National Human Development Report 2016

SUSTAINABLE DEVELOPMENT GOALS & CAPABILITY BASED DEVELOPMENT IN REGIONS OF KAZAKHSTAN

Published for the United Nations Development Programme

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FOREWORD

Dear Reader, you are holding a national Human Development Report, which follows the methodology and approach of the flagship global policy and research initiative of the United Nations Development Programme. This report paves the way for a continuous practice of developing a series of policy briefs and reports on the Sustainable Development Goals (the SDGs) by the United Nations Agencies and their partners. These series will aim to put at the center of policy maker's attention the most valuable asset for Kazakhstan- its people, and their capabilities and well-being.

I am happy to note that this report coincides with year one of implementation of the global sustainable development agenda and the SDGs. For coherent and integrated support for the SDGs' implementation and localization, the UN Development Group (UNDG) uses a common approach – Mainstreaming Acceleration and Policy Support (MAPS). This product is an example of MAPS in action through research and policy advisory support for decision-makers in Kazakhstan. Moreover, this research has considered one of the key lessons learned from the Millennium Development Goals (MDSs) era: that the high-quality, disaggregated data, monitoring and evidence base can help shift policies and targeted support towards the most pressing bottlenecks and gaps.

The current national Human Development Report provides an assessment of subnational/regional development in Kazakhstan, considering both capabilities and the ability to meet the selected SDGs to ensure healthy lives and promote well-being for all at all ages, to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, to build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation and especially to reduce inequality across the country. The choice of a theme for this report has been determined by the country's immediate challenge: reducing regional disparities and achieving a balanced regional development. The diverse natural conditions, inherited social, economic and spatial structures and the dynamics of development over the last few decades had led to disparities in economic and infrastructure development, employment, incomes and quality of life among regions of Kazakhstan.

The report takes a "whole of development" perspective, including not only economic growth, innovation and productivity, but also fundamental targets of social progress and sustainability. The authors tried to combine a quantitative approach to measure both capabilities/economic complexities and sustainable development pathways of regions based on their economic diversification, historical evolution in skills development, and other considerations.

I hope the report will inspire decision-makers, policymakers, partners, development stakeholders and interested individuals to join efforts to promote equitable and sustainable development agenda in Kazakhstan. Given the topic of this particular report, I would like to conclude my foreword by a well-known Kazakh proverb: "Бірлігі күшті ел азбайды, пішуі кең көйлек тозбайды" which successfully reiterates the idea that equality (parity) and unity within the nation makes it stronger and more resilient, while a "dress" tailored and sewn by all of us will not be "worn out".

Norimasa Shimomura
UN Resident Coordinator in Kazakhstan

FOREWORD

I am pleased to welcome the National Human Development Report for 2016, created with the support of the United Nations Development Programme in Kazakhstan.

The National Human Development Report contains an assessment of Kazakhstan's territorial development, in terms of both opportunities and country's ability to meet the new Sustainable Development Goals for the period from 2015 to 2030.

The recommendations of the report pay much attention to the relationship between the economy and human development in the regions of Kazakhstan by applying knowledge as a necessary condition for a sustainable future and accelerated realization of Sustainable Development Goals.

We express our gratitude to the United Nations Development Programme in Kazakhstan for the work done in preparation of this report, which is to be used as a practical guide.

In conclusion, I would like to note that Kazakhstan was one of the first United Nations' countries that was ahead of the schedule in achieving the Millennium Development Goals for the period of 2000 to 2015 with the joint effort of the Government bodies, private sector, civil society and citizens of Kazakhstan.

We hope to further the fruitful cooperation to continue economic reforms in building innovative capacity, integrated development for the achievement and comprehensive implementation of the new Sustainable Development Goals.

Timur Suleimenov
Minister of National Economy
of Republic of Kazakhstan

ACKNOWLEDGEMENTS

In preparing the current National Human Development Report (NHDR), the team consisting of UNDP staff and Whiteshield Partners were grateful for ownership of the SDG agenda, and practical support provided by regional and national stakeholders. We acknowledge generous support and commitment to the HDR series of the Ministry of National Economy and its Committee for Statistics, and the Ministry of Foreign Affairs.

The team is also grateful for the close technical support provided by the akimats of Mangystau and Kyzylorda regions during the field visits to obtain primary data, as well as for their invaluable comments and recommendations to the report.

Our sincere thanks and appreciations also go to George Bouma, Ben Slay, Elena Danilova-Cross, Mihail Peleah and other colleagues from UNDP Istanbul Regional Hub for their active support and valuable feedback to the various drafts of this report.

We would especially like to thank Fadi Farra, Nadia Klos and Georgy Kalashnov of Whiteshield Partners in preparing a quality and comprehenvise report, and all colleagues within the UN Country Team in Kazakhstan who have provided feedback and advice.

We hope to continue a long-lasting tradition of developing practical research and policy briefs in years to come to support the accelerated implementation of the SDGs in Kazakhstan by 2030.

Munkhtuya Altangerel
UNDP Deputy Resident Representative

ACRONYMS

CSRK – Committee of Statistics of the Ministry of national economy of the Republic Kazakhstan

ECI – Economic Complexity Index (Hausmann, Hidalgo et al. 2011)

FCI – Fixed Capital Investment

FDI – Foreign Direct Investments

GRP – Gross Regional Product

HD – Human development

HS – Harmonized System (standardized system of names and numbers to classify traded products)

KZT – Kazakhstan Tenge

Maslikhat – a local representative body in the Republic of Kazakhstan

PCI – Product Complexity Index (Hausmann, Hidalgo et al. 2011)

PC – Contribution to Processing Sector Index

PPP – Public Private Partnership

RCA – Revealed Comparative Advantage (Balassa 1986)

nRCA – number of Revealed Comparative Advantages on the regional level

RCI – Regional Capability Index

RECI – Regional Economic Complexity Index

RSDGC – Regional Sustainable Development Goals Challenges

R&D – Research and Development

SC – Contribution to Services Sector Index

SD – Sustainable development

SDG – Sustainable Development Goal

SME – Small and Medium Enterprises

EXECUTIVE SUMMARY

Kazakhstan has been remarkably successful in managing its transition since 1991, with GDP per capita rising from US$1,469 in 1998 to nearly US$13,612 in 2013 and an HDI value increasing from 0.690 to 0.788 between 1990 and 2014. However, social and regional disparities have widened, and there is a need for more nuanced development policies to capture the full benefits of sustainable economic growth.

Kazakhstan's HDI value of 0.788 in 2014 places the country in the high human development category and ahead of the average for peers in Europe and Central Asia, at the 56th place out of 188 countries and territories. Poverty was significantly reduced from about 50% in 2000 to about 5% in 2012.

The share of population living below official minimum subsistence level[1] dropped from 5.5% in 2011 to 2.8% in 2014. While agriculture accounts for less than 5 percent of GDP, the sector continues to employ almost one-fourth of the working population and is critical to addressing poverty and food security, as well as providing an important avenue for diversification of the economy.

However, Kazakhstan still remains vulnerable to fluctuations in commodity prices. The country's real GDP growth slowed from 4.1 percent in 2014 to 1.2 percent in 2015[2], due to falling oil prices and weakened domestic and external demand.

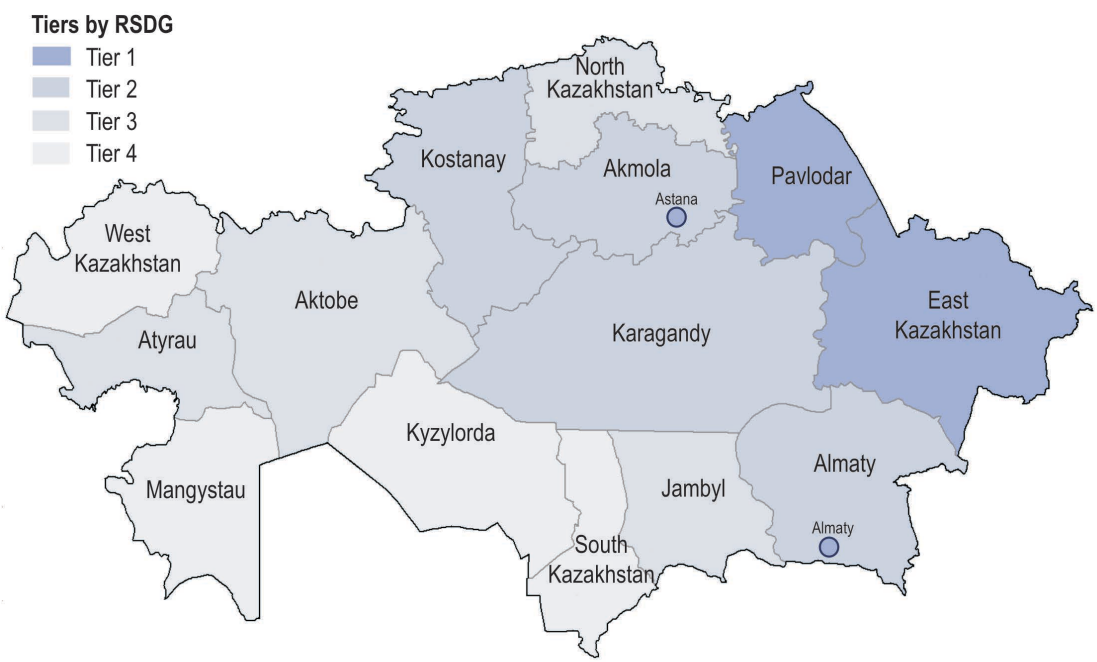
Moreover, Kazakhstan faces issues with regional variations in poverty, income inequality and environmental degradation. The HDI value falls to 0.694 when it is discounted for inequality.

Kazakhstan is performing relatively well on human development at the national level, but with strong disparities at the regional level

Kazakhstan's strong overall human development performance over the last fifteen years hides a more uneven performance at the regional level in terms of capabilities, human development and sustainable development[3].

Figure 1

Regional Sustainable Development Challenge Index Results in Kazakhstan's regions, 2015[4]



1. Subsistence level income in Kazakhstan was approximately $106 in 2014.

2. http://databank.worldbank.org/data/reports.aspx?Code=NY.GDP.MKTP.KD.ZG&id=af3ce82b&report_name=Popular_indicators&popular-type=series&ispopular=y

3. Regions of Kazakhstan were analysed along several dimensions: capabilities, human development and sustainable development. Each dimension was quantified through a regional index that was constructed based on available data.

4. Tier 1 reflects top four regions that have the best positions on the RSDGC Index, following the same patern Tier 2, Tier 3 and Tier 4 (last four regions with the worst RSDGC Index) were allocated. Capabilities are measured by economic complexity, which in turn is closely correlated to manufacturing exports. With additional productive knowledge accumulation, a country can expand its production and increase the share of manufacturing in the total merchandise exports. The reverse is also true: increased manufacturing as a share of exports facilitates knowledge accumulation.

At the regional level, economic complexity is the highest in the administrative cities of Astana and Almaty as well as Karagandy and the Almaty region. By contrast, the two regions of focus in this report, Mangystau and Kyzylorda, have among lowest level of capabilities in the country. Horizontal and vertical policy measures are needed to help these regions raise their level of economic complexity to achieve greater prosperity and sustainable development. How these regions can best achieve this target is main subject of this report.

Based on the results of SDG Index and Capability Index developed for this report, not all regions are following the same development path. While some regions are more advanced in terms of capabilities, others are ahead on sustainable development pathways.

In particular, within the framework of Sustainable Development Goals (SDGs), Kazakhstan faces six major regional sustainable development challenges

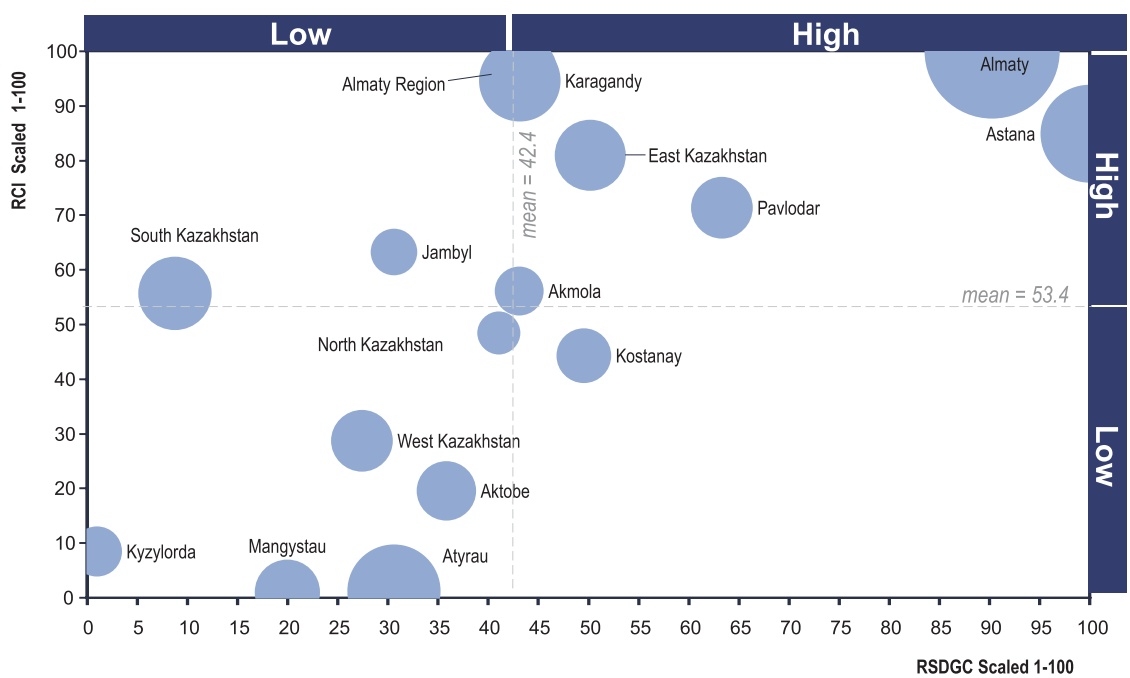
Kazakhstan faces six main sustainable development challenges, all of which are closely related to the SDGs. These challenges are: (1) High levels of inequality between regions (SDG 10); (2) Uneven development of innovation and infrastructure (SDG 9); (3) Uneven levels of growth, productivity and employment (SDG 8); (4) Regional disparities in terms of health and access to healthcare (SDG 3); (5) Disparities in education levels (SDG 4); (6) Gender inequality (SDG 5). The first three challenges are primarily at the enterprise level, whereas the next three are focused on individual well being.

To address these challenges, the Government of Kazakhstan has launched a number of initiatives at the national level, but further action is required at the regional level

Government initiatives such as the Strategy 2050 and 100 Steps are helping to strengthen institutions, reduce inequalities and generate further employment. The "Kazakhstan 2050" strategy aspires to achieve sustained annual economic growth of 4 percent, and ensure that

Figure 2

Kazakhstan Sustainable Development Goals Challenge vs Economic Complexity Index Results by Region in Kazakhstan, Scaled 1—100, 2014[5]



5. Note: Please see methodology for RSDGC and RCI calculation; Source: Whiteshield Partners Analysis

at least half of GDP is generated by small and medium-sized businesses. To enhance human development, "Kazakhstan 2050" looks to transform the country into a diversified knowledge-based economy with strong domestic industry and small businesses, improved life conditions of vulnerable groups of society, advanced health services and education, and providing greater opportunities for all people.

The analytical framework used for this report incorporates both capabilities and sustainable development instruments to pave the way to more balanced and equitable growth in Kazakhstan

Based on the results of the Regional Economic Complexity Index (RECI) and the Regional Sustainable Development Goals Challenge Index (RSDGCI)[6], the approach adopted for this report is driven by the following questions:

- What is the current level of capabilities and sustainable development in Kazakhstan at the national and regional level?
- How to explain the different capabilities and sustainable development paths at the regional level?
- Based on these different development paths, what policies are needed to foster more balanced and sustainable development for all of Kazakhstan's regions?

Kazakhstan is ahead of its peers in Central Asia in terms of capabilities and sustainable development, but remains behind the global "tier 1" leaders[7]

While Kazakhstan is ahead of regional peers like Kyrgyzstan and Tajikistan in terms of capabilities, with an Economic Complexity Index[8] score close to the average of 0.5, it remains well behind the global leaders such as the Czech Republic, Hungary, and Slovenia. Likewise, Kazakhstan is ahead of some of its regional peers in meeting the SDGs but it is well behind tier 1 players, with an average of rank of 74.

Two regions were identified to generate policy learnings at the regional and national level: Kyzylorda and Mangystau

The development path of each region depends on its historic evolution and its relative positioning on capabilities and sustainable development. Kyzylorda, has limited capabilities but stronger potential in sustainable development, especially human development. This region should aim for a development pathway based on capabilities, upgrading complexity within its existing sectors of agribusiness as well as stone, glass and metals, and then leveraging higher levels of complexity to diversify into other sectors. Mangystau, which is highly dependent on oil and gas exports, has developed basic capabilities and should focus first on achieving stronger sustainable development, particularly at the human level, before accelerating its diversification efforts. The region should invest a higher proportion of the proceeds from oil and gas exports into education, infrastructure, access to healthcare and gender equality.

Two types of development path were identified – the Capability path and the Sustainable Development path – as well as four types of policy responses

The capability path: most regions in Kazakhstan first follow a capability driven path to development, moving up on the Regional Capability Index (RCI) Index and then right on the Regional SDG (RSDG) Index. These regions have first invested in building the complexity and diversity of their manufacturing and services before turning to improving infrastructure, SME development, employment creation, access health, education, and gender equality. Regions that have followed a capability driven path to development include the Almaty Region, and East Kazakhstan.

The Sustainability path: Once minimum capabilities are established, it is also possible for regions to take a sustainability driven path to development. These regions place a greater initial emphasis on investing in people and sustainable enterprises. Kostanai is an example of a region that has followed this path.

6. Developed and published by Whiteshield Partners in Harvard Business Review in 2013; SDG Index based on Stiglitz & all methodology and developed for this report by Whiteshield Partners for regions of Kazakhstan

7. Tier 1 reflects countries with the highest (1st quartile) Capability and Sustainable Development indices.

8. Economic Complexity is a reflection of a country's productive knowledge – See Haussmann & all

Regions that follow a sustainability path usually first focus on enterprise SDGs before turning to human SDGs and then strengthening their capabilities. Actions to support enterprise SDGs involve investment promotion, the development of techno parks, active labor policies, infrastructure investment and public investment in R&D and innovation. Aktobe and Mangystau, which were low on both SDG dimensions, first developed through the enterprise dimension. The Almaty Region, likewise, shifted its focus on the human dimension once it was strong enough on the enterprise dimension.

