

Region	Index Score	Rank
Julfa district	0,249	61
Lachin district	0,245	62
Hajigabul district	0,243	63
Siyazan district	0,241	64
Naftalan city	0,217	65
Kangarli district	0,165	66
Kalbajar district	0,137	67
Shahbuz district	0,125	68
Khizi district	0,096	69
Sadarak district	0,068	70
Khojavand district	0,054	71
Khojaly district	0,021	72
Khankandi city	0,000	73

6.3. Environmental Index

6.3.1. Eigen Values

Table 31: Eigenvalues Environmental Index

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,445	37,041	37,041	4,445	37,041	37,041
2	1,830	15,253	52,294	1,830	15,253	52,294
3	1,758	14,650	66,944	1,758	14,650	66,944
4	1,011	8,421	75,365	1,011	8,421	75,365
5	0,848	7,069	82,434			
6	0,635	5,294	87,728			
7	0,475	3,961	91,688			

6.3.2. Principal Components

Table 32: Principal Components Environmental Index

Var. Code	Component			
	1	2	3	4
ENV1	0,671	0,501	0,158	-0,036
ENV2	0,699	0,434	-0,105	-0,265
ENV3	-0,029	0,157	0,852	0,268
ENV4	0,504	-0,660	0,214	-0,250
ENV5	-0,682	0,545	-0,051	0,280
ENV6	0,334	-0,218	0,736	0,209
ENV7	0,777	-0,392	-0,110	-0,055
ENV8	0,796	-0,022	-0,014	0,061
ENV9	0,658	0,597	-0,017	-0,278
DEM2	0,431	-0,139	-0,465	0,669
DEM7	0,782	0,031	-0,290	0,334
HEALTH9	-0,453	-0,236	-0,304	-0,202

Table 33: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,655
Bartlett's Test of Sphericity	Approx. Chi-Square	479,557
	df	66
	Sig.	0,000

6.3.3. Ranking-Environment Index

**Table 34: Ranking of Districts and Cities based on Environmental Index-
Top and Bottom Districts**

Region	Index Score	Rank
Top 10		
Lachin district	0,920	1
Kalbajar district	0,918	2
Jabrayil district	0,916	3
Gadabay district	0,904	4
Gubadli district	0,887	5

Region	Index Score	Rank
Top 10		
Lerik district	0,789	6
Shahbuz district	0,768	7
Yardimli district	0,739	8
Khojavand district	0,726	9
Zangilan district	0,718	10
Bottom 10		
Khachmaz district	-0,299	64
Hajigabul district	-0,331	65
Naftalan city	-0,371	66
Salyan district	-0,847	67
Nakhchivan city	-1,124	68
Ganja city	-1,164	69
Mingachevir city	-2,065	70
Absheron district	-2,181	71
Sumgayit city	-3,110	72
Shirvan city	-3,128	73

Table 35: Ranking of Districts and Cities based on Environmental Index

Region	Index Score	Rank
Lachin district	0,920	1
Kalbajar district	0,918	2
Jabrayil district	0,916	3
Gadabay district	0,904	4
Gubadli district	0,887	5
Lerik district	0,789	6
Shahbuz district	0,768	7
Yardimli district	0,739	8
<i>Khojavand district</i>	0,726	9
Zangilan district	0,718	10
<i>Khojaly district</i>	0,668	11
Sadarak district	0,666	12
Balakan district	0,624	13
Gobustan district	0,622	14

Region	Index Score	Rank
Ordubad district	0,607	15
Zardab district	0,568	16
Tovuz district	0,556	17
Gakh district	0,554	18
Kangarli district	0,548	19
Gusar district	0,541	20
Ujar district	0,530	21
Aghdam district	0,524	22
Oghuz district	0,520	23
Aghstafa district	0,518	24
Fuzuli district	0,491	25
Dashkasan district	0,487	26
Aghsu district	0,476	27
<i>Shusha district</i>	0,436	28
Masalli district	0,425	29
Saatli district	0,419	30
Ismayilli district	0,417	31
Julfa district	0,416	32
Samukh district	0,405	33
Zagatala district	0,396	34
Kurdamir district	0,384	35
Sharur district	0,373	36
Goranboy district	0,362	37
Sabirabad district	0,332	38
Tartar district	0,328	39
Jalilabad district	0,320	40
Agdash district	0,303	41
Goychay district	0,303	42
Bilasovar district	0,267	43
Shamakhi district	0,260	44
Gabala district	0,234	45
Goygol district	0,203	46
Guba district	0,202	47
Babak district	0,199	48
Gazakh district	0,169	49

Region	Index Score	Rank
Barda district	0,162	50
Astara district	0,113	51
Lankaran district	0,105	52
Yevlakh district	0,095	53
Shamkir district	0,093	54
Imishli district	0,076	55
Neftchala district	0,019	56
Aghjabadi district	0,014	57
Beylagan district	-0,027	58
Shaki district	-0,061	59
Siyazan district	-0,140	60
Khizi district	-0,161	61
Shabran district	-0,195	62
<i>Khankandi city</i>	-0,219	63
Khachmaz district	-0,299	64
Hajigabul district	-0,331	65
<i>Naftalan city</i>	-0,371	66
Salyan district	-0,847	67
<i>Nakhchivan city</i>	-1,124	68
<i>Ganja city</i>	-1,164	69
<i>Mingachevir city</i>	-2,065	70
Absheron district	-2,181	71
<i>Sumgayit city</i>	-3,110	72
<i>Shirvan city</i>	-3,128	73

7. CRDI FOR DISTRICTS - LANKARA-ASTARA ECONOMIC REGION

In this section, the CRDI with 57 indicators, the Innovation and Technology Index with 9 indicators, and the Environmental Index with 14 indicators were produced for the Lankaran-Astara region. These indices provide a more detailed picture of the development status of the 6 districts relative to each other.

7.1. Composite Regional Development Index

7.1.1. Eigen Values

According to the analysis results, the first principal component is quite sufficient for the index with a variance explanation rate of 51.3%.

Table 36: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	29,240	51,298	51,298	29,240	51,298	51,298
2	9,982	17,512	68,811	9,982	17,512	68,811
3	7,260	12,737	81,547	7,260	12,737	81,547
4	4,755	8,343	89,890	4,755	8,343	89,890
5	3,495	6,131	96,021	3,495	6,131	96,021
6	2,268	3,979	100,000	2,268	3,979	100,000