The two development paths have been demonstrated through the analysis of RECI and SDGI for all regions of Kazakhstan covering the period 2006-2016. Within the framework of these development paths, four types of policy responses can be adopted by regions:

"Innovate": regions with strong results on both the Economic Complexity Index and SDG Index should focus on R&D support, strengthening linkages between private enterprises and universities, encouraging cross-border R&D collaboration, and attracting FDI that is targeted towards innovation and skills transfer.

"Go Structural": regions that have a high score on the SDG Index but a much lower one on the Economic Complexity Index must implement measures to upgrade their capabilities through more open competition, FDI-SME linkages, export promotion and public-private partnerships for skills development.

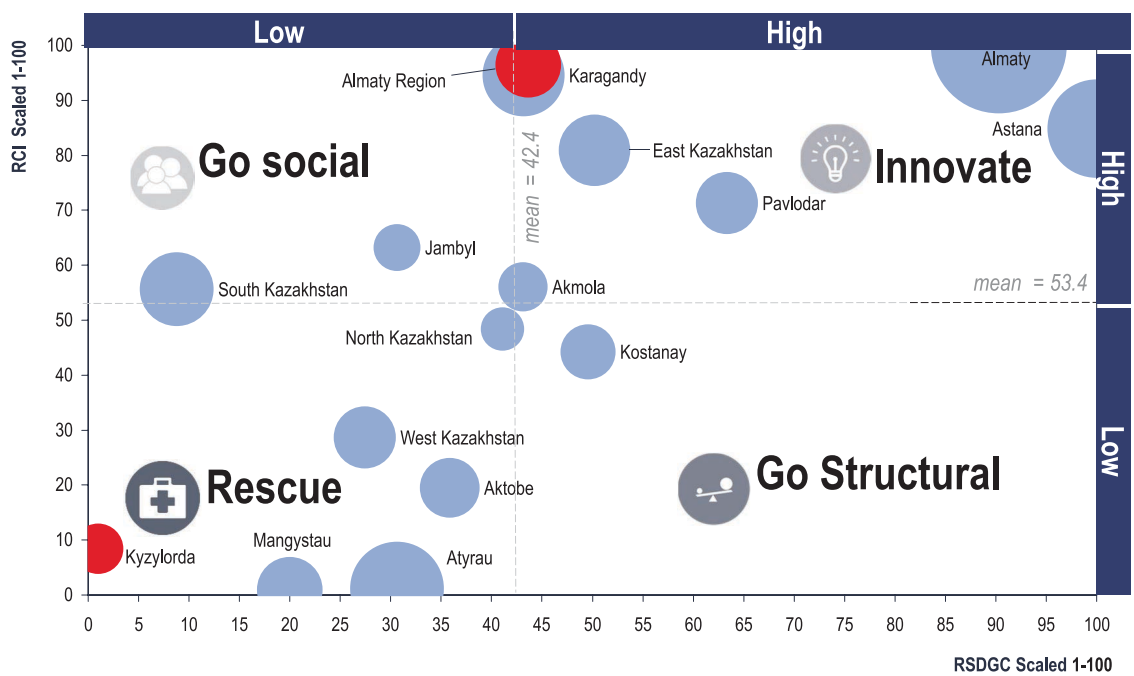
"Go Social": regions with a high score on the Economic Complexity Index but low score on the SDG Index have not invested sufficiently in human development and sustainability. These regions must focus further on investment in education, healthcare, social security, gender equality and sustainable forms of production and consumption.

"Rescue": for regions that demonstrate weak results on both the SDG Index and the Economic Complexity Index there is a need for a combination of horizontal and vertical policies to progressively move up the value chain and generate the financing for sustainable development.

The challenge is to help regions strike a better balance between capabilities and sustainable development within regions while reducing the gaps between regions.

Figure 3

Regions of Kazakhstan ranked by RCI and RSDG Score



Policies for action: A call for Kazakhstan to move from tier 2 to tier 1 group of countries

In order for Kazakhstan to move from the tier 2 to tier 1 group of countries the public authorities will need to follow both a capability and sustainable development path depending on the current position of the different regions of the country. The Government will also need to encourage further collaboration between regions with similar SDG challenges using more successful regions as performance benchmarks. This report offers a roadmap for action for both regions studied as well as lessons learned for other regions and broader development options for policy makers to consider.

At the national level, the country should place an emphasis on building next generation capabilities so that it can compete more effectively on a global scale. National actions include further investment in R&D and innovation from both the Government and the business, investment promotion targeted at the most innovative multinationals (with an emphasis on skills and technology transfer), strengthening the legal and fiscal framework for venture capital and "angel" investing, and accelerating the development of triple helix partnerships between Government, universities and the private sector. Specific policies should be implemented to strengthen the contribution of SMEs to GDP and exports through Foreign Direct Investments (FDI)-SME linkage programmes, as well as the expansion of incubators and credit guarantee schemes to boost access to finance for investment. Moreover, structural reforms to enforce competition policy and product market liberalisation will also be fundamental to creating the right conditions for small and medium sized enterprises to thrive. As Kazakhstan raises its level of economic complexity, it will also further diversify into new sectors and invest in a broader set of factors such as sustainable production and consumption, combating climate change, and building resilient infrastructure.

Kazakhstan should consider the following additional projects to complement initiatives at the regional level:

SDG 10: Conduct an in-depth review of the five poorest regions in the country to help define an appropriate development path taking into account the experience and lessons learned from other regions. The Government should then consider co-financing the key projects designed to implement the policy roadmap.

SDG 9: Implement "triple helix partnerships" between local Government, business and universities in all Kazakhstan's regions that are below the national average on capabilities.

SDG 8: Implement a "Youth Guarantee Scheme" at the national level to ensure that all youth between 14 and 29 are guaranteed a training or employment experience within 6 months of completing their formal education experience, including through internships.

SDG 5: Launch a national gender award for the firms that demonstrate the greatest gender diversity and the ones that demonstrate most progress in this area.

SDG 4: Launch a nation-wide campaign to proportion of digital learning and access to computer equipment in all high schools.

SDG 3: Introduce universal access to healthcare to ensure that all citizens of Kazakhstan have equal access to healthcare.

In order to offer a more extensive analysis and policy recommendations related to SDGs, policy makers could also consider extending the SDG Index prepared for this report from 6 SDGs to all 17 SDGS. The comprehensive SDG Index could be used to compare SDG performance of regions both within and outside Kazakhstan in order to draw policy recommendations on the optimal development path the pursue.

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1 THE ANALYTICAL FRAMEWORK FOR THIS REPORT INCORPORATES BOTH CAPABILITIES AND SUSTAINABLE DEVELOPMENT

1.1 A quantitative approach to modelling regional development

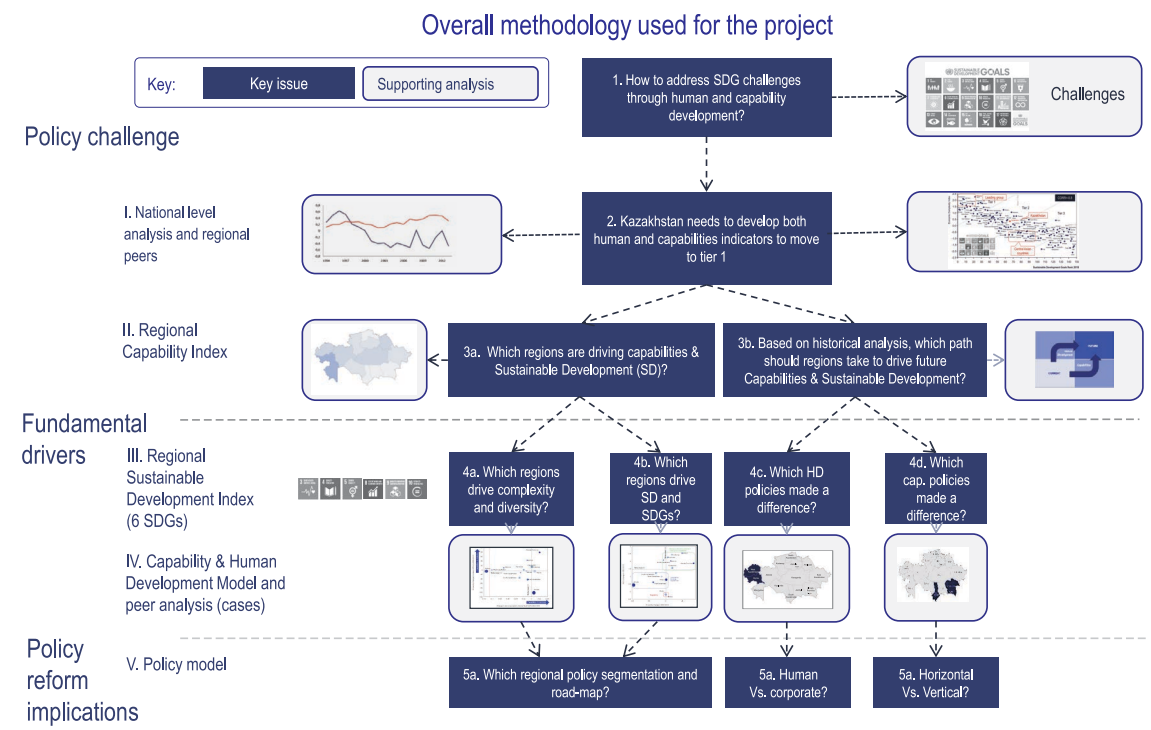
Leveraging the results of two indexes developed by Whiteshield Partners, the Economic Complexity Index and the regional Sustainable Development Goal Challenge Index, the analytical framework adopted in this report considers the following questions:

- What is the current level of capabilities and sustainable development in Kazakhstan at the national and regional level?
- How to explain the different development paths at the regional level?
- Based on these different development paths, what policies are needed to foster more balanced and sustainable development for all of Kazakhstan's regions?

The decision-tree below highlights in more detail the approach taken by Whiteshield Partners to address the above questions and identify region-specific public policy recommendations.

Figure 4

Capabilities and Sustainable development policies decision tree for Kazakhstan



Source: Whiteshield Partners

1.2 Measuring progress in sustainable development at the regional level: The Regional Sustainable Development Goals Challenge Index

While better capabilities and higher levels of economic complexity generally drive human development, the path is not always straight forward, in particular at the regional level. Human development and sustainability may sometimes lag behind capabilities and require active policies to bring them in line with national and international standards[9].

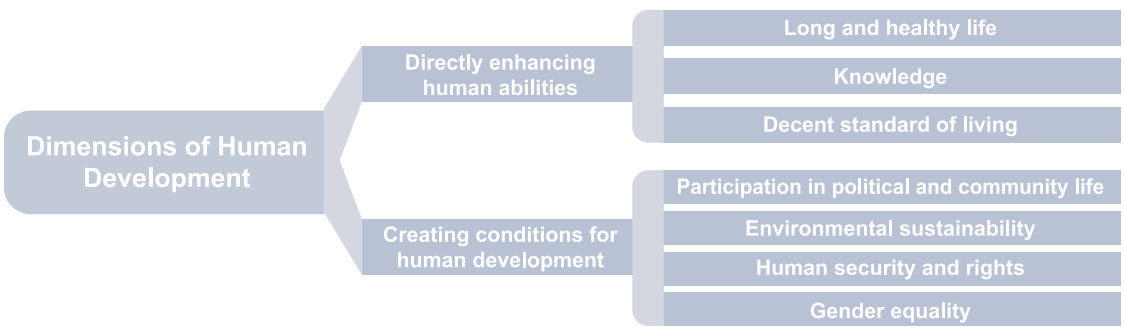
The UNDP defines human development as "expanding the richness of human life, rather than simply the richness of the economy in which human beings live. It is an approach that is focused on people and their opportunities and choices."[10] (see Box 1).

9. Farra & Berglof, Harvard Business Review 2013 – Mapping the knowledge Economy of Russia

10. http://hdr.undp.org/en/humandev

Box 1

The Dimensions of Human Development



People: Human development focuses on improving the lives people lead rather than assuming that economic growth will lead, automatically, to greater wellbeing for all. Income growth is seen as a means to development, rather than an end in itself.

Opportunities: Human development is about giving people more freedom to live lives they value. In effect this means developing people's abilities and giving them a chance to use them. For example, educating a girl would build her skills, but it is of little use if she is denied access to jobs, or does not have the right skills for the local labour market. Three foundations for human development are to live a long, healthy and creative life, to be knowledgeable, and to have access to resources needed for a decent standard of living. Many other things are important too, especially in helping to create the right conditions for human development, and some of these are in the Table 1 in Appendix. Once the basics of human development are achieved, they open up opportunities for progress in other aspects of life.

Choice: Human development is, fundamentally, about more choice. It is about providing people with opportunities, not insisting that they make use of them. No one can guarantee human happiness, and the choices people make are their own concern. The process of development – human development – should at least create an environment for people, individually and collectively, to develop to their full potential and to have a reasonable chance of leading productive and creative lives that they value.[11]

11. Source: http://hdr.undp.org/en/humandev

To address the existing regional challenges and build long-term comparative advantages, policy makers in Kazakhstan, when preparing the country's development strategy, need to place a greater emphasis on sustainability and human development at the regional level, to ensure that the benefits of growth impact the widest number of people, leaving no one behind.

The Sustainable Development Goals (SDGs) provide an excellent framework to assess progress on sustainable development. The 17 SDGs and 169 targets – which focus on the 5 Ps of people, planet, prosperity, people, peace and partnership – build on the Millennium Development Goals (MDGs).

Building on the SDG framework and Stiglitz's previous work on composite indexes for human development[12], Whiteshield Partners has developed a pilot Index to assess selected dimensions of sustainable development challenges at the regional level. It should be noted from the outset that this Index is based on selected SDG goals most relevant to the development of enterprises and individuals in Kazakhstan's regions and is not meant to be comprehensive. It is intended to provide a first snapshot of sustainable development based on the most acute challenges faced by Kazakhstan's regions. A more comprehensive index would need to be developed and applied to Kazakhstan's regions, covering all 17 SDGs.

The index focuses on 6 SDG dimensions that are most relevant to Kazakhstan's challenges at both the national and regional level[13]:

Goal 3: Good health and well-being
Goal 4: Quality Education
Goal 5: Gender Equality
Goal 8: Decent Work and Economic Growth
Goal 9: Industry, Innovation and Infrastructure
Goal 10: Reduced Inequalities

Each of these SDGs is linked to a number of indicators that have been weighted and standardised. The index for each challenge is calculated using a simple average of the standardised indicators (see Table 1 in Appendix)[14]. The RSDGC[15] Index was calculated as a simple average of the six selected challenges.

The first three challenges reflect "Human" dimension of the index and the last three challenged reflect "Enterprise" dimension of the Index.

The indicators used for the index combine both input measures, such as R&D spending as a % of GRP[16], and output measures, such as exports as % of GRP.

So where do Kazakhstan's regions stand on sustainable development?

Based on the initial results of the Sustainable Development Challenge Index, four regions lead the country in sustainable development: Astana and Almaty cities, Pavlodar and East Kazakhstan. The regions that lag behind on sustainable development include West Kazakhstan and Mangystau, followed by Kyzylorda and South Kazakhstan. Policy responses to enhance sustainable development will need to be tailored to the development path of each region, as highlighted in Chapter 2 of this report.

12. Jeffrey D. Sachs, Guido Schmidt-Traub and David Durand-Delacre, Preliminary Sustainable Development Goal (SDG) Index and Dashboard, SDSN Working Paper 15 February 2016, http://unsdsn.org/wp-content/uploads/2016/02/160215-Preliminary-SDG-Index-and-SDG-Dashboard-working-paper-for-consultation.pdf http://www.sdgindex.org/download/

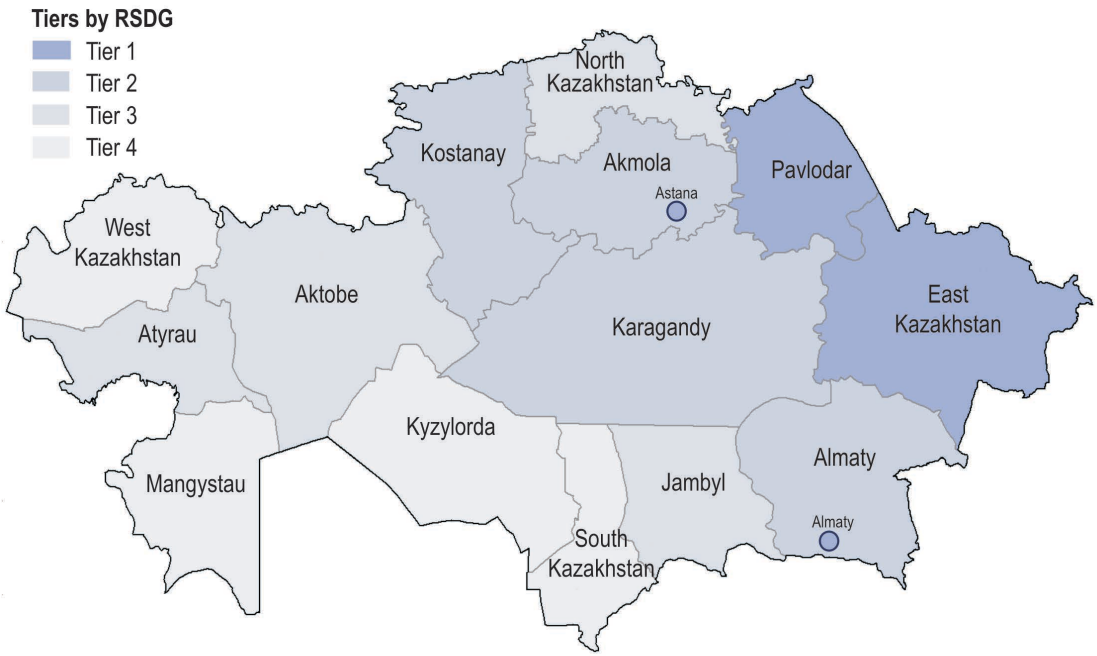
13. The dimensions were shortlisted as a result of review of major national policy programmes, and fine-tuning after interviews with major stakeholders in Kyzylorda and Mangystau regions.

14. The indicators were normalised using the SDG Index methodology. The SDG Challenge average was calculated as a simple average across the normalised indicators. The SDG Challenge Index was calculated as simple average of SDG Challenges. http://unsdsn.org/wp-content/uploads/2016/02/160215-Preliminary-SDG-Index-and-SDG-Dashboard-working-paper-for-consultation.pdf

15. Regional Sustainable Development Goals Challenge Index.

16. Tier 1 reflects top four regions that have the best positions on the RSDGC Index, following the same pattern Tier 2, Tier 3 and Tier 4 (last four regions with the worst RSDGC Index) were allocated.

Figure 5
Regional Sustainable Development Challenge Index Results in Kazakhstan's regions, 2015[16]



Region	Challenge 1: Inequalities between regions (SDG 10)	Challenge 2: Uneven development of innovation and infrastructure	Challenge 3: Uneven levels of growth, productivity and employment	Enterprise level	Challenge 4: Regional disparities in levels of health and access to	Challenge 5: Disparities in education levels (SDG 4)	Challenge 6: Gender inequality (SDG 5)	Individual Level	RSDG Overall average	RSDG Scaled 1-100	RSDG rank
Astana	85.9	71.4	65.2	74.2	98.4	65.6	64.1	76.0	75.1	100.0	1
Almaty	64.1	77.7	58.0	66.6	95.3	75.0	57.8	76.0	71.3	90.3	2
Pavlodar	65.6	58.9	63.4	62.6	62.5	43.8	70.3	58.9	60.8	63.3	3
East Kazakhstan	50.0	75.9	56.3	60.7	53.1	67.2	31.3	50.5	55.6	50.2	4
Kostanay	48.4	64.3	49.1	53.9	34.4	57.8	78.1	56.8	55.4	49.5	5
Almaty Region	53.1	44.6	64.3	54.0	39.1	53.1	64.1	52.1	53.1	43.7	6
Karagandy	46.9	54.5	58.0	53.1	56.3	71.9	29.7	52.6	52.9	43.2	7
Akmola	40.6	69.6	47.3	52.5	31.3	57.8	70.3	53.1	52.8	43.1	8
North Kazakhstan	42.2	47.3	50.9	46.8	51.6	50.0	70.3	57.3	52.0	41.1	9
Aktobe	46.9	42.9	63.4	51.0	64.1	34.4	48.4	49.0	50.0	35.9	10
Atyrau	59.4	49.1	58.9	55.8	45.3	31.3	43.8	40.1	48.0	30.6	11
Jambyl	53.1	48.2	41.1	47.5	29.7	50.0	65.6	48.4	48.0	30.6	11
West Kazakhstan	46.9	28.6	62.5	46.0	57.8	43.8	40.6	47.4	46.7	27.4	13
Mangystau	57.8	47.3	42.0	49.0	45.3	48.4	21.9	38.5	43.8	20.0	14
South Kazakhstan	43.8	44.6	40.2	42.9	43.8	23.4	40.6	35.9	39.4	8.8	15
Kyzylorda	40.6	21.4	29.5	30.5	40.6	45.3	40.6	42.2	36.3	1.0	16

1.3 Measuring capabilities at the regional level: The Regional Economic Complexity Index

To address the existing regional challenges and build long-term comparative advantages, policy makers in Kazakhstan, should not only assess progress on sustainable development but also on capabilities, which ultimately tends to drive sustainable development[17]. The foundation for capabilities, of course, is knowledge, which is also the driver behind economic growth[18]. The novel and innovative concept of Economic Complexity put forward by Hausmann and Hidalgo[19] has proven to be one of the most promising approaches to turn such 'intangible' concepts as knowledge and capabilities into sources of comparative advantages and measurable units of analysis.

Armed with data to assess productive knowledge, policy makers can recognise different development paths and address capability gaps based on the stage of development.

Whiteshield Partners has extended the Hausmann and Hidalgo approach to the analysis of capabilities at the sub-national level by aligning global level information on product complexity with regional level export data and assessing capabilities of the regions of Kazakhstan from 2003 to 2014. Whiteshield Partners research is based on collection, triangulation and analysis of comprehensive national and regional export data complemented by the analysis of business constraints[20], intellectual property development and scientific publications trends.

This approach uses capabilities, value-chains and territories (or regions) as dimensions for the analysis. It guides policymakers and investors in the identification and improvement of capability and innovation opportunities in Kazakhstan at the regional level by addressing the following questions:

1 - Why are products and sectors of Kazakhstan not moving up the value-chains fast enough vs. peer countries like Turkey?

2 - Which regions are driving the productive knowledge of Kazakhstan? What is their relative role in contributing to this productive knowledge and how did their role evolve over time?

3 - Which regions are driving the diversification of the country? Which ones have created new productive knowledge over the reference period of 2003-2015?

4 - Based on all previous analysis, what vertical and horizontal policies[21] can address specific capability gaps in the regions of Kazakhstan and improve their future performance?

What is the level of capabilities in Kazakhstan?

Kazakhstan is underperforming in terms of capability building compared to its global peers but ahead of its regional peers

Capabilities are measured by economic complexity, which in turn is closely correlated to manufacturing exports. With additional productive knowledge, a country can expand its production and increase the share of manufacturing in the total merchandise exports. The reverse is also true: increased manufacturing as a share of exports also facilitates knowledge accumulation. In Kazakhstan, the Economic Complexity Index has been declining since 1996 with several ups and downs over the last five years while the share of merchandise exports has been monotonously decreasing over the reference period (see Figure 8). By contrast, Turkey, which started with a lower Economic Complexity Index than *Kazakhstan in the 1995, was able to out-perform Kazakhstan both in terms of economic complexity and the share of manufacturing export (except in 2014 were oil price effects distorted Kazakhstan's performance).*

Turkey was selected as a fast-developing regional peer with different export structure and capability development trends. Over a decade, Turkey outperformed Kazakhstan by such indicators as WEF Global Competitiveness Index (GCI) and Economic Complexity Index. Turkey and Kazakhstan were ranked the 51st and the 71st by the GCI in 2005 and the 45th and the 50th in 2014 respectively.

17. Haussman, Hidalgo, Atlas of Economic Complexity (2105) and Rodrick (2015)

18. Source: OECD (2011), "Measuring Innovation", Paris: OECD

19. Source: Hausmann, Hidalgo et al. (2011), "The Atlas of Economic Complexity", Harvard, MIT. Note: According to the authors calculations, the Economic Complexity Index accounts for 15.1 percent of the variance in economic growth during the 1996-2008 period vs. the World Governance Indicators combined including Government effectiveness, regulatory quality, rule of law, voice and accountability, political stability or control of corruption which only account for 1 percent. ECI also has a 0.75 percent correlation coefficient with GDP growth.

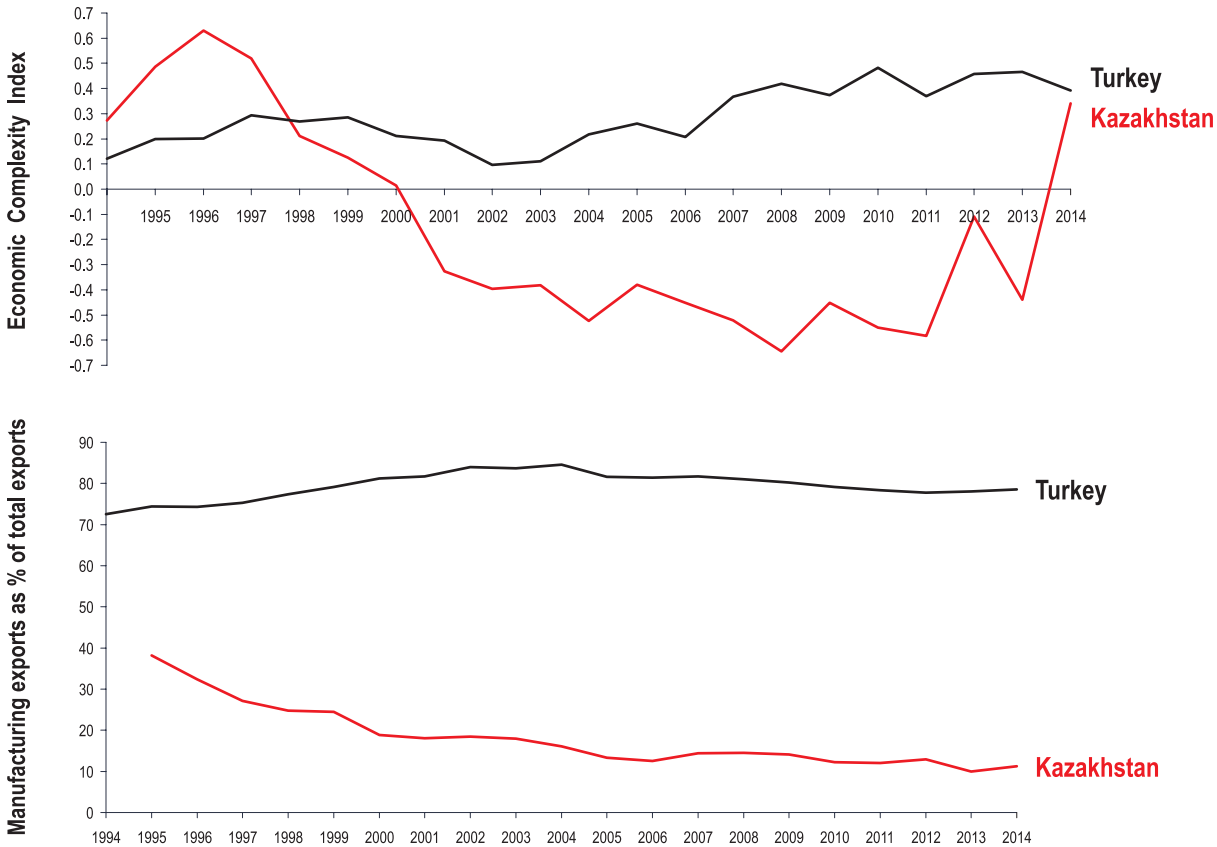
20. Note: based on Business Environment and Enterprise Performance Survey.

21. Horizontal policies imply policies applied across the country, while Vertical policies refer to sectors and industries.

Figure 6

a. Economic Complexity Index 1995–2014 (bottom)[22] and

b. Manufactures exports as the % of merchandise exports in 1995–2014 (top)



22. Source: World Bank database, 1994-2013, http://databank.worldbank.org/data/views/variableSelection/selectvariables.aspx?source=world-development-indicators#s_m, Observatory of Economic Complexity https://atlas.media.mit.edu/en/rankings/country/, Whiteshield Partners analysis

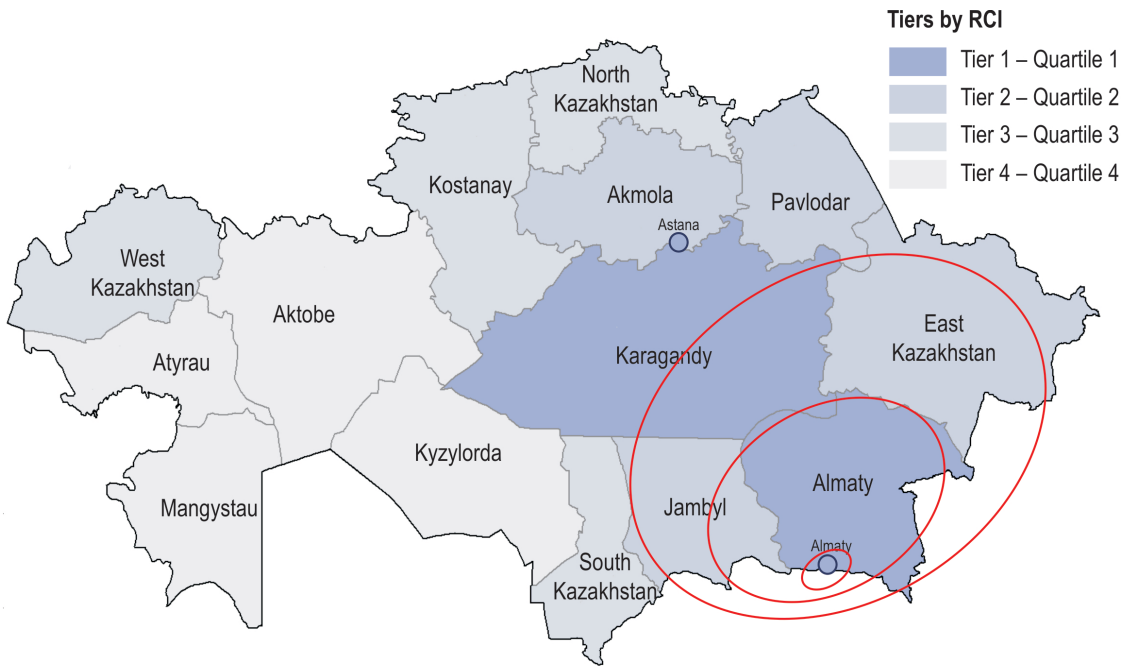
At the regional level, economic complexity is the highest in the administrative cities of Astana and Almaty as well as Karagandy and the Almaty region. It should be noted that the two regions of focus in this report, Mangystau and Kyzylorda, have among lowest level of capabilities in the country (with Mangystau ahead of Kyzylorda). Both horizontal and vertical policy measures are needed to help these regions raise their level of economic complexity to achieve greater prosperity and sustainable development. How these regions can best achieve this target will the subject of the second part of this report.

Figure 7

Economic Complexity Index Results by Region in Kazakhstan, 2015[23]

Colours corresponding to rank by Regional Capability Index

Map of Kazakhstan regions with colours corresponding to rank by Regional Capability Index 2014



Regions	Complexity		Diversity	Industrialisation					
	RECI	Contribution to services sector (CS)	Number of RCAs	Contribution to processing sector (CP)	RCI	RCI scaled 1-100	Ranking by RCI 2014	Complexity dimension	Diversity& Industrialisation dimension
Almaty	0.1	1.6	85	0.4	66.4	100.0	1	79.9	52.9
Almaty Region	0.3	0.8	79	1.5	64.5	96.5	2	60.8	68.1
Karagandy	0.2	0.6	42	3.1	63.5	94.5	3	53.5	73.4
Astana	0.0	2.1	37	0.2	58.2	84.9	4	95.5	20.8
East Kazakhstan	-0.2	0.6	56	2.1	56.0	80.9	5	48.1	63.9
Pavlodar	-0.3	0.4	39	2.6	50.8	71.3	6	39.8	61.8
Jambyl	-0.4	0.5	58	1.3	46.4	63.3	7	41.5	51.3
Akmola	-0.5	0.7	38	1.4	42.5	56.1	8	44.3	40.7
South Kazakhstan	-1.0	0.5	53	1.6	42.3	55.7	9	30.6	54.0
North Kazakhstan	-0.3	0.5	44	0.8	38.3	48.4	10	41.4	35.1
Kostanay	-0.7	0.5	40	1.0	36.0	44.3	11	36.8	35.2
West Kazakhstan	0.0	0.6	6	0.4	27.5	28.7	12	50.5	4.6
Aktobe	-1.4	0.5	16	0.9	22.5	19.5	13	25.6	19.4
Kyzylorda	-1.2	0.6	6	0.2	16.5	8.5	14	30.8	2.1
Atyrau	-2.7	1.1	7	0.4	12.5	1.2	15	20.4	4.7
Mangystau	-2.3	1.0	5	0.3	12.4	1.0	16	22.5	2.3

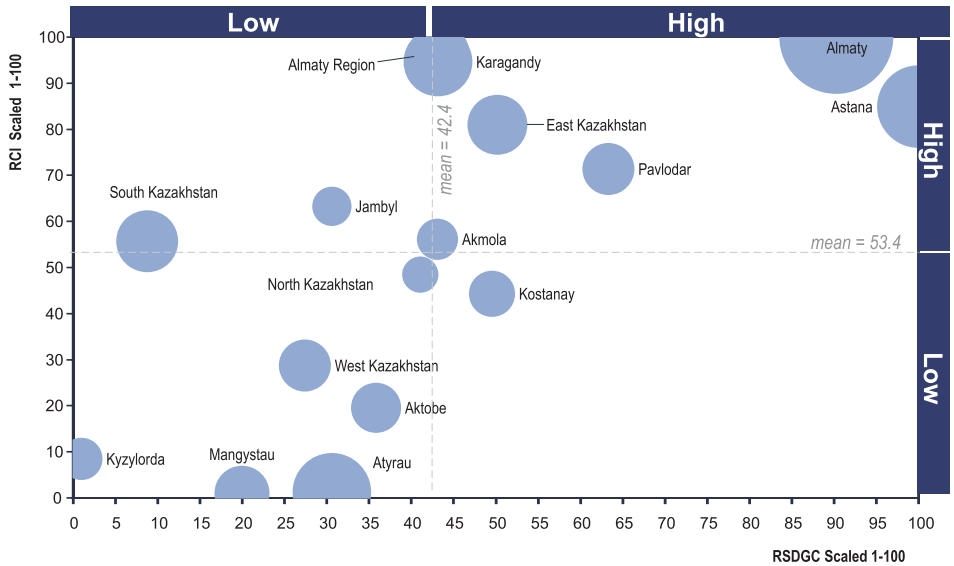
Based on the SDG Index and Capability Index results, it is clear that not all regions are following the same development path. While some regions are more advanced in terms of capabilities, others are ahead on sustainable development (see figure 8).

23. Note: non-oil GRP (mining excluded) has correlation of 0.6 with Regional Capability Index in 2014; For Atyrau threshold RCA was selected to be equal to 1; Source: stat.gov.kz, EBRD, Whiteshield Partners

24. Note: Please see methodology for RSDGC and RCI calculation; Source: Whiteshield Partners Analysis

Figure 8

Kazakhstan Sustainable Development Goals Challenge (RSDHC) vs Economic Complexity Index (RCI) Results by Region in Kazakhstan, Scaled 1—100, 2014[24]



Only Almaty region and Jambyl went up on both dimensions, none of the regions went up two tiers. Improving on RSDGC dimension appears more complicated without strong existent positions on Capability dimension. Out of the regions that were both low on RCI and RSDGC dimensions Jambyl and South Kazakhstan have moved up the capability path, Almaty region and East Kazakhstan were already high on Capability dimension and have managed to move up the RSDGC dimension as well; none of the regions that had low RSDGC have managed to improve on it, Kostanai was already high on RSDGC dimension has slightly improved its positions on Capability dimension. Both Kyzylorda and Mangystau remained stagnant and low on both dimensions. Please see methodology for RSDGC and RCI calculation (Whiteshield Partners Analysis).