Figure 12: Eigenvalues CRDI

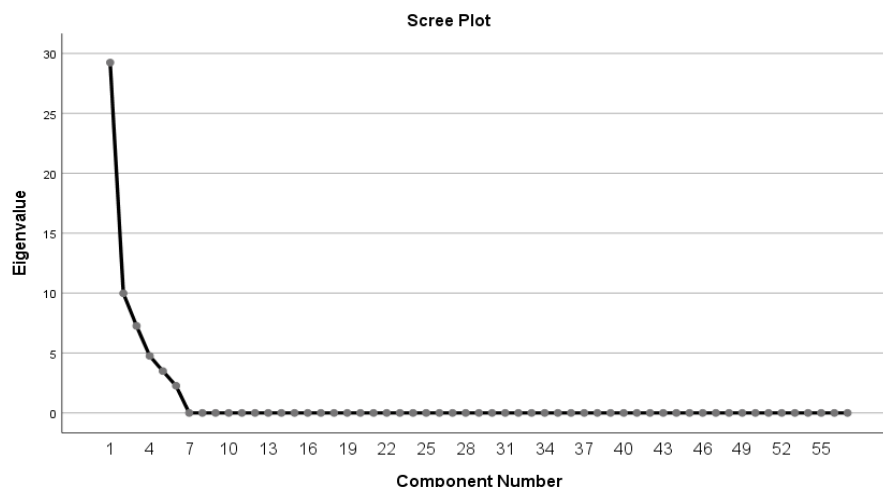
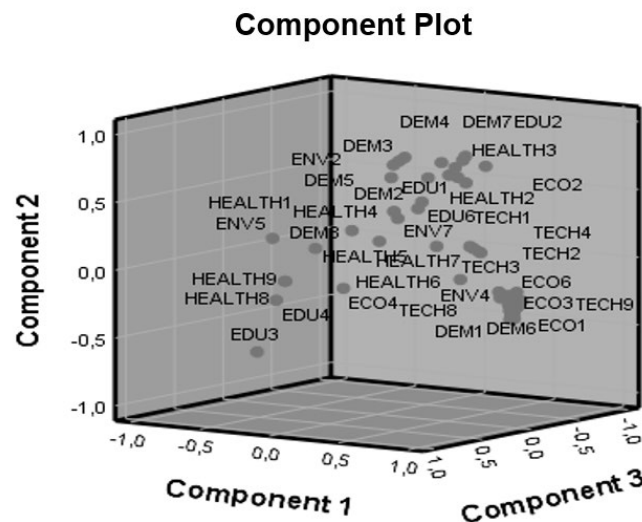


Figure 12: Component Plot: CRDI



7.1.2. Principal Components

Table 37: Component Matrix CRDI

Variable	Var. Code	1	2	3	Rank
Population	DEM1	0,960	-0,268	-0,031	20
Population density for 01.01.2021 (per 1 sq. km, person)	DEM2	0,172	0,398	-0,176	47
Average Age - Tot	DEM3	0,384	0,844	0,321	37
Average Age - Men	DEM4	0,383	0,861	0,263	39
Average Age - Women	DEM5	0,384	0,821	0,379	38
Total Population	DEM6	0,961	-0,267	-0,031	19
Urbanization Rate (%) = Urban Pop/Total Pop	DEM7	0,499	0,816	-0,197	32
2.4.5. Unemployed receiving fixed social benefits by cities and districts of the country - per 1000 population	DEM8	0,183	0,260	0,896	46
Gross Domestic Product	ECO1	0,968	-0,239	-0,039	12
GDP Per Capita	ECO2	0,529	0,627	-0,158	30

Variable	Var. Code	1	2	3	Rank
<i>34.1. Ratio of output production in main branches of economy in the regions of the country, in percent</i>	ECO3	0,965	-0,231	-0,064	16
<i>34.5. Per capita volume of output production in main branches of economy in the regions of the country, in manats</i>	ECO4	-0,394	-0,252	-0,214	55
<i>Government Investment</i>	ECO5	0,966	-0,193	-0,108	15
<i>Private Investment</i>	ECO6	0,858	-0,173	-0,045	26
<i>35. Income of population by economic regions of the country, %</i>	ECO7	0,979	-0,190	-0,039	5
<i>Labor force share of region in Country, %</i>	ECO8	0,964	-0,256	-0,022	17
<i>9.8. Distribution of employed population by economic activities - Agriculture, forestry and fishing</i>	ECO9	0,963	-0,257	-0,026	18
<i>9.8. Distribution of employed population by economic activities - Manufacturing</i>	ECO10	0,976	-0,201	-0,056	7
<i>Tax Payer-Legal Entities</i>	ECO11	0,982	-0,180	0,035	3
<i>Tax Payer-Individual</i>	ECO12	0,972	-0,222	-0,057	11
<i>Number of newly established individual entrepreneurship entities</i>	ECO13	0,942	-0,284	-0,035	22
<i>Current Enterprises</i>	ECO14	0,857	-0,346	-0,188	28
<i>Number of diseases per 10000 population</i>	HEALTH1	-0,072	0,338	-0,277	53
<i>Number of physicians per 10000 population</i>	HEALTH2	0,524	0,718	0,223	31
<i>Number of paramedical staff per 10000 population</i>	HEALTH3	0,360	0,761	-0,149	41

Variable	Var. Code	1	2	3	Rank
<i>Number of hospital beds per 10000 population</i>	HEALTH4	0,195	0,342	0,538	44
<i>Capability of the out-patient clinics per 10000 population</i>	HEALTH5	0,410	0,288	0,563	35
<i>Infant mortality by economic regions and administrative cities and districts</i>	HEALTH6	0,023	-0,233	-0,824	49
<i>3.12. Number of birth by women being at officially unregistered marriage by economic regions and administrative cities and districts</i>	HEALTH7	0,158	0,089	-0,386	48
<i>Average Age of Death</i>	HEALTH8	-0,021	0,001	0,918	50
<i>Life Expectancy at birth - 20</i>	HEALTH9	-0,021	0,001	0,918	51
<i>Utilization rate of sports infrastructure (People/Sport establishment)</i>	EDU1	0,414	0,645	-0,240	34
<i>Proportion of the population doing sports per Thsnd Population</i>	EDU2	0,393	0,678	-0,557	36
<i>Share of students completed secondary education and admitted to higher educational institutions - Men</i>	EDU3	-0,423	-0,602	0,632	56
<i>Share of students completed secondary education and admitted to higher educational institutions - Women</i>	EDU4	-0,062	-0,138	0,951	52
<i>Average Schoolling Year - Tot</i>	EDU5	0,283	0,679	-0,398	43
<i>Average Schoolling - Men</i>	EDU6	0,187	0,447	-0,194	45
<i>Average Schoolling - Women</i>	EDU7	0,304	0,728	-0,447	42
<i>Employment of Education Sector</i>	EDU8	0,967	-0,243	0,005	14

Variable	Var. Code	1	2	3	Rank
<i>Number of Higher educational institutions</i>	TECH1	0,844	0,248	0,248	29
<i>Number of New Higher Education Student</i>	TECH2	0,883	0,198	0,194	24
<i>Number of Registered Higher Education Student</i>	TECH3	0,879	0,204	0,201	25
<i>Number of Higher Education Graduates</i>	TECH4	0,858	0,232	0,231	27
<i>Employment of ICT Sector</i>	TECH5	0,943	-0,319	-0,024	21
<i>Employment of Professional, scientific and technical activities Sector</i>	TECH6	0,983	-0,176	0,027	1
<i>Employment of Financial and insurance activities sector</i>	TECH7	0,968	-0,249	0,011	13
<i>35. Income of population by economic regions of the country, in thsd. Manats - ICT Sector</i>	TECH8	0,982	-0,127	0,053	2
<i>9.8. Distribution of employed population by economic activities - Art, entertainment and recreation</i>	TECH9	0,976	-0,199	0,038	8
<i>Electricity Consumption of Region</i>	ENV1	0,973	-0,191	-0,063	10
<i>14.3.1. Use of water for domestic and drinking needs by economic and administrative region and towns of the country 1) / million m3 - Per Resident - m3</i>	ENV2	0,381	0,731	0,399	40
<i>14.6. Irrigation and water supply of agriculture by economic and administrative regions and towns of the country 1) (million m3)</i>	ENV3	0,979	-0,117	-0,041	6