This reports aims to identify key national and regional challenges to building capabilities and achieving sustainable development, selecting two case studies to further understand and identify relevant policy actions and highlight national policy learning and development paths. We now turn to the main sustainable development and capabilities challenges faced by Kazakhstan and how the Government has already responded.

2 OVERVIEW: STRONG DISPARITIES BETWEEN KAZAKHSTAN'S REGIONS NEED TO BE ADDRESSED

2.1 Kazakhstan needs to unlock its capability and sustainable development potential

Capabilities, which drive higher levels of innovation, productivity and growth, are strongly correlated with sustainable development. The latter was originally defined by the Brundtland Commission as development "that meets the needs of the present without compromising the ability of future generations to meet their own needs".[25] This original sustainability theme was successfully captured by the SDGs, and the sustainable development's three pillars of economic development, social equity and environmental protection, are fundamentally driven by capabilities.

While Kazakhstan is ahead of peers in its region in terms of capabilities, it remains well behind the global leaders, with an Economic Complexity Index[26] (ECI) score close to the average of less than 0.5 (see figure 9). Kazakhstan's overall performance in meeting the UN's Sustainable Development Goals (SDGs) does not fare much better: while ahead of some of its regional peers, is also close to the average of rank of 74.

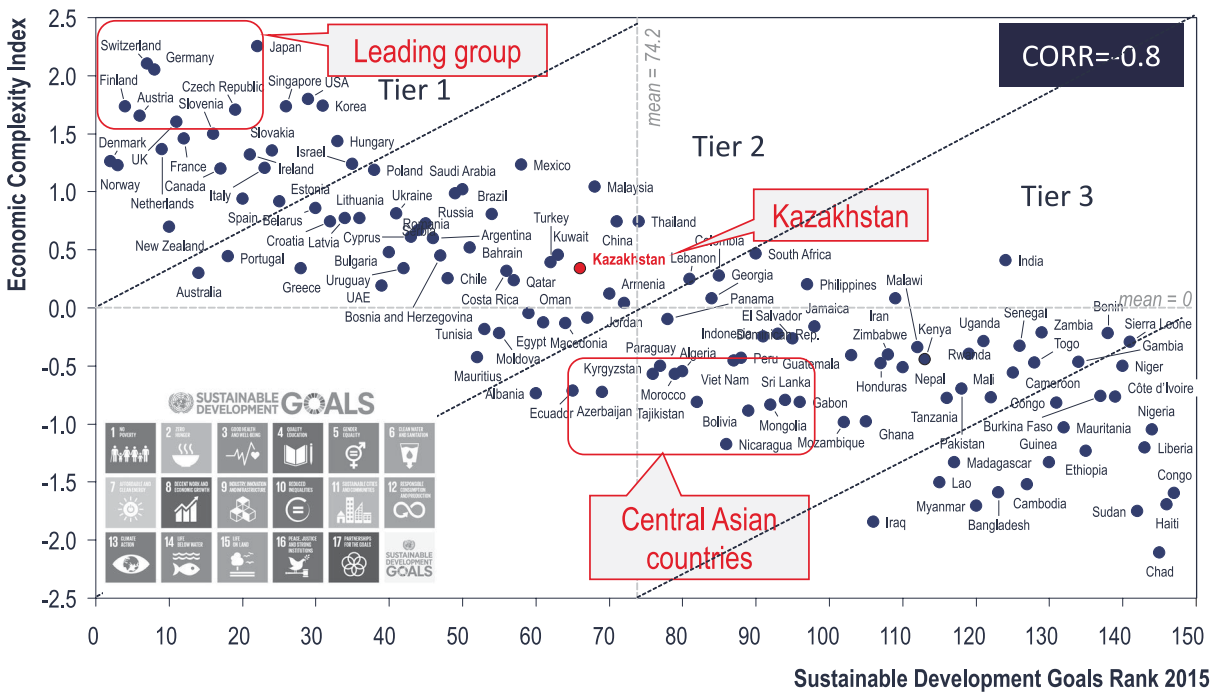
25. Brundtland Commission, «Our Common Future» Oxford University Press, 1987.

26. Economic Complexity is a reflection of a country's productive knowledge – See Haussmann & all

27. It should be noted that the lower the rank on Sustainable Development Goals the better is the result relative to peers. http://www.sdgindex.org/download/

Figure 9

Economic Complexity Index Rank 2014 vs Sustainable Development Goals Index Rank 2015[27]



Kazakhstan has an opportunity to 'unlock' its potential both in terms of capabilities and sustainable development through targeted policies at the national and regional level. For instance, further investment in R&D and innovation from both Government and business is one of the paths that would help Kazakhstan move up the value chain and generate further resources for sustainable development.

28. The Human Development Index is a composite statistic of life expectancy, education, and income per capita indicators, which are used to rank countries into four tiers of human development.

2.2 Kazakhstan is performing relatively well on human development at the national level but displays strong disparities at the regional level

Human development, including financial well-being, healthy life and educational achievement, has made more progress in Kazakhstan than sustainable development, which encompasses a broader set of factors such as sustainable production and consumption, combating climate change, and building resilient infrastructure. Kazakhstan's score on the Human Development Index (HDI)[28] is well above the mean of 0.7, performing better than countries such as Turkey, China or Georgia or other countries in Central Asia (see Figure 10).

The country's strong performance in human development can be explained in part by significant Government investment in health and education as well as free and broad access to these public goods. Moreover, Government initiatives such as the Strategy 2050 and President Nazarbayev's 100 Steps are helping to strengthen institutions, reduce inequalities and generate further employment.

Kazakhstan's average national performance on human development, however, hides a very uneven performance at the regional level[29] (see figure 11).

29. See for example «Kazakhstan Regional Disparities: Economic Performance by Oblast», US AID, 2006

Figure 10

Economic Complexity Rank 2014 vs Human Development Index

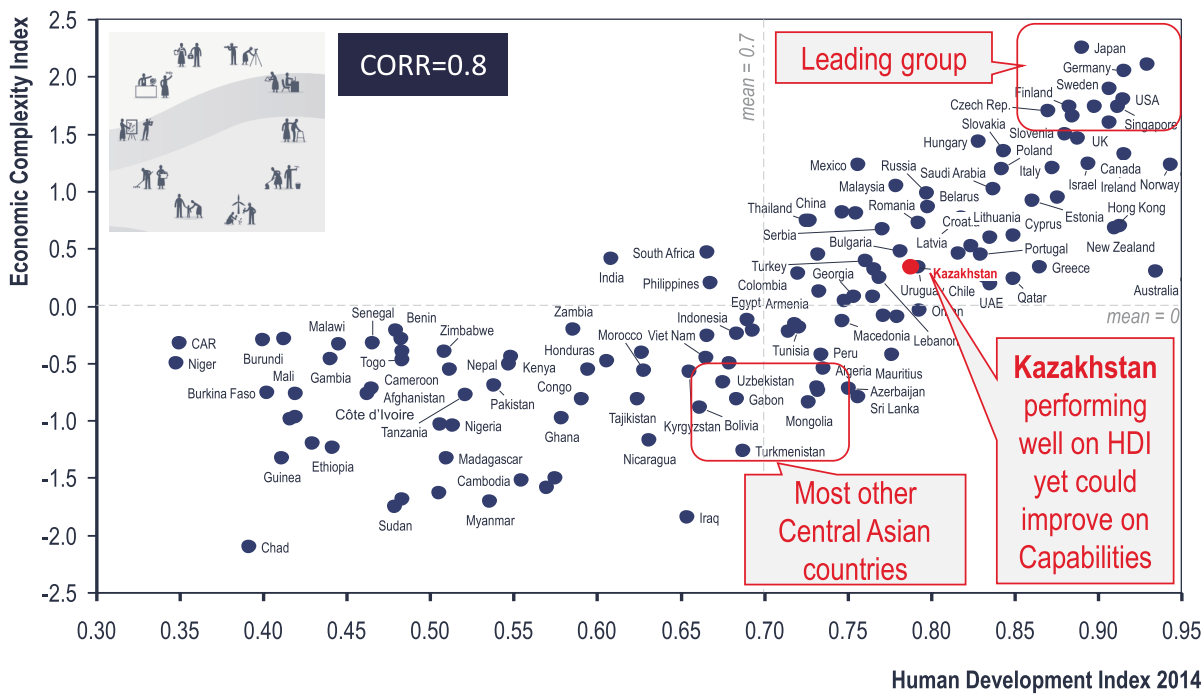
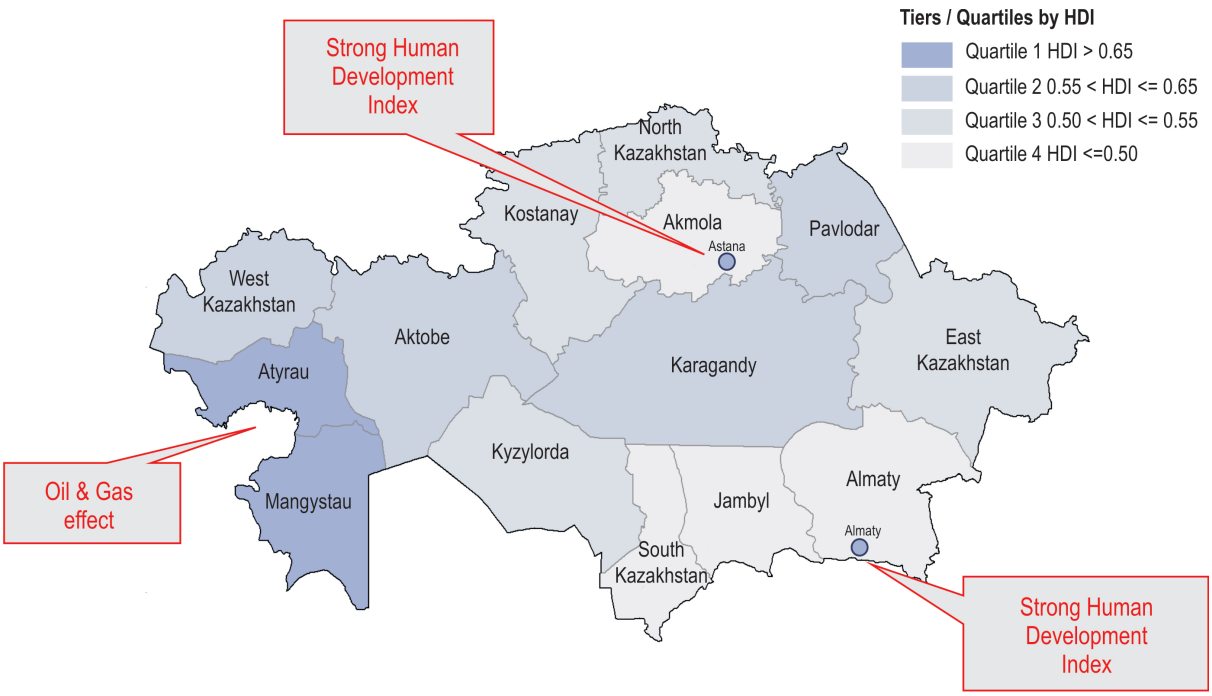


Figure 11

Human Development Index by region, 2014[30]



A number of regions are well below the average HDI score for the country, in particular Jambyl, Akmola, South Kazakhstan and the Almaty region, which are the weakest performers, with a score of less than 0.50. Not surprisingly, the administrative cities of Almaty and Astana have the highest HDI scores in the country, followed by the regions of Atyrau and Mangystau, which benefit from oil and gas revenues.

30. Note: HDI is calculated according to UNDP methodology subject to data available: (((life xepectancy at birth (2014)-20)/65) * (mean years of schooling (2006)/15)* (GRP per capita, USD PPP 2011 (2014) -100)/74900)^(1/3) Source: CSRK, http://stat.gov.kz/getImg?id=ESTAT103360, http://www.epdc.org/country/kazakhstan/search?indicators=575&year_from=1990&year_to=2016, http://data.worldbank.org/indicator/PA.NUS.PPP, http://hdr.undp.org/sites/default/files/hdr2015_technical_notes.pdf, Whiteshield Partners Analysis

2.3 Kazakhstan faces six sustainable development challenges at the regional level

The strong disparities in human development between Kazakhstan's regions are mirrored by an uneven performance in sustainable development at the regional level. In particular, Kazakhstan faces six sustainable development challenges, all of which are closely related to the SDGs. These challenges are: (1) High levels of inequality between regions (SDG 10); (2) Uneven development of innovation and infrastructure (SDG 9); (3) Uneven levels of growth, productivity and employment (SDG 8); (4) Regional disparities in terms of health and access to healthcare (SDG 3); (5) Disparities in education levels (SDG 4); (6) Gender inequality (SDG 5). The first three challenges are primarily at the enterprise level, whereas the next three are related more to individuals.

Challenge 1: High levels of inequality between regions (SDG 10)

Disparities in Gross Regional Product Per Capita[31]

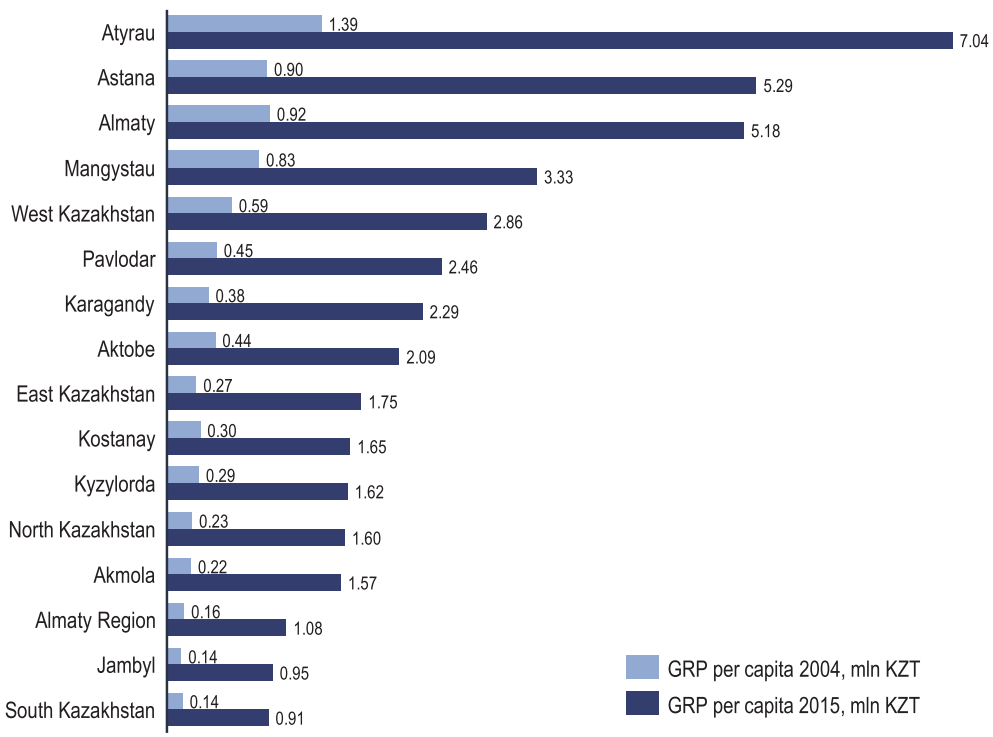
Most of the country's GDP is concentrated around the administrative cities of Astana and Almaty, the main oil-extracting region of Atyrau and the industrial regions of Karagandy and South Kazakhstan. These regions and cities accounted for 55% of the cumulated GRP in 2013.

Although GRP per capita has grown rapidly over the last decade in all of Kazakhstan's regions, the disparities continue to be striking. Consider that Atyrau had more than seven times the GRP per capita of South Kazakhstan in 2015.

Growth rates of regions with established processing sectors, such as Karagandy, East Kazakhstan, Pavlodar, Kostanay etc, although positive, fall behind growth rates of oil extracting regions and cities. It led to decreased contribution of these regions into the country's GDP (see figure 12).

Figure 12

GRP per capita 2015 vs GRP per capita 2004[32]

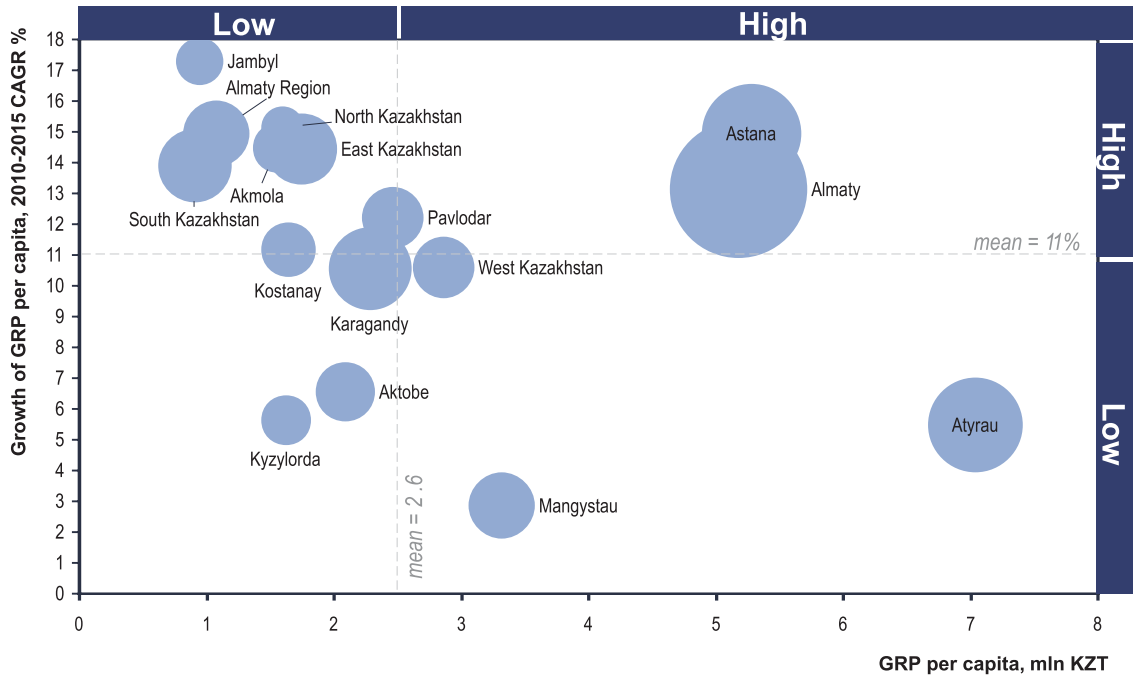


31. Source: Here and after, if nothing else is noted - CSRK, stat.gov.kz.

32. Note: nominal GRP; Source: http://stat.gov.kz/getImg?id=ESTAT119162, http://stat.gov.kz/getImg?id=ESTAT103360, Whiteshield Partners Analysis

Figure 13

GRP per Capita in 2015 vs Growth of GRP per Capita 2010–2015 in Kazakhstan[33]



When measuring inequality in terms of GRP per capita and GRP per capita growth, Kazakhstan has different clusters of regions (see figure 13).

A first "Laggards" cluster, which includes the regions of Kyzylorda and Aktobe, has both low GDP per capita and relatively low GDP per capita growth. These regions could benefit from both horizontal and vertical policies to bring them closer to the country's mean income levels. As an industrialised region, Aktobe could focus more on the upgrading and modernisation of its plants and machinery to boost productivity and evolve towards more advanced manufacturing. Kyzylorda should consider diversifying outside of its dependence on commodities, towards other areas such as value added IT services. Another cluster of regions, Jambyl, Almaty Region, North Kazakhstan, South Kazakhstan, and East Kazakhstan, has a much lower GRP per capita (half the mean) but it is growing fast, at 15% per year or more.

Regions in the "Challenger" cluster may benefit from short-term policies to alleviate poverty – such as wage supplements – but they are already on a trend to reach the national GDP per capita average in a few years.

Atyrau and Mangystau fall into the "Energy based" cluster: regions that have a high GDP per capita but below average GDP per capita growth. These regions could benefit from vertical policies to boost their level of R&D, innovation and productivity and reach higher levels of growth in wealth creation.

The "winning cluster" includes regions or cities that have consistently high GDP per capita and GDP per capita growth. The administrative cities of Astana and Almaty both fall in this category. As the engines of growth and wealth creation in Kazakhstan, the cities of Astana and Almaty could find additional ways to positively impact other regions, namely by establishing commercial linkage programmes with the poorest regions in the country.

Despite positive dynamics of GRP per capita and personal income growth across the regions, it was notably advantageous for bottom 40% (share increase by more than 1 p.p.) only in Astana, Pavlodar, and Almaty region[34].

33. Note: GRP per capita growth - nominal GRP; Source: http://stat.gov.kz/getImg?id=ESTAT119162, http://stat.gov.kz/getImg?id=ESTAT103360, Whiteshield Partners Analysis

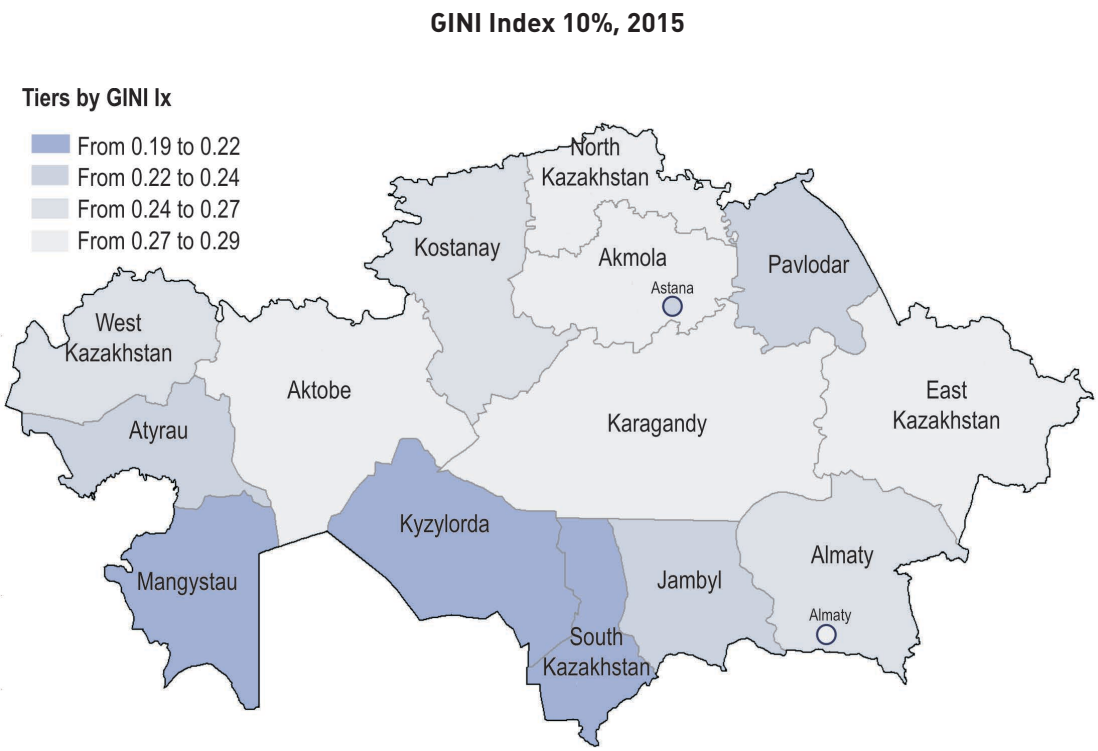
34. Country Case Study on Regional Disparities on the Republic of Kazakhstan, 2015.

Measuring inequality thanks to a regional Gini index

While GDP per capita and GDP per capita growth provide an indication of differences in wealth creation between regions, they do not measure inequality within regions. The Gini index assesses the degree to which income distribution deviates from perfectly equal distribution. A Gini result of 0 represents perfect equality while a result of 100 signals perfect inequality. It should be noted that the regions in Kazakhstan with the highest level of inequality – Akmola, Karagandy and East Kazakhstan – are also the ones where GDP per capita is growing the fastest (see figures 14 and 15). Rapidly growing economies typically generate higher levels of inequality in the short term that can be addressed through targeted policies. As the regions of Akmola, Karagandy and East Kazakhstan not only have high levels of inequality but are also among the poorest in the country, they could benefit from poverty alleviation measures, such as income supplements for the most needy families. These income supplements could be partly financed at the national level until they become self-sustained through their rapid growth. Further analysis should be conducted to pinpoint the sources of growth in these regions and why it is not trickling down to the broader population. The lowest level of inequality in Kazakhstan can be found in Mangystau, Kyzylorda, South Kazakhstan and Pavlodar, with a Gini index of less than 0.22. Lessons learned from policies adopted in these regions could be used to benefit other regions with higher levels of inequality.

Figure 14

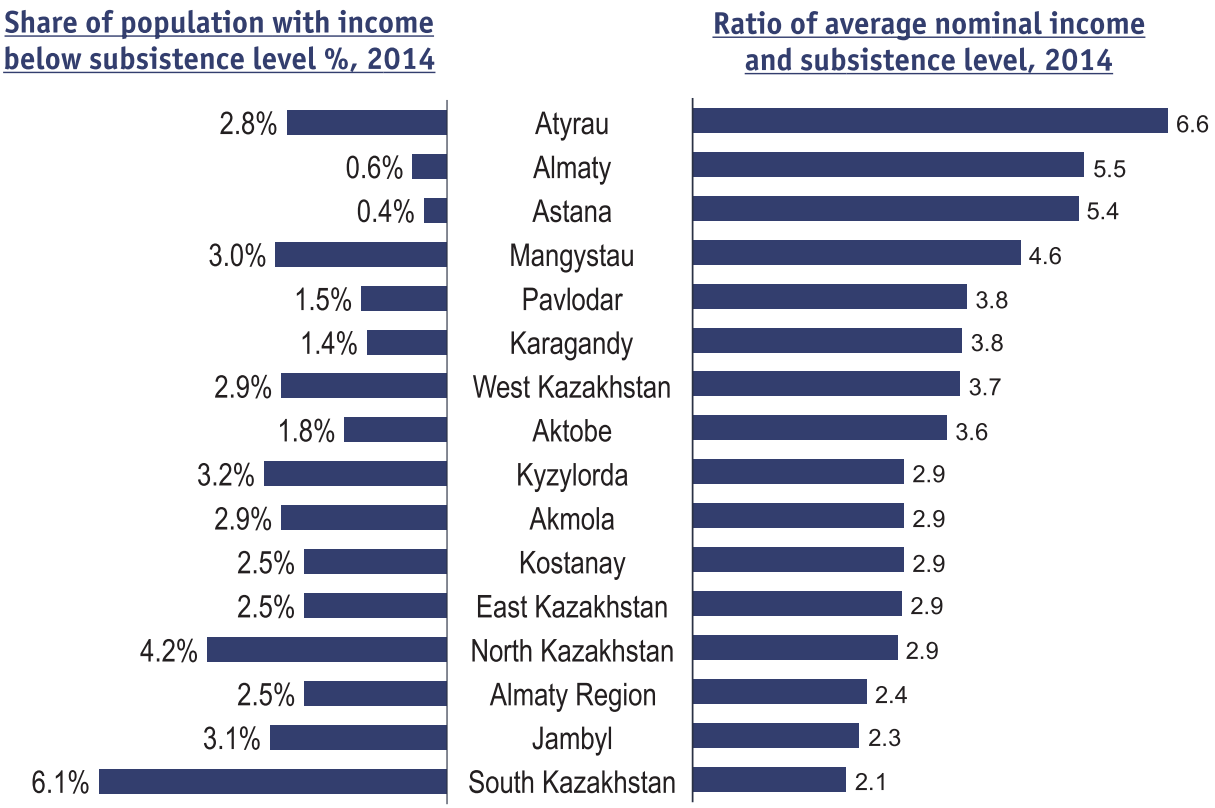
Gini Index for the Regions of Kazakhstan, 2015[35]



35. Note: tier intervals may appear uneven due to range value rounding issue. Map color coding reflects accurate tier split based on equal intervals within max and minimum values range. Source: http://taldau.stat.gov.kz/ru/PivotGrid/PivotTable?indicators=704502, Whiteshield Partners Analysis

Figure 15

Share of population with income below subsistence level (%) and ratio of average nominal income and subsistence level, 2014[36]



36. Source: http://taldau.stat.gov.kz/ru/Constructor Wizard/Pivot GridPageWizard, Whiteshield Partners Analysis

Income and Poverty discrepancies

Yet another way to measure inequality is to consider the share of the population below subsistence level (see figure 15). In 2014, South Kazakhstan had 15 times the level of population under the subsistence level compared to the city of Astana (0.4%). For North Kazakhstan it was ten times.

These different measures of inequality in Kazakhstan highlight strong discrepancies between regions that could be addressed through targeted policies such as income supplements or a more progressive tax policy. The regions with the greatest poverty levels, such as South and North Kazakhstan would certainly benefit from financial support at the national level.

Challenge 2: Uneven development of innovation and infrastructure (SDG 9)

The second challenge, after inequality, is the strong discrepancy between regions in their investment in innovation and infrastructure. The administrative cities of Almaty and Astana stand out not only in terms of their income per capita but also in terms of their investment in innovation, as measured by R&D spending as % of GRP and the number of R&D workers relative to the population (see figure 16).

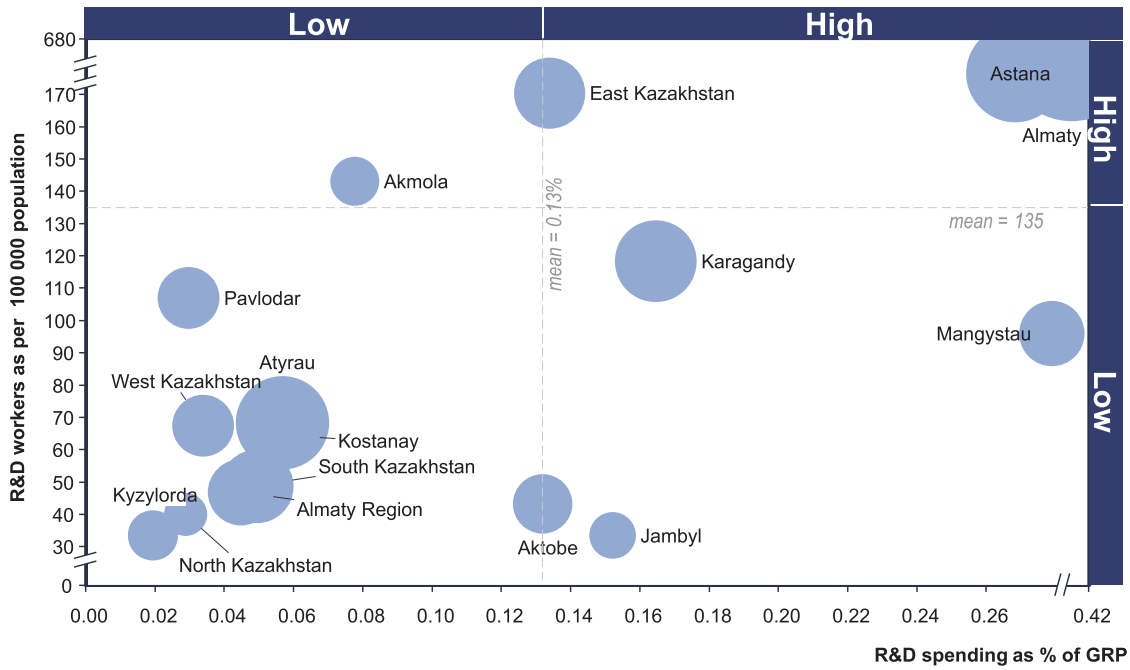
37. Source: http://stat.gov.kz/getImg?id=ESTAT107166, Whiteshield Partners Analysis

38. Source: CSRK, Customs, Whiteshield calculations

39. Note: 9.0 bln KZT out of 17.8 bln KZT

Figure 16

R&D Spending as % of GRP vs % R&D workers per 100,000 population in Kazakhstan, 2015[37]

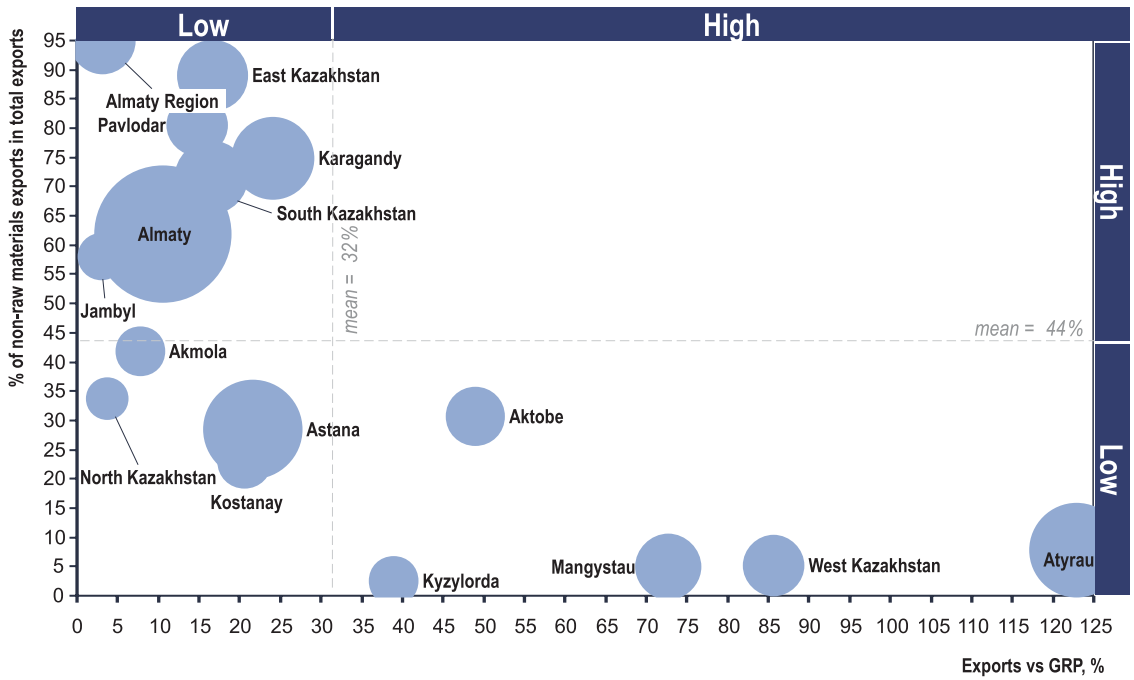


The contrast between Almaty at one end of the spectrum, and the regions of West Kazakhstan, Pavlodar, Kyzylorda, Almaty Region, Atyrau and Kostanay at the other end, is striking. This latter group of regions should consider different ways to invest further in R&D and reduce the gap of up to twenty fold with Almaty. Mangystau also has a relatively high level of R&D spending as % of GRP, in particular for a resource dependent region, but is not clear that this spending is generating results: although exports represent 75% of GRP, only 5% of these exports are non-raw material (see figure 17). Moreover, Mangystau is in Kazakhstan's lowest quartile in terms of innovation GRP as a % of total GRP (see figure 18). Mangystau should consider options to better orient its R&D spending so that it translates into innovation.

The majority of regions that have a very low proportion of non-commodity exports are dependent on oil and gas extraction, which accounts for 50% of the country's industry[38].The oil-extracting regions, Atyrau, Mangystau, West Kazakhstan, Aktobe and Kyzylorda, accounted for 73% of Kazakhstan's export in 2013[39] while non-extracting regions like Pavlodar, Akmola, Almaty Region, North Kazakhstan and Jambyl accounted for only 3%. Kazakhstan's regions that have less than 10% of non-commodity exports in total exports (the oil extracting regions of Kyzylorda, Atyrau, West Kazakhstan, Mangystau) will need to find ways to move up the value chain from commodity extraction to processing and manufacturing.