Variable	Var. Code	1	2	3	Rank
14.7. Discharger of waste water by economic and administrative regions and towns of the country ¹) (million m ³)	ENV4	0,974	-0,090	0,136	9
14.8. Air pollutant emissions from stationary sources by economic and administrative regions and towns of the country (thsd. ton)	ENV5	-0,593	0,161	0,231	57
Water consumption by economic and administrative regions and cities of the country per capita	ENV6	0,414	0,673	-0,151	33
Polluting substances released into the atmosphere, per sq km ²	ENV7	-0,109	0,270	-0,367	54
Employment of Electricity, gas and steam production, distribution and supply sector	ENV8	0,979	-0,140	0,029	4
Employment of Water supply; waste treatment and disposal sector	ENV9	0,938	-0,324	-0,042	23

7.1.3. Ranking

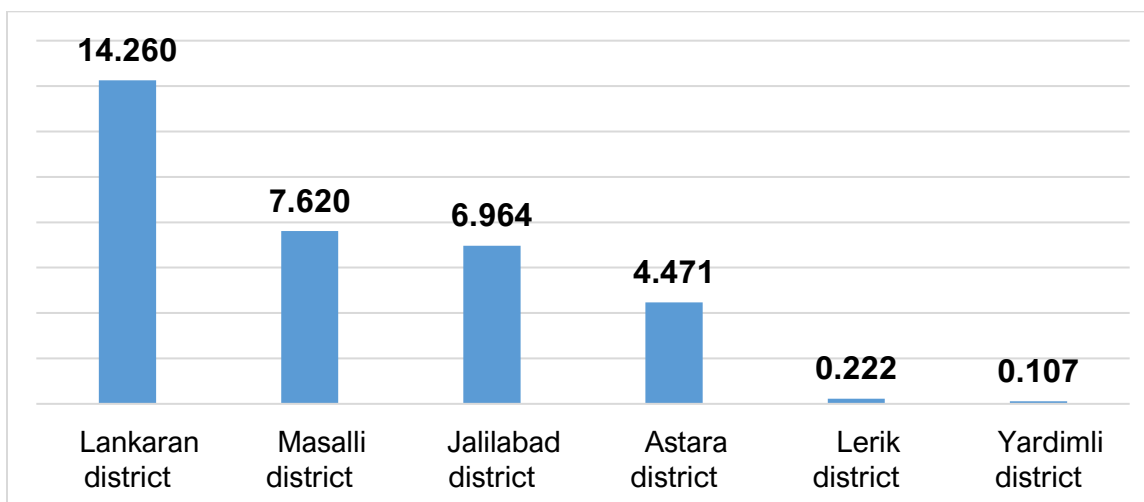
According to the 57 selected indicators, Lankaran city is the most developed city in the region and the leading district. Masallı comes in second place and Jalilabad comes in third place.

Table 38: CRDI Ranking of Districts - Lankaran Astara Economic Region and Policy Reponse

Rayon	CRDI Score	Rank	Level	Response
Lankaran district	14,260	1	Tier 2	Amplify
Masalli district	7,620	2		
Jalilabad district	6,964	3		

Rayon	CRDI Score	Rank	Level	Response
Astara district	4,471	4	Tier 3	Accelerate
Lerik district	0,222	5	Tier 5	Activate
Yardimli district	0,107	6		

Figure 13: Ranking of Districts - Lankaran Astara Economic Region



The most important indicators that determine the level of regional development for LAER are listed below.

Table 39: LAER Key Indicators of Development for the Composite Regional Development Index

Var. Code	Variable	1 st Comp.	Rank
TECH-ECO	<i>Employment of Professional, scientific and technical activities Sector</i>	0,983	1
TECH-ECO	<i>Income of population by economic regions of the country, in thsd. Manats - ICT Sector</i>	0,982	2
ECO	<i>Tax Payer-Legal Entities</i>	0,982	3
ENV	<i>Employment of Electricity, gas and steam production, distribution and supply sector</i>	0,979	4
ECO	<i>Income of population by economic regions of the country, %</i>	0,979	5

ENV	<i>Irrigation and water supply of agriculture by economic and administrative regions and towns of the country 1) (million m3)</i>	0,979	6
ECO	<i>Distribution of employed population by economic activities - Manufacturing</i>	0,976	7
TECH-ECO	<i>Distribution of employed population by economic activities - Art, entertainment and recreation</i>	0,976	8
ENV	<i>Discharger of waste water by economic and administrative regions and towns of the country1) (million m3)</i>	0,974	9
ENV	<i>Electricity Consumption of Region</i>	0,973	10
ECO	<i>Tax Payer-Individual</i>	0,972	11
ECO	<i>Gross Domestic Product</i>	0,968	12
TECH-ECO	<i>Employment of Financial and insurance activities sector</i>	0,968	13
EDUCATION	<i>Employment of Education Sector</i>	0,967	14
ECO	<i>Government Investment</i>	0,966	15

7.2. Findings and Recommendations

Lankaran, Jallilabad and Masalli are the leading districts in the region and are overall in Tier 2 among all the districts in the country where growth can be amplified with the right policies in place. Astara district falls in Tier 3 of all districts in Azerbaijan where we recommend that development be activated with higher intensity. In contrast, Yardimli and Lerik districts are in the lowest Tier 5 of development among all the districts. Here we need to activate basic development by putting in place good infrastructure. increasing human capital and connecting better to the growth districts of Lankaran, Jalilabad and Masalli.

7.3. Innovation and Technology Index

Innovation & Technology Index was realized with 9 variables. As a result of the analysis, it is seen that the first principal component has sufficient explanatory power with a rate of 95%.

7.3.1. Eigen Values

Table 40: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8,565	95,167	95,167	8,565	95,167	95,167
2	0,396	4,398	99,565			
3	0,033	0,366	99,932			
4	0,003	0,033	99,965			
5	0,002	0,026	99,991			

Table 41: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,785
Bartlett's Test of Sphericity	Approx. Chi-Square	4137,656
	df	36
	Sig.	0,000

7.3.2. Principal Components

Table 42: Component Matrix

Variable	Var. Code	1 st Component
<i>Number of Higher educational institutions</i>	TECH1	0,995
<i>Number of New Higher Education Student</i>	TECH2	0,996
<i>Number of Registered Higher Education Student</i>	TECH3	0,996
<i>Number of Higher Education Graduates</i>	TECH4	0,996
<i>Employment of ICT Sector</i>	TECH5	0,997
<i>Employment of Professional, scientific and technical activities Sector</i>	TECH6	0,997
<i>Employment of Financial and insurance activities sector</i>	TECH7	0,996
<i>35. Income of population by economic regions of the country, in thsd. Manats - ICT Sector</i>	TECH8	0,990
<i>9.8. Distribution of employed population by economic activities - Art, entertainment and recreation</i>	TECH9	0,799

7.3.3. Findings & Ranking

Table 43: CRDI Ranking of Districts in Lankaran Astara Economic Region

Rayon	Index Score	Rank
Lankaran district	4,924	1
Jalilabad district	0,785	2
Masalli district	0,768	3
Astara district	0,150	4
Lerik district	0,044	5
Yardimli district	0,001	6

7.4. Environmental Index

According to the Environmental Index results, the rayon in the best environmental situation in the region is Lerik. Assisted is in second place. As the population increases and the level of development increases, the regional rayons are negatively affected environmentally. This situation shows the importance of sustainable development programs for the region.