Figure 17

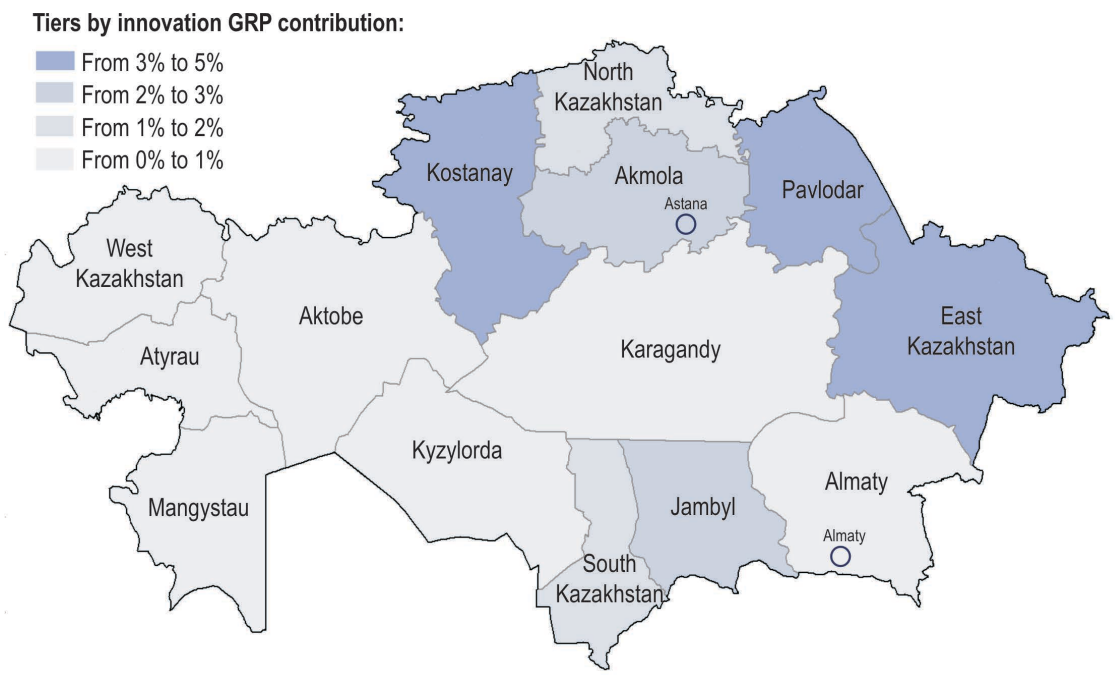
Exports as % of GRP vs non–raw materials exports in total exports, 2014 (size of bubble corresponds to GRP in 2015)[40]



40. Source: http://stat.gov.kz/getImg?id=ESTAT109252, https://www.oanda.com/currency/average, http://stat.gov.kz/getImg?id=ESTAT107166, http://stat.gov.kz/getImg?id=ESTAT103360, Whiteshield Partners Analysis

Figure 18

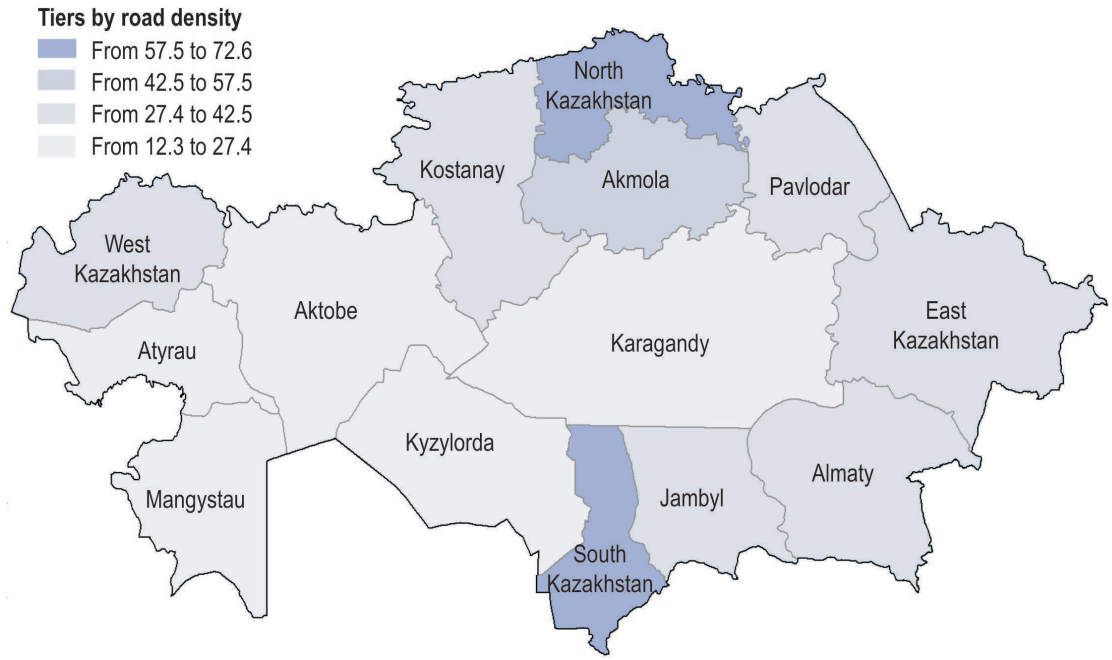
Innovation GRP as % of total GRP, 2014[41]



41. Note: tier intervals may appear uneven due to range value rounding issue. Map color coding reflects accurate tier split based on equal intervals within max and minimum values range; Source: http://stat.gov.kz/getImg?id=ESTAT109252, Whiteshield Partners Analysis

Figure 19

Road Density in Kazakhztan per 1000 km2, 2015[42]



42. Note: tier intervals may appear uneven due to range value rounding issue. Map color coding reflects accurate tier split based on equal intervals within max and minimum values range. Source: http://stat.gov.kz/getImg?id=ESTAT107166, Regions of Kazakhstan Bulletin – Section 7: Real economy, Whiteshield Partners Analysis

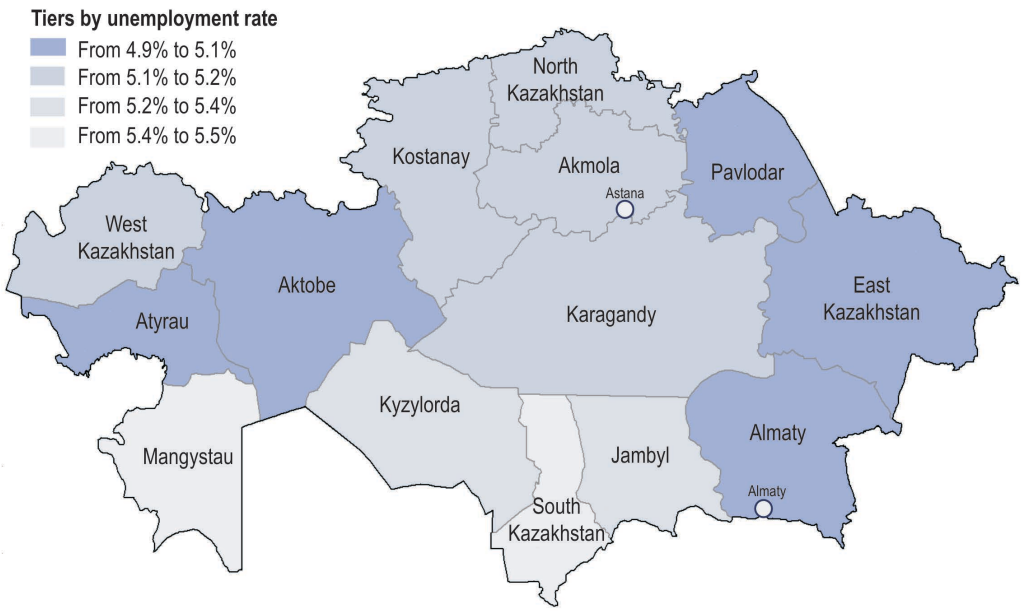
The development and maintenance of modern transport, communications and energy infrastructure is also critical for sustainable development. Yet infrastructure is very uneven between Kazakhstan's regions. Consider the case of roads. Road density is highest in the North Kazakhstan and South Kazakhstan. However, in the center and west of the country, including Karagandy, Kyzylorda, Aktobe, Atyrau and Mangystau, road infrastructure is much lower, with less than 20 km per 1 000 km^2 (see figure 19). The quality and density of roads is fundamental to effective supply chains. These regions should evaluate options to invest further in road infrastructure, with financial support from the national Government or through public-private partnerships (PPPs).

Challenge 3: Uneven levels of growth, productivity and employment (SDG 8)

The third challenge to sustainable development faced by Kazakhstan's regions is productivity and employment. Although Kazakhstan's average unemployment rate of 5% is low by international standards, again there are variations of employment between regions (see figure 20) The regions with the highest rates of unemployment, such as South Kazakhstan and Mangystau, must strengthen their capabilities, pursue structural reforms and implement active labour market policies.

Figure 20

Average Unemployment Rates by Region, 2010–2015[43]

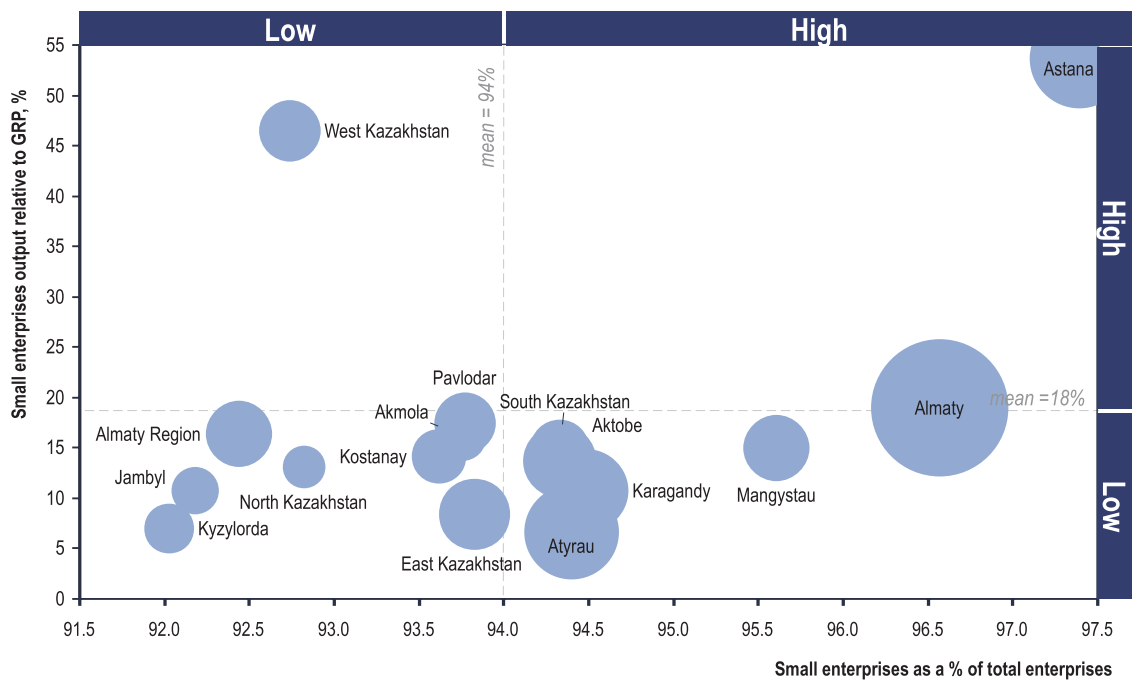


43. Note: tier intervals may appear uneven due to range value rounding issue. Map color coding reflects accurate tier split based on equal intervals within max and minimum values range; Source: http://taldau.stat.gov.kz/ru/PivotGrid/PivotTable?indicators=702944, Whiteshield Partners Analysis

Small and medium sized enterprises (SMEs) represent an excellent source of employment creation. Although SMEs account for over 90% of enterprises in all of Kazakhstan's regions, their contribution to GRP is no more than 20% in all regions except Astana and West Kazakhstan (see figure 21).

Figure 21

Small enterprises as a % of total enterprises (2015) and small enterprises output relative to GRP % (2014) (size of the bubble corresponds to GRP in 2015)[44]



44. Source: http://stat.gov.kz/getImg?id=ESTAT107166, http://stat.gov.kz/getImg?id=ESTAT103360, Whiteshield Partners Analysis

The regions with the highest priority to support SME development are those where the relative number of SMEs and their contribution to GRP is the lowest (bottom left quartile of figure 23). These regions include Jambyl, Kyzylorda, the Almaty region, North Kazakhstan, Kostanay, Pavlodar and East Kazakhstan.

Policies to support SME development in these regions include making it easier for a business to register and acquire necessary licenses, reduced tax rates for micro enterprises, the expansion of incubators, preferential rates for access to finance, and expanding business skill development courses in universities. These active SME policy measures should also be accompanied by broader structural measures at the national level, such as the implementation and enforcement of competition policy.

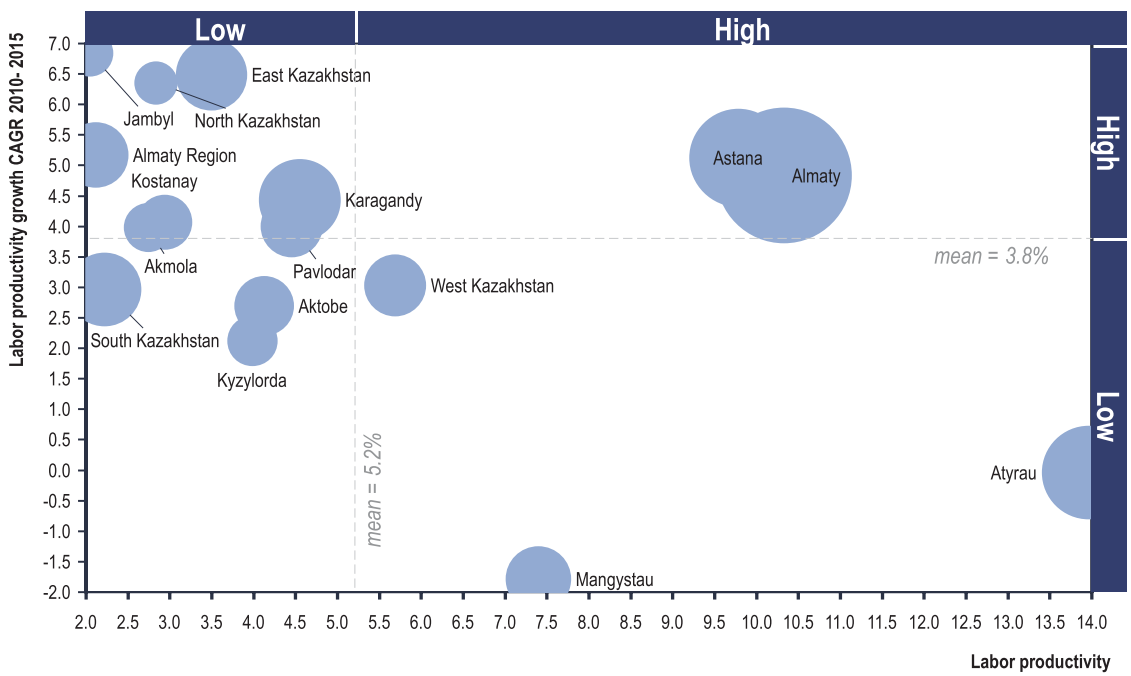
Labour productivity is yet another critical dimension of sustainable development in which the regions of Kazakhstan are polarized (see figure 22). The highest levels of labour productivity can be found in the administrative cities of Astana and Almaty. Atyrau and Mangystau stand out as regions with relatively high productivity but low or even negative productivity growth. These two regions could invest further in skills development through internship programmes, enterprise training, public-private partnerships and linkage programmes between foreign investors and SMEs. The other regions of Kazakhstan have low but growing labour productivity which can also be better sustained through further investment in training.

Challenge 4: Disparities in levels of health and access to healthcare (SDG 3)

Another important challenge for Kazakhstan's regions at the individual level is achieving the right levels of health and access to healthcare. Access to healthcare in an advanced industrial nation should be universal and balanced. Yet some regions in the south of the country, notably Mangystau, South Kazakhstan and Almaty, have more limited access to hospital beds compared to their peers in the rest of the country. All the regions except the major cities experience a shortage of physicians: the density of physicians is at least twice lower in regions compared to Astana or Almaty (see figure 23).

Figure 22

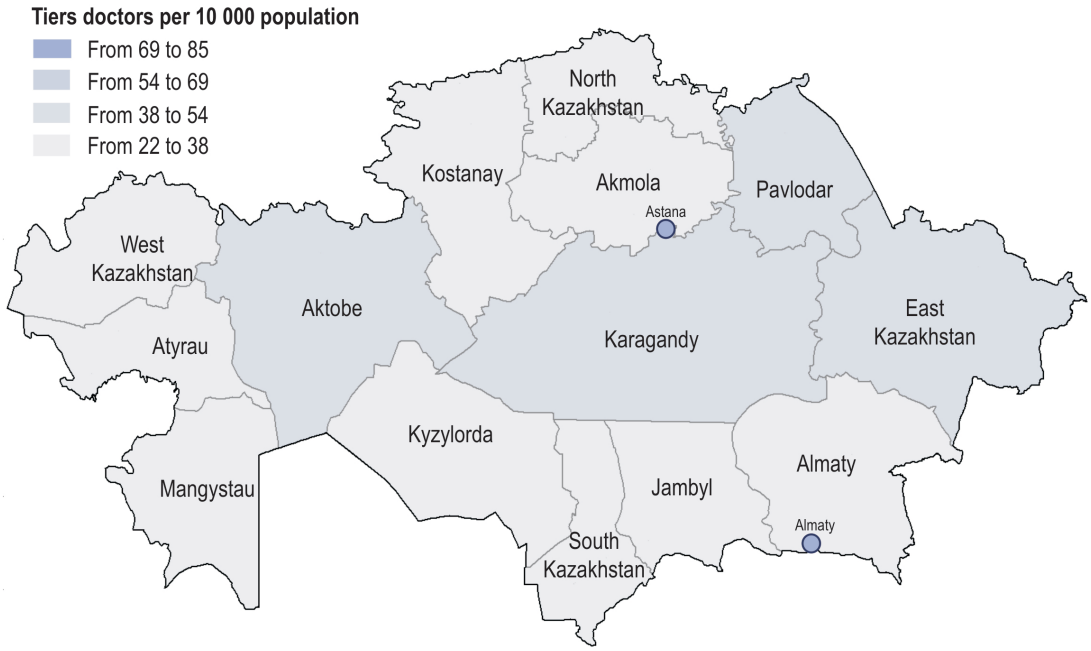
Labour productivity 2015 vs Labour productivity growth, 2010—2015[45]



45. Note: Labor Productivity is calculated as ratio of the GRP (mn tenge) and employed population. For Productivity growth GRP physical volume growth rates were applied to 2015 GRP value. Source: http://stat.gov.kz/getImg?id=ESTAT119162, http://taldau.stat.gov.kz/ru/PivotGrid/PivotTable?indicators=702840, http://www.stat.gov.kz/getImg?id=ESTAT103416, Whiteshield Partners Analysis

Figure 23

Number of doctors per 10 000 Population, 2014[46]

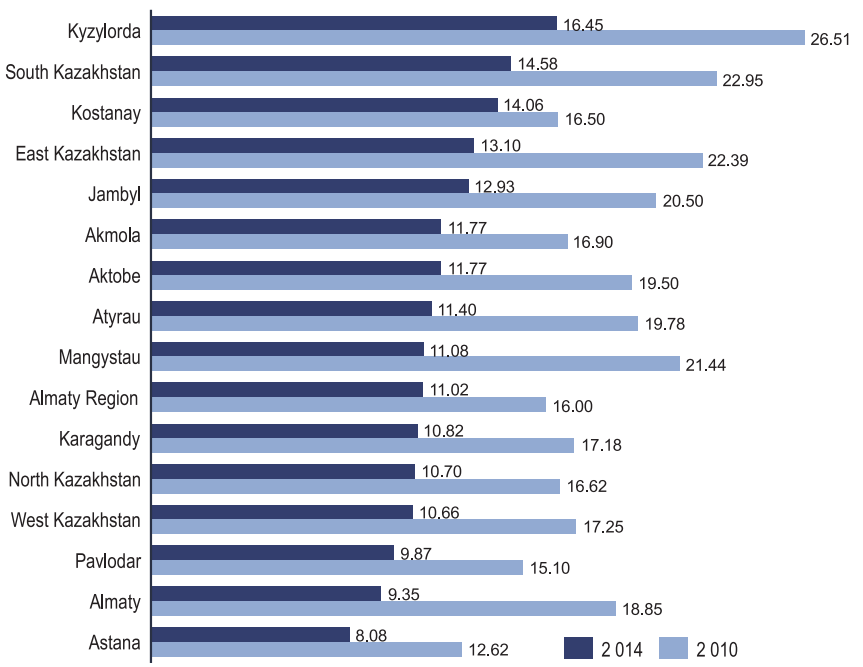


46. Note: tier intervals may appear uneven due to range value rounding issue. Map color coding reflects accurate tier split based on equal intervals within max and minimum values range; Source: http://stat.gov.kz/getImg?id=ESTAT107166, Whiteshield Partners Analysis

Substantial disparities in health care are also reflected in "output" indicators, such as child mortality under age 5 per 1000 births. Despite substantial progress during the short period 2010-2014, difference between the worst and the best performing regions is still reaching 2x: 16.45 for Kyzylorda vs. 8.08 for Astana.

Figure 24

Child mortality under age of 5 years old per 1000 births, 2014 vs 2010[47]



47. Source: http://stat.gov.kz/getImg?id=ESTAT107166

To achieve better access to healthcare, regions need to have the appropriate level of infrastructure and incentives for doctors to practice in more remote locations.

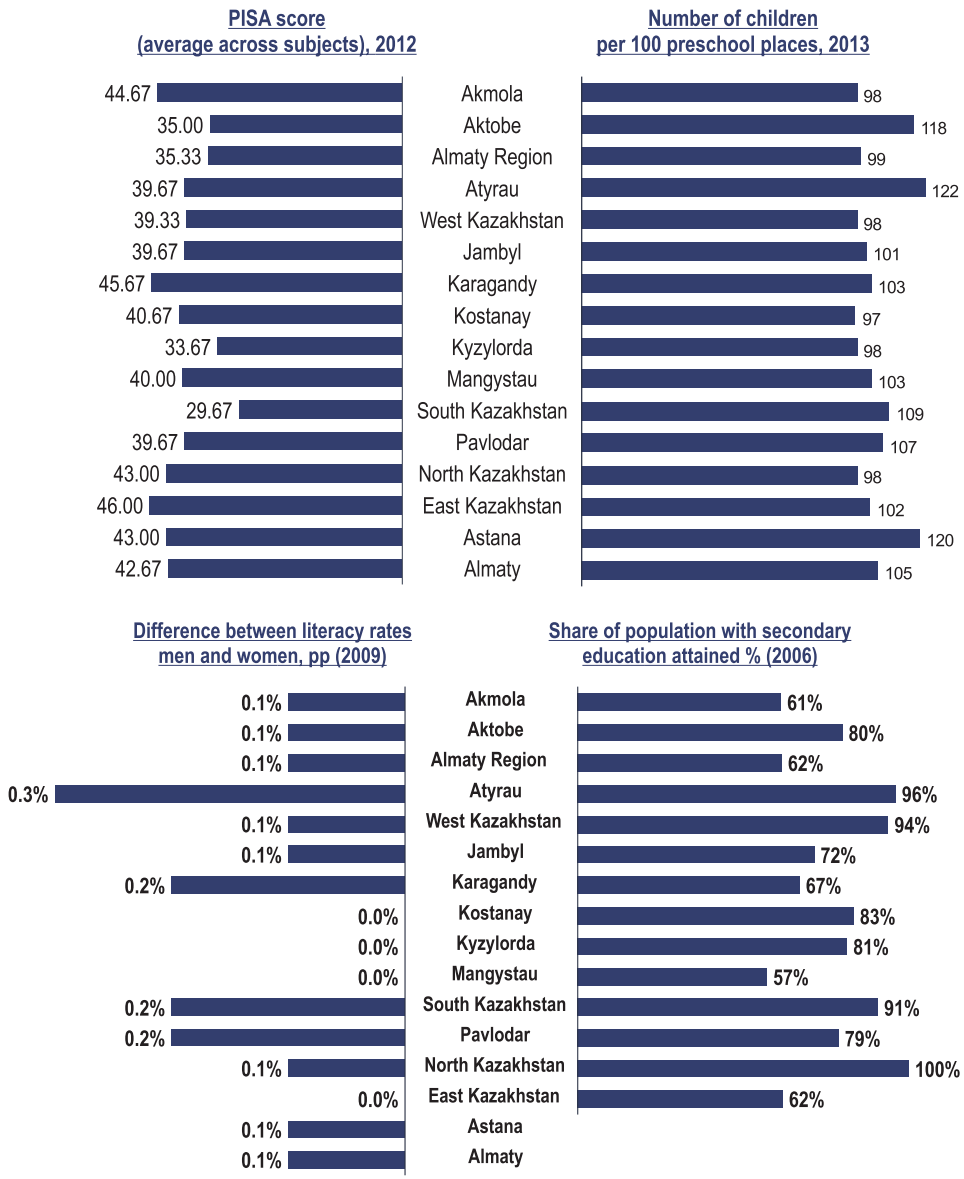
Mangystau could consider investing a greater part of its receipts from commodity exports into healthcare access. Marketing campaigns and financial incentives should be put in place to attract more doctors to the most remote regions. Moreover, the national Government might consider providing credits to the poorer regions such as South Kazakhstan or Almaty region to help boost investment in the healthcare infrastructure.

Challenge 5: Disparities in education levels (SDG 4)

Access to quality education is just as fundamental as healthcare to achieve sustainable development and it should be universal as well as balanced. Access to preschool education also influences women's participation in labour force, yet 10 regions do not have capacity to accept all children at preschools (see figure 25).

Figure 25

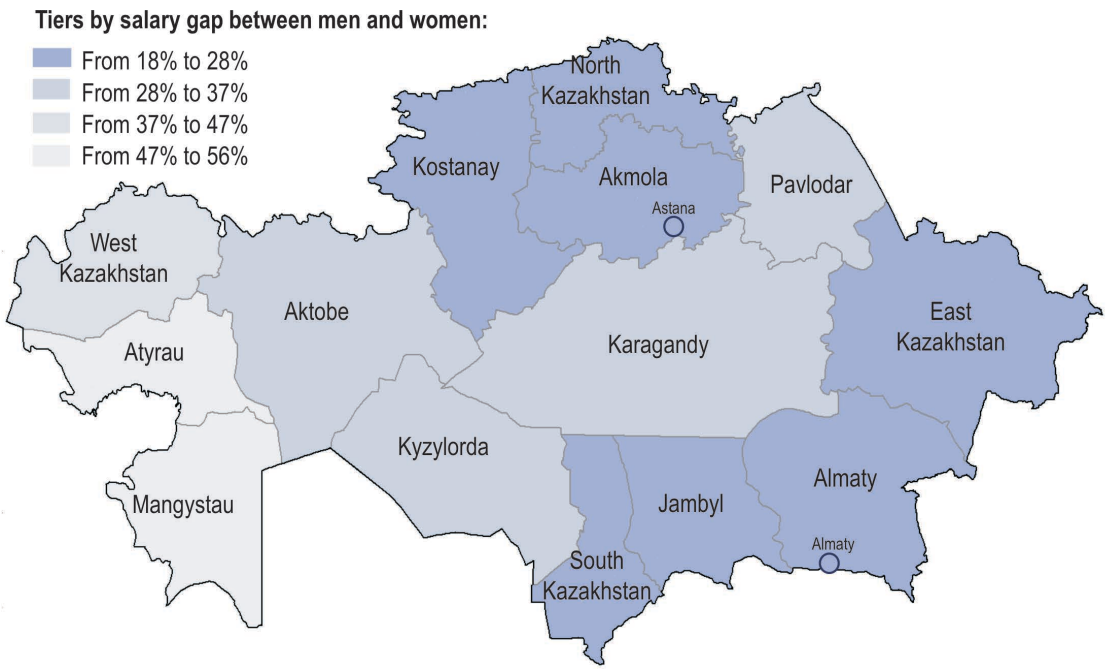
Key indicators on Education[48]



48. Source: CSRK, http://iac.kz/ru/analytics/nacionalnyy-otchet-osnovnye-rezultaty-mezhdunarodnogo-issledovaniya-pisa-2012, CSRK, http://www.stat.gov.kz/getImg?id=ESTAT105348, http://stat.gov.kz/getImg?id=ESTAT103360, http://www.epdc.org/country/kazakhstan/search?indicators=575&year_from=1990&year_to=2016, Whiteshield Partners Analysis

Figure 26

Salary gap between men and women by region, 2014[49]



A priority for these regions should be to ensure that all children go through primary and secondary education. It should not only be mandatory at the national level but also enforced locally. People living in more remote areas should have access to schools with adequate roads and school bus transportation.

Challenge 6: Gender inequality (SDG 5)

Despite important progress made in Kazakhstan to reduce gender gaps in education and employment, there are still notable gaps at the national level and important disparities remain between regions. Consider wage levels: the difference in salary between men and women in regions such as Atyrau and Mangystau is approximately 50% (see figure 26).

Both Atyrau and Mangystau are heavily dependent on commodity extraction, which is typically a male dominated sector. Wage levels are also inflated by the commodity effect. Mining regions such as Atyrau and Mangystau should put in place to proactive policies to promote the employment of women in the mining sector at comparable wage levels to those of men. Local Government communication campaigns and gender awards can help make firms more responsive to reducing the gender gap. Communication campaigns should also be in place at the high school and university level to encourage more women to pursue careers in engineering and mining.

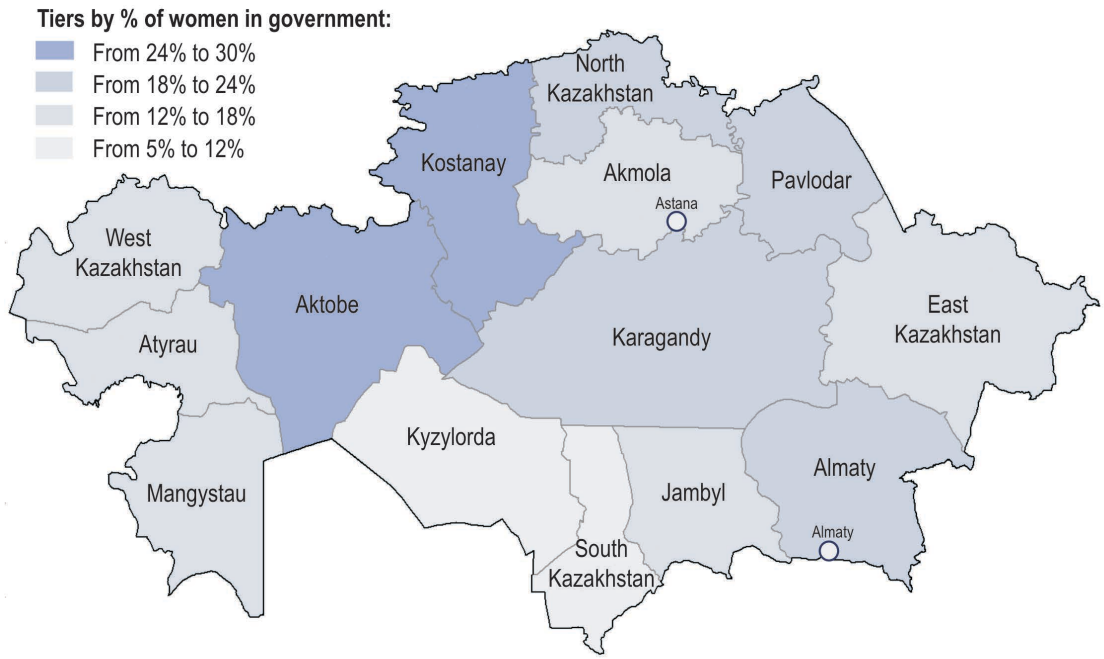
Strong gender gaps in education can also place women at a disadvantage in holding public offices. Thus Kyzylorda not only has one of the highest gender gaps in literacy rate, it also holds among the lowest proportion of women in public leadership positions compared to other regions[50] (see figure 27).

49. Note: tier intervals may appear uneven due to range value rounding issue. Map color coding reflects accurate tier split based on equal intervals within max and minimum values range. Salary gap is calculated as 1-Women's average nominal monthly wage/ Men's average nominal monthly wage
Source: http://stat.gov.kz/getImg?id=ESTAT107166, Whiteshield Partners Analysis

50. After 2016 elections the share of women in local Maslikhats has increased twofold, taking Kyzylorda to the top of the group. However special attention should be paid to encouraging women to initiate and participate actively in the decision making process.

Figure 27

Percentage of Women in public leadership positions, 2013[51]



51. Note: tier intervals may appear uneven due to range value rounding issue. Map color coding reflects accurate tier split based on equal intervals within max and minimum values range. Share of women in Government is calculated as a simple average between women in city, regional and subregional councils; Source: http://www.stat.gov.kz/faces/wcnav_externalId/homeGenderInd2?_adf.ctrl-, Whiteshield Partners Analysis

As we have seen from the above section, Kazakhstan's regions face a number of inter-related challenges to achieve more balanced and sustainable development. We now turn to the policies that have been put in place by the Government to address these challenges.

2.4 Public policies in Kazakhstan: A number of existing initiatives but need for further action at the regional level to enhance capabilities and sustainable development

To address these different sustainable development challenges, the Government of Kazakhstan has put regional development at the core of its policy reform agenda. The main bodies supervising the reforms are the Ministry of National Economy (MNE) and the Ministry of Investment and Development (MID).

The Ministry of National Economy is the main body responsible for the implementation of the Strategy 2050[52], the main policy document announced by the Government in November 2012. The Strategy 2050 sets out a number of key priorities supporting the SDGs goals:

1. Economic policy of the new course – all around economic pragmatism based on the principles of profitability, return on investment and competitiveness

2. Comprehensive support of entrepreneurship – leading force in the national economy

3. New principles of social policy – social guarantees and personal responsibility

4. Knowledge and professional skills are key landmarks of the modern education

It also sets general goals for the broader economic development of Kazakhstan, including industrial, innovation and infrastructure development.

The MID is responsible for the development and realization of the Government Programme on Accelerated Industrial and Innovation Development (GPAIID), which aims at accelerating the economy diversification and is a part of the industrial policy of Kazakhstan in terms of innovation.

The first phase of the programme, GPAIID 2010-2014, generated positive results, including a twofold increase in the share of active innovative companies, and a threefold increase in the expenditures on technological innovations and the volume of innovative production. However, the country's innovation performance at the global level remains rather poor. In 2014-2015, Kazakhstan held the 50th position among 144 economies in the World Economic Forum Global Competitiveness Index (GCI)[53], with one of the weakest indicators being innovation[54] (84th place).

The MID is also the central operating body to create and regulate the Special Economic Zones (SEZ)[55] of Kazakhstan. Currently there are 10 SEZ in the country, including, for example, the SEZ "Ontustik" in South Kazakhstan aimed at developing textile industry or the SEZ "Pavlodar" created to develop petrochemical industry.

President Nursultan Nazarbayev also announced 100 concrete steps on 20 May 2015 to implement five major institutional reforms related to sustainable development:

- Creation of a modern and professional civil service
- Ensuring the rule of law
- Industrialization and economic growth
- A unified nation for the future
- Transparency and accountability of the state

A number of these concrete steps are closely correlated with the SDGs (see Table 2 in Appendix).

While a number of initiatives have already been undertaken at a national level to strengthen the sustainability of Kazakhstan's development, policies need to be further adapted to the regional level, taking into account the wide disparities and different paths of development. Moreover, existing policies need to undergo an evaluation to highlight the initiatives that have achieved greatest impact. What specific policies need to be implemented at the regional level? Since each region has a specific set of economic conditions and its own development path, there is not a standard "policy recipe". In the next two chapters of this report we focus on the cases of Kyzylorda and Mangystau, to better assess their specific challenges and what is the optimal development path they can take to boost capabilities and sustainable development.

52. Source: http://www.akorda.kz/ru/page/page_poslanie-prezidenta-respubliki-kazakhstan-lidera-natsii-nursultana-nazarbaeva-narodu-kazakhstana

53. Source: http://www.weforum.org/reports/global-competitiveness-report-2014-2015

54. Note: Innovation sub-index includes the following pillars: capacity of innovation, quality of scientific research institutions, company spending on R&D, university – industry collaboration in R&D, Government procurement of advanced technology products, availability of scientists and engineers, PCT patent applications

55. Source: Ministry of foreign affairs of RK, Special economic zones - http://www.mfa.kz/images/block-in-main/invest/specialjnye_ekonomicheskie_zony_respubliki_kazahstan-2013.pdf

3 SDGS AND CAPABILITIES CASE STUDIES: KYZYLORDA VS ALMATY REGION – THE CASE FOR CAPABILITY BASED DEVELOPMENT

3.1 General characteristics of the selected regions: why Kyzylorda vs Almaty Region

Kyzylorda and Almaty Region are two regions comparable in terms of GDP per capita with limited contribution to both the processing and service sector. Yet the Almaty Region has a number of Revealed Comparative Advantages (RCA), totalling 79 compared to 6 for Kyzylorda (see figure 28).