7.4.1. Eigen Values

Table 44: Total Variance Explained-Environmental Factors

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5,964	42,600	42,600	5,964	42,600	42,600
2	2,129	15,210	57,810	2,129	15,210	57,810
3	1,742	12,441	70,250	1,742	12,441	70,250
4	1,062	7,589	77,839	1,062	7,589	77,839
5	0,982	7,013	84,852			
6	0,678	4,842	89,694			

Table 45: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,730
Bartlett's Test of Sphericity	Approx. Chi-Square	1456,530
	df	91
	Sig.	0,000

7.4.2. Principal Components

Table 46: Principal Components

Variable	Var. Code	1	2	3	4
<i>Electricity Consumption of Region</i>	ENV1	0,954	0,198	-0,127	-0,021
<i>14.3.1. Use of water for domestic and drinking needs by economic and administrative region and towns of the country 1) / million m³ - Per Resident - m³</i>	ENV2	0,560	-0,411	0,199	-0,020
<i>14.6. Irrigation and water supply of agriculture by economic and administrative regions and towns of the country 1) (million m³)</i>	ENV3	0,109	0,693	0,553	0,253
<i>14.7. Discharger of waste water by economic and administrative regions and towns of the country1) (million m³)</i>	ENV4	0,375	0,028	0,390	-0,309
<i>14.8. Air pollutant emissions from stationary sources by economic and administrative regions and towns of the country (thsd. ton)</i>	ENV5	-0,898	-0,079	0,287	0,214
<i>Water consumption by economic and administrative regions and cities of the country per capita</i>	ENV6	0,043	0,049	0,732	-0,358
<i>Polluting substances released into the atmosphere, per sq km²</i>	ENV7	0,778	-0,318	0,036	-0,091
<i>Employment of Electricity, gas and steam production, distribution and supply sector</i>	ENV8	0,961	0,201	-0,083	-0,019
<i>Employment of Water supply; waste treatment and disposal sector</i>	ENV9	0,936	0,123	-0,239	-0,143
<i>Population density for 01.01.2021 (per 1 sq. km, person)</i>	DEM2	0,251	-0,519	0,049	0,638
<i>Urbanization Rate (%) = Urban Pop/Total Pop</i>	DEM7	0,572	-0,586	0,332	0,297

Variable	Var. Code	1	2	3	4
9.8. Distribution of employed population by economic activities - Agriculture, forestry and fishing	ECO9	0,249	0,758	0,190	0,422
9.8. Distribution of employed population by economic activities - Manufacturing	ECO10	0,939	0,160	-0,080	0,139
Life Expectancy at birth - 20	HEALT H9	-0,209	0,249	-0,624	0,077

7.4.3. Ranking Environmental Index

According to the Environmental Index results, the district with the best environmental situation in the region is Lerik. Yardimli is in second place.

Table 47: Ranking of Districts in LAER based on Environmental Factors

Rayon	Index Score	Rank
Lankaran district	0,546	6
Masalli district	0,695	3
Jalilabad district	0,665	5
Astara district	0,691	4
Lerik district	0,947	1
Yardimli district	0,915	2

7.4.4. Findings and Recommendations

As the population increases and the level of development increases, the environment is likely to be negatively impacted. Both districts have biodiversity hotspots like the Zuvand State Reserve in Lerik and the Ruvarud Reserve shared with Yardimli. Mountains environments are fragile and a green growth path is more desirable for these districts building on their unique environment with an emphasis on regenerative agriculture and animal husbandry and green and agrotourism. Sustainable development programs for needed for such districts.

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ANNEX 1

1. Data Normalization

A theoretical framework should be developed to provide the basis for the selection and combination of single indicators into a meaningful composite indicator under a fitness-for-purpose principle. Indicators should be selected on the basis of their analytical soundness, measurability, coverage of the regions, relevance to the phenomenon being measured and relationship to each other. The use of proxy variables should be considered when data are scarce. Consideration should be given to different approaches for imputing missing values. Extreme values should be examined as they can become unintended benchmarks.

Normalization Methods

Method	Equation
1. Ranking	$I_{qc}^t = Rank(x_{qc}^t)$
2. Standardisation (or z-scores)	$I_{qc}^t = \frac{x_{qc}^t - x_{qc=\bar{c}}^t}{\sigma_{qc=\bar{c}}^t}$
3. Min-Max	$I_{qc}^t = \frac{x_{qc}^t - \min_c(x_q^{t_0})}{\max_c(x_q^{t_0}) - \min_c(x_q^{t_0})}$
4. Distance to a reference country	$I_{qc}^t = \frac{x_{qc}^t}{x_{qc=\bar{c}}^{t_0}}$ or $I_{qc}^t = \frac{x_{qc}^t - x_{qc=\bar{c}}^{t_0}}{x_{qc=\bar{c}}^{t_0}}$
5. Categorical scales	<p>Example:</p> $I_{qc}^t = \begin{cases} 0 & \text{if } x_{qc}^t < P^{15} \\ 20 & \text{if } P^{15} \leq x_{qc}^t < P^{25} \\ 40 & \text{if } P^{25} \leq x_{qc}^t < P^{65} \\ 60 & \text{if } P^{65} \leq x_{qc}^t < P^{85} \\ 80 & \text{if } P^{85} \leq x_{qc}^t < P^{95} \\ 100 & \text{if } P^{95} \leq x_{qc}^t \end{cases}$

Normalization Example

Table 1: Before Normalization

HDI Calculation by SNKE	GDP	GDP Per Capita PPP	Life Expectancy (LE)	Mean Years of Schooling (MYS)
<i>Republic of Azerbaijan</i>	5.398	14.300	73,2	10,9
<i>Baku city</i>	12.638	33.480	72,7	11,7
<i>Nakhchivan Autonomous Republic</i>	5.276	13.977	75,2	11,2
<i>Absheron-Khizi economic region</i>	5.825	15.431	70,1	11,0
<i>Daghlig Shirvan economic region</i>	2.893	7.665	73,2	10,4
<i>Ganja-Dashkasan economic region</i>	3.454	9.150	73,5	10,9
<i>Karabakh economic region</i>	2.143	5.676	73,3	10,3
<i>Gazakh-Tovuz economic region</i>	3.288	8.710	75,1	10,5
<i>Guba-Khachmaz economic region</i>	3.289	8.714	72,5	10,4
<i>Lankaran-Astara economic region</i>	2.495	6.610	72,9	10,5
<i>Central Aran economic region</i>	3.285	8.702	72,5	10,7
<i>Mil-Mughan economic region</i>	3.047	8.072	71,1	10,6
<i>Shaki-Zagatala economic region</i>	3.119	8.263	73,4	10,8
<i>Eastern Zangazur economic region</i>	1.444	3.827	75,7	10,8
<i>Shirvan-Salyan economic region - total</i>	3.566	9.448	71,8	10,7
Mean (Officially Published)	5.398	14.300	73,2	10,9
Mean - Estimated	3.983	10.552	73,1	10,8
Median -Estimated	3.286	8.706	73,1	10,7
Standard Deviation (STD)	2.483	6.577	1,4	0,3

Table 2: After Normalization

	GDP	GDP Per Capita PPP	Life Expectancy (LE)	Mean Years of Schooling (MYS)
<i>Republic of Azerbaijan</i>	0,0000	0,0000	0,0000	0,0000
<i>Baku city</i>	2,9164	2,9164	-0,3512	2,4437
<i>Nakhchivan Autonomous Republic</i>	-0,0491	-0,0491	1,4052	0,8551
<i>Absheron-Khizi economic region</i>	0,1720	0,1720	-2,2329	0,3016
<i>Daghlig Shirvan economic region</i>	-1,0089	-1,0089	0,0028	-1,5825
<i>Ganja-Dashkasan economic region</i>	-0,7831	-0,7831	0,2303	-0,0273
<i>Karabakh economic region</i>	-1,3113	-1,3113	0,0473	-1,6942
<i>Gazakh-Tovuz economic region</i>	-0,8499	-0,8499	1,3861	-1,1441
<i>Guba-Khachmaz economic region</i>	-0,8493	-0,8493	-0,5339	-1,4308
<i>Lankaran-Astara economic region</i>	-1,1693	-1,1693	-0,2119	-1,1318
<i>Central Aran economic region</i>	-0,8512	-0,8512	-0,4916	-0,4737
<i>Mil-Mughan economic region</i>	-0,9470	-0,9470	-1,5380	-0,9123
<i>Shaki-Zagatala economic region</i>	-0,9180	-0,9180	0,1781	-0,3516
<i>Eastern Zangazur economic region</i>	-1,5925	-1,5925	1,7741	-0,3145
<i>Shirvan-Salyan economic region - total</i>	-0,7378	-0,7378	-0,9677	-0,6094
MAX	2,9164	2,9164	1,7741	2,4437
MIN	-1,5925	-1,5925	-2,2329	-1,6942

Figure 1: Before Normalization

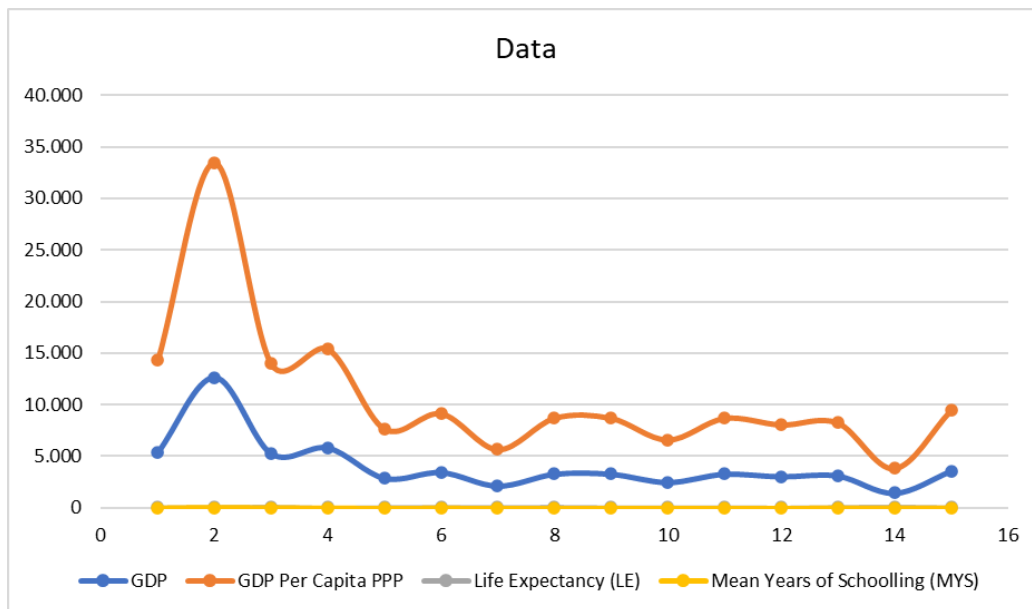
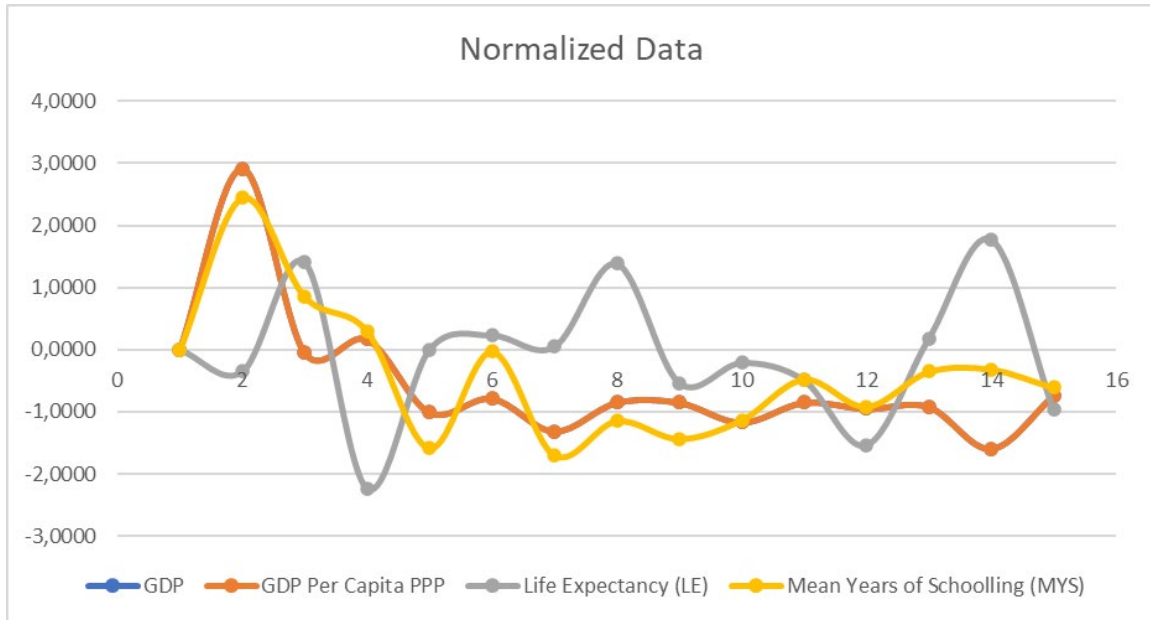


Figure 2: After Normalization



2. Education Index

In addition to 8 basic education indicators, 4 higher education indicators under the theme of innovation and technology have also been added to the education index. The results of the analysis made with a total of 12 indicators are below.

2.1. Eigen Values

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5,416	45,135	45,135	5,416	45,135	45,135
2	2,511	20,924	66,059	2,511	20,924	66,059
3	1,418	11,818	77,877	1,418	11,818	77,877
4	1,072	8,930	86,807	1,072	8,930	86,807
5	0,641	5,340	92,147			
6	0,524	4,363	96,510			
7	0,237	1,976	98,486			
8	0,124	1,033	99,519			

Since KMO and Bartlett's test results are above .50, the analysis results are reliable. In addition, since the explained variance ratio of the 1st principal component is over 45%, the 1st principal component is sufficient for the index. However, since the 2nd principal component also has a rate of 20%, the 2nd principal component can also be taken into account in the analysis.

Table 3: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,607
Bartlett's Test of Sphericity	Approx. Chi-Square	1783,127
	df	66
	Sig.	0,000

Figure 3:

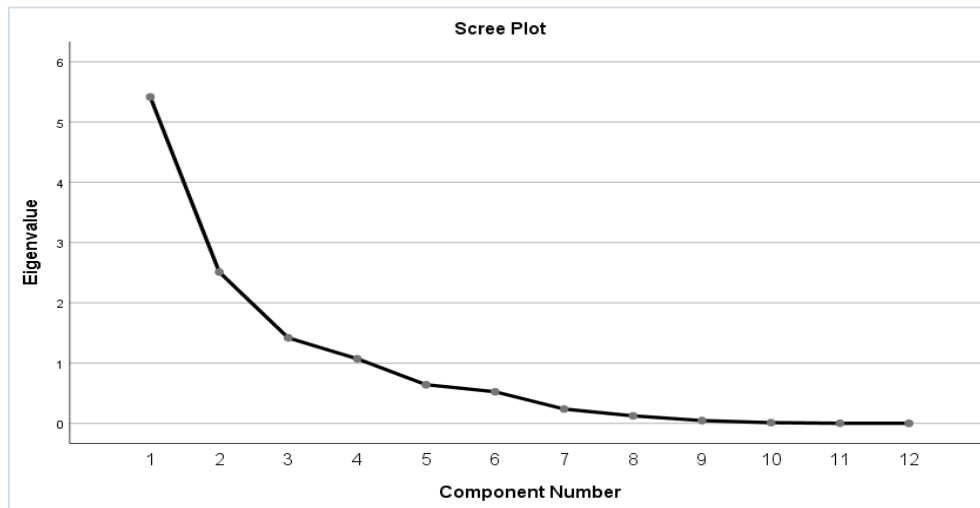
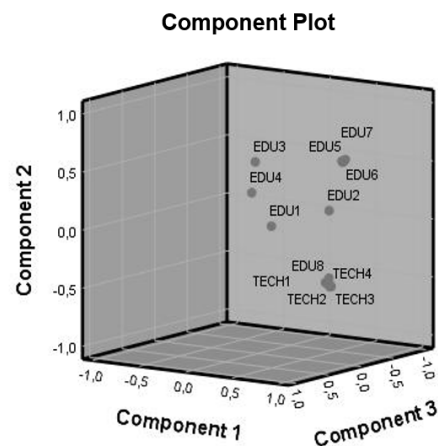


Figure 4



2.2. Principal Components

Among education indicators, the most descriptive indicators were higher education indicators and Average Schooling Year.

Table 4: Component Matrix

Variable	Var. Code	1	2	3	4
Utilization rate of sports infrastructure (People/Sport establishment)	EDU1	0,045	-0,030	-0,142	0,930
Proportion of the population doing sports per Thsnd Population	EDU2	0,524	0,122	-0,347	0,348
Share of students completed secondary education and admitted to higher educational institutions - Men	EDU3	0,351	0,653	0,542	0,058
Share of students completed secondary education and admitted to higher educational institutions - Women	EDU4	0,408	0,414	0,679	0,208
Average Schooling Year - Tot	EDU5	0,728	0,588	-0,307	-0,111
Average Schooling - Men	EDU6	0,680	0,568	-0,321	-0,109
Average Schooling - Women	EDU7	0,723	0,570	-0,274	-0,104
Employment of Education Sector	EDU8	0,496	-0,469	-0,387	-0,002
Number of Higher educational institutions	TECH1	0,861	-0,385	0,192	-0,022
Number of New Higher Education Student	TECH2	0,887	-0,422	0,145	-0,031
Number of Registered Higher Education Student	TECH3	0,885	-0,423	0,137	-0,029
Number of Higher Education Graduates	TECH4	0,881	-0,423	0,156	-0,032

2.3. Ranking

In the education index, major cities other than Baku rank first. Ganja is in the first place, Nakhchivan is in the second place, and Sumgayit is in the third place.

Table 5: Ranking Educational Index

<i>Variable Code</i>	<i>Education Index Score</i>	<i>Rank</i>
Nakhchivan city	5,485	2
Babak district	2,814	11
Julfa district	2,667	16
Kangarli district	2,762	14
Ordubad district	2,778	13
Sadarak district	2,853	10
Shahbuz district	2,811	12
Sharur district	2,920	9
Sumgayit city	4,820	3
Absheron district	4,249	4
Khizi district	1,788	65
Aghsu district	1,869	60
Ismayilli district	1,960	54
Gobustan district	1,586	68
Shamakhi district	2,239	34
Ganja city	6,914	1
Naftalan city	3,049	7
Dashkasan district	1,823	64
Goranboy district	2,375	26
Goygol district	2,042	47
Samukh district	2,141	38
Khankandi city	0,661	73
Aghjabadi district	2,409	24
Aghdam district	2,408	25
Barda district	2,303	31

Variable Code	Education Index Score	Rank
Fuzuli district	2,314	30
<i>Khojaly district</i>	1,303	69
<i>Khojavand district</i>	0,804	71
<i>Shusha district</i>	2,597	18
Tartar district	0,763	72
Aghstafa district	0,958	70
Gadabay district	2,010	49
Gazakh district	3,004	8
Shamkir district	2,359	27
Tovuz district	2,425	23
Khachmaz district	1,895	58
Guba district	2,174	37
Gusar district	1,957	55
Siyazan district	1,851	62
Shabran district	1,602	66
Astara district	2,094	42
Jalilabad district	2,003	50
Lerik district	1,600	67
Lankaran district	3,468	6
Masalli district	2,100	41
Yardimli district	1,862	61
Mingachevir city	3,700	5
Agdash district	2,050	46
Goychay district	2,269	33
Kurdamir district	1,982	52
Ujar district	1,997	51
Yevlakh district	2,033	48
Zardab district	2,315	29
Beylagan district	2,177	36
Imishli district	2,083	44
Saatli district	1,847	63
Sabirabad district	1,946	56
Balakan district	2,090	43

Variable Code	Education Index Score	Rank
Gakh district	2,684	15
Gabala district	2,207	35
Oghuz district	2,302	32
Shaki district	2,544	20
Zagatala district	2,447	21
Jabrayil district	2,350	28
Kalbajar district	1,887	59
Gubadli district	2,665	17
Lachin district	1,982	53
Zangilan district	2,447	22
Shirvan city	2,564	19
Bilasuvar district	1,936	57
Hajigabul district	2,129	39
Neftchala district	2,079	45
Salyan district	2,109	40

3. Health Index

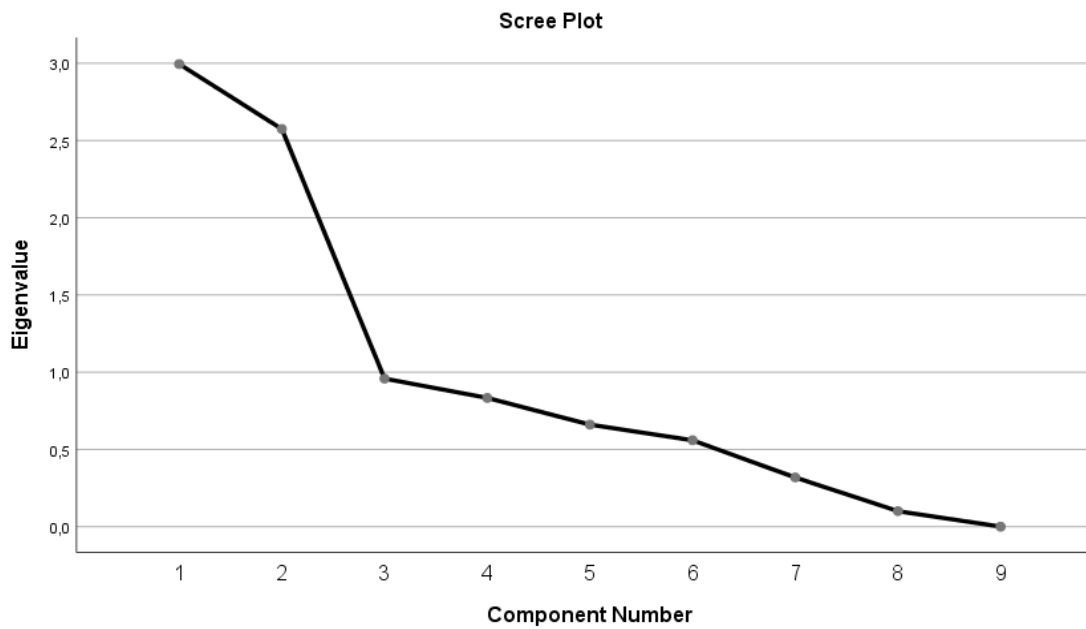
There are 9 indicators in the health index. The first principal component has an explanation rate of 33.3% and the second principal component has an explanation rate of 28.6%. In the analysis here, the index produced with the first principal component is included.

3.1. Eigen Values

Table 6: Total Variance Explained

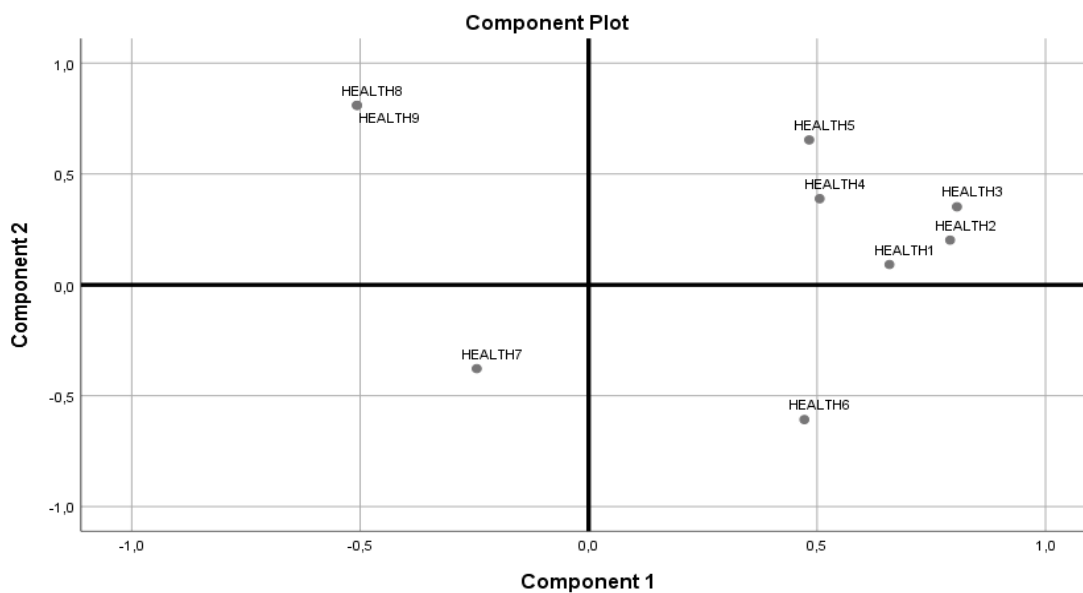
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,995	33,278	33,278	2,995	33,278	33,278
2	2,574	28,603	61,881	2,574	28,603	61,881
3	0,959	10,651	72,532			
4	0,833	9,261	81,793			
5	0,661	7,341	89,134			

Figure 5:



The variables Average Age of Death and Life Expectancy at birth, which are not presented by AZSTAT within the health indicators but are added to the index, are more descriptive for the second principal component.

Figure 6: Component Plot



3.2. Principal Components

Table 7: Component Matrix - Health

Variable	Var. Code	1	2
Number of diseases per 10000 population	HEALTH1	0,658	0,092
Number of physicians per 10000 population	HEALTH2	0,791	0,202
Number of paramedical staff per 10000 population	HEALTH3	0,806	0,352
Number of hospital beds per 10000 population	HEALTH4	0,506	0,388
Capability of the out-patient clinics per 10000 population	HEALTH5	0,483	0,654
Infant mortality by economic regions and administrative cities and districts	HEALTH6	0,472	-0,608
3.12. Number of birth by women being at officially unregistered marriage by economic regions and administrative cities and districts	HEALTH7	-0,245	-0,378
Average Age of Death	HEALTH8	-0,507	0,810
Life Expectancy at birth - 20	HEALTH9	-0,507	0,810
Extraction Method: Principal Component Analysis.			

3.3. Ranking

Table 8: Ranking of Districts – Health Index

Variable	Health Index Score	Rank
Nakhchivan city	1,895	1
Babak district	-0,325	69
Julfa district	-0,035	53
Kangarli district	-0,160	60
Ordubad district	-0,292	65
Sadarak district	-0,078	58
Shahbuz district	0,159	30
Sharur district	-0,163	61
Sumgayit city	1,356	4
Absheron district	0,801	9
Khizi district	0,431	18

<i>Variable</i>	<i>Health Index Score</i>	<i>Rank</i>
Aghsu district	0,128	36
Ismayilli district	0,120	37
Gobustan district	0,322	20
Shamakhi district	0,139	34
Ganja city	0,923	7
Naftalan city	1,856	2
Dashkasan district	0,043	49
Goranboy district	0,164	29
Goygol district	0,135	35
Samukh district	-0,228	62
Khankandi city	-0,738	73
Aghjabadi district	0,056	46
Aghdam district	0,040	50
Barda district	0,725	10
Fuzuli district	0,243	26
Khojaly district	0,061	45
Khojavand district	1,794	3
Shusha district	0,150	32
Tartar district	0,073	44
Aghstafa district	-0,016	52
Gadabay district	-0,585	72
Gazakh district	0,317	22
Shamkir district	0,074	43
Tovuz district	0,222	27
Khachmaz district	0,217	28
Guba district	0,159	31
Gusar district	0,319	21
Siyazan district	0,453	16
Shabran district	0,293	23
Astara district	0,077	42
Jalilabad district	-0,054	54
Lerik district	-0,343	71
Lankaran district	0,111	38
Masalli district	-0,309	68

<i>Variable</i>	<i>Health Index Score</i>	<i>Rank</i>
Yardimli district	-0,103	59
Mingachevir city	0,955	5
Agdash district	0,448	17
Goychay district	0,420	19
Kurdamir district	0,106	40
Ujar district	-0,231	63
Yevlakh district	0,052	47
Zardab district	-0,013	51
Beylagan district	0,620	12
Imishli district	0,049	48
Saatli district	-0,064	55
Sabirabad district	-0,066	56
Balakan district	0,109	39
Gakh district	0,518	14
Gabala district	0,614	13
Oghuz district	0,474	15
Shaki district	0,952	6
Zagatala district	0,276	24
Jabrayil district	-0,297	66
Kalbajar district	-0,265	64
Gubadli district	-0,338	70
Lachin district	0,254	25
Zangilan district	-0,299	67
Shirvan city	0,865	8
Bilasuvar district	0,103	41
Hajigabul district	-0,071	57
Neftchala district	0,141	33
Salyan district	0,667	11

Table 9 Ranking of Variables for CRDI

Theme	Variable	Var. Code	Initial	Extraction	Rank
DEM	Population	DEM1	1,000	0,994	12
DEM	Population density for 01.01.2021 (per 1 sq. km, person)	DEM2	1,000	0,847	41
DEM	Average Age - Tot	DEM3	1,000	0,954	26
DEM	Average Age - Men	DEM4	1,000	0,949	27
DEM	Average Age - Women	DEM5	1,000	0,926	33
DEM	Total Population	DEM6	1,000	0,995	11
DEM	Urbanization Rate (%) = Urban Pop/Total Pop	DEM7	1,000	0,887	38
DEM	2.4.5. Unemployed receiving fixed social benefits by cities and districts of the country - per 1000 population	DEM8	1,000	0,758	50
ECO	Gross Domestic Product	ECO1	1,000	0,998	3
ECO	GDP Per Capita	ECO2	1,000	0,877	39
ECO	34.1. Ratio of output production in main branches of economy in the regions of the country, in percent	ECO3	1,000	0,996	8
ECO	34.5. Per capita volume of output production in main branches of economy in the regions of the country, in manats	ECO4	1,000	0,679	55
ECO	Government Investment	ECO5	1,000	0,851	40
ECO	Private Investment	ECO6	1,000	0,987	20
ECO	35. Income of population by economic regions of the country, %	ECO7	1,000	0,997	5
ECO	Labor force share of region in Country, %	ECO8	1,000	0,996	10
ECO	9.8 Distribution of employed population by economic activities - Agriculture, forestry and fishing	ECO9	1,000	0,930	31

Theme	Variable	Var. Code	Initial	Extraction	Rank
ECO	9.8 Distribution of employed population by economic activities - Manufacturing	ECO10	1,000	0,929	32
ECO	Tax Payer- Legal Entities	ECO11	1,000	0,997	7
ECO	Tax Payer- Individual	ECO12	1,000	0,985	21
ECO	Number of newly established individual entrepreneurship entities	ECO13	1,000	0,936	30
ECO	Current Enterprises	ECO14	1,000	0,996	9
HEALTH	Number of diseases per 10000 population	HEALTH1	1,000	0,756	51
HEALTH	Number of physicians per 10000 population	HEALTH2	1,000	0,937	29
HEALTH	Number of paramedical staff per 10000 population	HEALTH3	1,000	0,888	37
HEALTH	Number of hospital beds per 10000 population	HEALTH4	1,000	0,776	45
HEALTH	Capability of the out-patient clinics per 10000 population	HEALTH5	1,000	0,743	52
HEALTH	Infant mortality by economic regions and administrative cities and districts	HEALTH6	1,000	0,812	42
HEALTH	3.12. Number of birth by women being at officially unregistered marriage by economic regions and administrative cities and districts	HEALTH7	1,000	0,577	56
HEALTH	Average Age of Death	HEALTH8	1,000	0,907	35
HEALTH	Life Expectancy at birth - 20	HEALTH9	1,000	0,907	34
EDUCATION	Utilization rate of sports infrastructure (People/Sport establishment)	EDU1	1,000	0,767	48
EDUCATION	Proportion of the population doing sports per Thsnd Population	EDU2	1,000	0,706	54

Theme	Variable	Var. Code	Initial	Extraction	Rank
EDUCATION	Share of students completed secondary education and admitted to higher educational institutions - Men	EDU3	1,000	0,762	49
EDUCATION	Share of students completed secondary education and admitted to higher educational institutions - Women	EDU4	1,000	0,772	47
EDUCATION	Average Schoolling Year - Tot	EDU5	1,000	0,969	24
EDUCATION	Average Schoolling - Men	EDU6	1,000	0,889	36
EDUCATION	Average Schoolling - Women	EDU7	1,000	0,955	25
EDUCATION	Employment of Education Sector	EDU8	1,000	0,989	19
TECH-EDU	Number of Higher educational institutions	TECH1	1,000	0,991	14
TECH-EDU	Number of New Higher Education Student	TECH2	1,000	0,991	16
TECH-EDU	Number of Registered Higher Education Student	TECH3	1,000	0,990	18
TECH-EDU	Number of Higher Education Graduates	TECH4	1,000	0,991	15
TECH-ECO	Employment of ICT Sector	TECH5	1,000	0,999	1
TECH-ECO	Employment of Professional, scientific and technical activities Sector	TECH6	1,000	0,999	2
TECH-ECO	Employment of Financial and insurance activities sector	TECH7	1,000	0,997	4
TECH-ECO	35. Income of population by economic regions of the country, in thsd. Manats - ICT Sector	TECH8	1,000	0,997	6
TECH-ECO	9.8 Distribution of employed population by economic activities - Art, entertainment and recreation	TECH9	1,000	0,949	28
ENV	Electricity Comsumption of Region	ENV1	1,000	0,977	22

Theme	Variable	Var. Code	Initial	Extraction	Rank
ENV	14.3.1 Use of water for domestic and drinking needs by economic and administrative region and towns of the country 1) / million m3 - Per Resident - m3	ENV2	1,000	0,790	44
ENV	14.6. Irrigation and water supply of agriculture by economic and administrative regions and towns of the country 1) (million m3)	ENV3	1,000	0,774	46
ENV	14.7. Discharger of waste water by economic and administrative regions and towns of the country1) (million m3)	ENV4	1,000	0,448	57
ENV	14.8. Air pollutant emissions from stationary sources by economic and administrative regions and towns of the country (thsd. ton)	ENV5	1,000	0,992	13
ENV	Water consumption by economic and administrative regions and cities of the country per capita	ENV6	1,000	0,801	43
ENV	Polluting substances released into the atmosphere, per sq km2	ENV7	1,000	0,722	53
ENV	Employment of Electricity, gas and steam production, distribution and supply sector	ENV8	1,000	0,969	23
ENV	Employment of Water supply; waste treatment and disposal sector	ENV9	1,000	0,990	17