Figure 28

Key Indicators for Kyzylorda and Almaty regions[56]

56. Source: stat.gov.kz, Whiteshield Partners analysis Note: here and below non-oil GRP is GRP with mining (oil and gas, coal, metal ore extracting and etc.) excluded

	Kyzylorda	Almaty region
Capabilities		
Regional economic complexity Ix, 2015	-1.25	0.3
Contribution to service sector, 2014 (vs avg)	0.62	0.77
Number of regional revealed comparative advantages, 2015	6	79
Contribution to processing sector, 2014 (vs avg)	0.25	1.48
RCI rank	14	2
Economic size / structure		
Population, K people,2014	753	1 922
GRP per Capita, K KZT,2015	1 624	1 077
Export value, mn USD 2014	2 998	365
Export value rank, 2014	8	14
SDGC		
RSDGC Ix Rank	16	6
Enterprise (Scaled 1-100)	30.5	54
Human (Scaled 1-100)	42.2	52.1

Kyzylorda is one of the regions in Kazakhstan that is highly dependent on oil & gas, which represent 99% of its exports. More recently, Kyzylorda has started to expand into other sectors such as agribusiness and processing. The expansion into new sectors represents an opportunity for diversification of the region's economy if it is able to move up the value chain in terms of complexity. The Almaty Region has managed to develop more complex capabilities in sectors such as agribusiness and represents a potential pathway for Kyzylorda to follow. The key questions addressed in this case study are as follows:

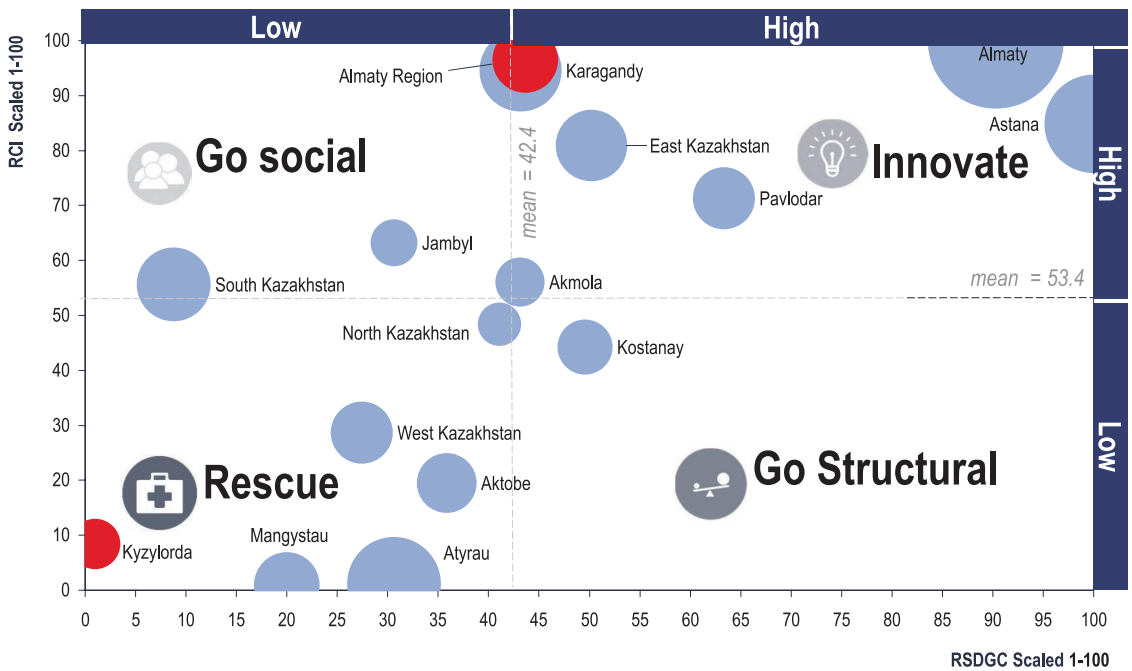
- Is economic development in these two regions driven by capabilities, sustainable development or both?
- Based on historical development and the example of Almaty Region, which pathway to development should Kyzylorda follow?
- Are the capabilities of both regions driven by complexity or diversity?
- Is sustainable development in both regions driven by individuals or enterprises?
- Which policies can make a difference to foster better capabilities and sustainable development?

3.2 Capabilities vs sustainable development: Which focus?

The Almaty Region is driven by capabilities. When ranking the regions on the Regional Capabilities Index and the Sustainable Development Challenge Index, the Almaty Region is clearly driven by capabilities, ranking second on the RCI, just behind Almaty city. The capabilities developed by Almaty Region are reflected in the large number of RCAs (79), which have been increasing over time. Kyzylorda, on the other hand, ranks among the last in the country on both capabilities and SDGs (see figure 29).

Figure 29

Regions of Kazakhstan ranked by RCI and SDG score[57]



57. Note: Please see methodology for RSDGC and RCI calculation; Source: Whiteshield Partners Analysis

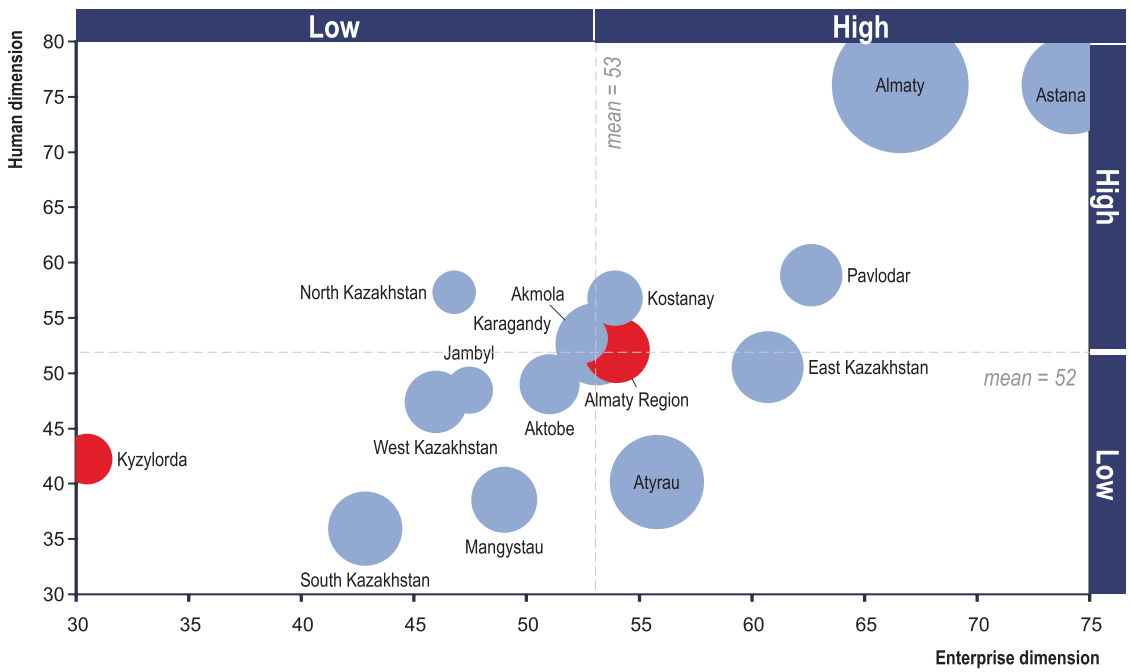
3.3 Sustainable development challenges: Human vs Enterprise – Which one first?

Kyzylorda has a below average level of SDG development related to human development (compared to the Almaty region which is around average for the nation). Kyzylorda also substantially lags behind the Almaty region on SDG development related to enterprises (see figure 30) Disparities in education levels and gender inequality are at similar levels between the two regions. At the enterprise level, Kyzylorda's contribution to productivity and employment (SDG 9) as well as infrastructure and innovation (SDG 8), are well behind the Almaty Region. In order to foster more sustainable growth, Kyzylorda will need to consider policies to enhance the business climate, innovation and attract further investment.

Although Kyzylorda's average performance on the human SDG dimensions is below the mean for the country, it should be noted that access to healthcare, education and gender disparities are very uneven at the sub regional level (see figure 31).

Figure 30

Positions of the Kyzylorda and Almaty regions on Enterprise and Human dimensions of the RSDG[58]

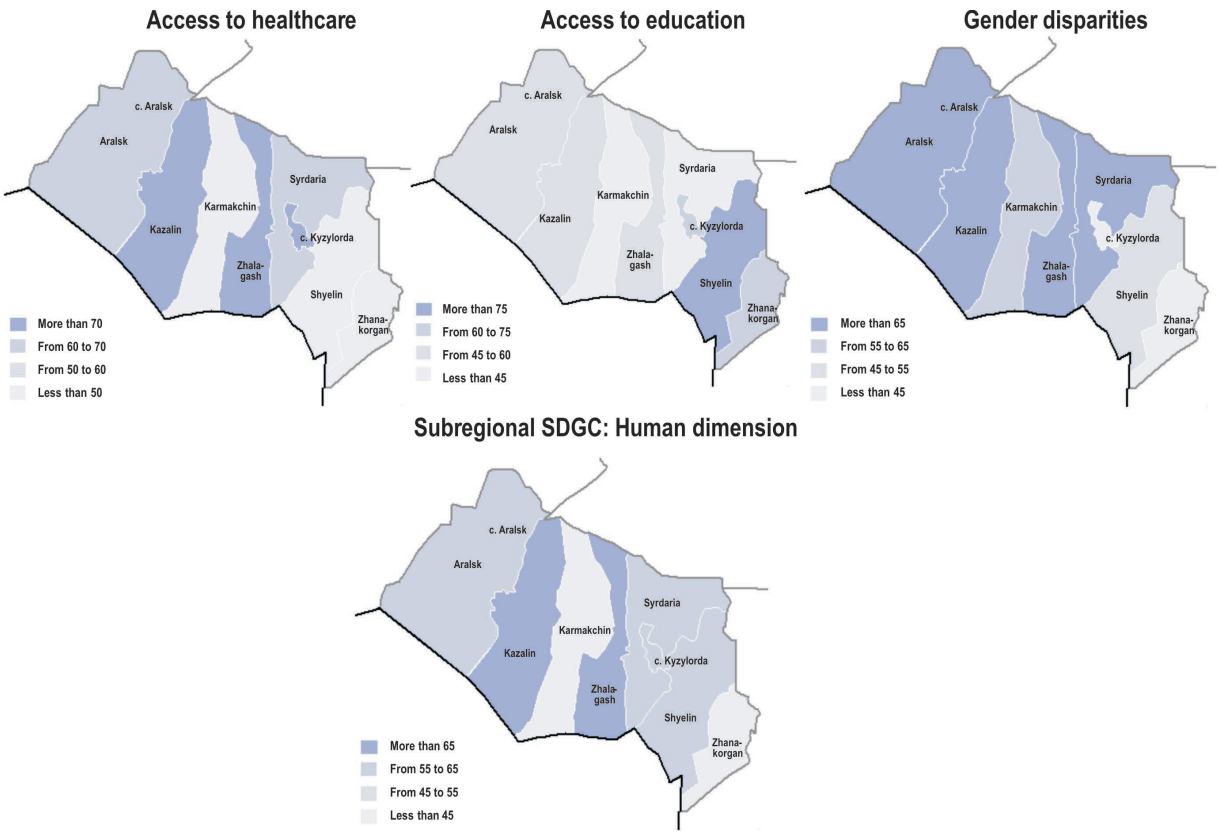


58. Note: Please see methodology for RSDGC calculation; Source: Whiteshield Partners Analysis

59. Source: CSRK, Whiteshield Partners Analysis

Figure 31

Kyzylorda sub–regional RSDG: Human dimension (%)[59]



In order to reduce inequality within the region, Kyzylorda authorities should aim to ensure that access to healthcare, to education and gender disparities are more consistent and balanced across the region.

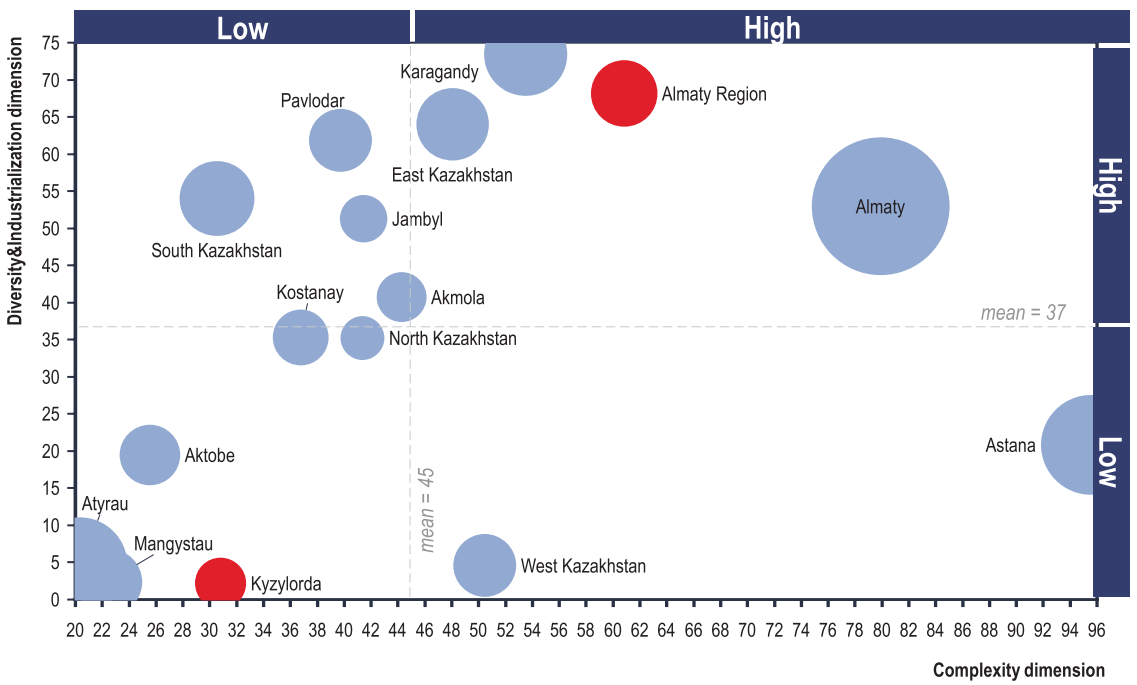
3.4 Capabilities: diversity vs complexity – The need to diversify by focusing on agribusiness and services

The Almaty Region ranks second in the country in terms of capabilities. While Kyzylorda and Almaty Region are two regions comparable in terms of GDP per capita and human development, the gap in capabilities between the two regions is striking. The Almaty Region is a tier 1 region that ranks second in the country in terms of capabilities, just behind Almaty city. Despite having a higher GDP per capita that can be explained by its oil exports, Kyzylorda is the second last region in the country in terms of capabilities and a tier 4 region (see Figure 32 Regional Complexity vs Diversity Index – Positions of the Kyzylorda and Almaty Regions66). The Almaty Region outperforms Kyzylorda in terms of both diversity and economic complexity.

While Kyzylorda and Almaty Region have comparable contribution to services (0.62 and 0.77 respectively), there is a marked difference in the processing sector where the Almaty Region reaches 1.48 compared to 0.25 for Kyzylorda. Kyzylorda had made some progress in the contribution to services, but revealed comparative advantage (RCA), the Regional Economic Complexity Index (RECI) and contribution to processing sector are among the lowest in Kazakhstan (see Table 3 in Appendix).

Figure 32

Regional Complexity vs Diversity Index — Positions of the Kyzylorda and Almaty Regions[60]



60. Note: Please see methodology for RCI calculation; Source: Whiteshield Partners Analysis

The Almaty Region ranks first in Regional Economic Complexity and second on the Regional Capability Index. The Almaty Region's contribution to services sector (CS), Revealed Comparative Advantage (RCA), and contribution to processing sector (CP) are among the highest in the country.

When breaking down capabilities, the *Almaty Region outperforms Kyzylorda in terms of diversity and economic complexity.* Almaty Region is much more diversified with 79 RCAs vs. 6 for Kyzylorda.

As we have already seen, the Almaty Region's contribution to processing sector is 1.48 vs average compared to 0.25 for Kyzylorda. 95% of Almaty Region exports are non-raw material and come from value-added goods, including machinery and metals[61].

Agriculture is a fundamental part of the economy in Almaty Region and just emerging in Kyzylorda. Both regions have a strong basis for agricultural growth but with different performances. Agriculture accounts for 13.9% of GRP in Almaty region and just 4.0% of GRP in Kyzylorda[62]. The Almaty Region has an agro-industrial oriented economy and is the main food producing region for the Almaty city. Agricultural and food products account for 7.6% of region's export. On the other hand, agricultural and food products have not been a major sector for Kyzylorda in past years. It only has re-gained comparative advantage in rice and groats (cereal) since 2003. The Almaty Region's economy in agribusiness is much more diversified and complex. It has Revealed Comparative Advantage in many 'complex' food products, including preparations of cereals, cocoa, sugars, starches and inulin.

A product space analysis reveals further potential for Kyzylorda in agribusiness. The logic of the Product Space approach implies that products[63] located closer to the center have more connections with other products, and therefore capabilities embedded in them can be easily applied in many other fields. In other words, regions, which RCAs are concentrated in the center, have more opportunities to develop new products, close to existing ones than those regions, which RCAs are scattered on the periphery.

The product space analysis over time reveals that Kyzylorda is beginning to export more agricultural products, including groats, fish fillets and rice. It has also increased its number of RCAs in agriculture from 0 to 3 between 2003 and 2015 (see Figure 33). However, it will now need to consider increasing the complexity of its agricultural products offering, including processing, certification and delivery.

Based on existing capabilities, which products could the regions produce by 2020? Hausmann, Hidalgo (2011) claim that evolution of export usually goes in the direction of the highest proximity, which means that products that have the strongest links with the current RCAs of a certain country or region, are most likely to become RCAs in the future because capabilities needed to produce these products are already in place. This claim is in line with the actual Product Space evolution of Kazakhstan and its regions: new RCAs are typically developed in close proximity of existing ones.

Knowledge of potential future RCAs of a region can be used to develop region-specific industrial policy recommendations. The key imperative is to move in the direction of the highest complexity products, selecting among the high proximity products. These recommendations are referred to as 'missing products'.

Future potential products for development in Kyzylorda's agri-business sector based on the PCI analysis include rye, wheat gluten, rapeseed oil, mustard oil, malt.

Moreover, Kyzylorda has started to expand its development of stone, glass and metals, moving from 1 RCA in 2003 (ferrous waste, scrap) to 2 RCAs in 2014 (adding copper powders and flakes) (see Figure 35 Missing products for Kyzylorda region – Stone, Glass and Metals).

Future "missing products" opportunities comprise of nickel tubes and pipes, cement, and flat rolled alloy steel. As we have already argued, however, the first priority for Kyzylorda will be to raise its level of complexity for existing products in both agribusiness and stone, glass and metals, before expanding into the development of new products and sectors. Policies to encourage targeted Foreign Direct Investment in these sector and linkage programmes with local firms will be particularly important in this regard.

61. http://stat.gov.kz/getImg?id=ESTAT1092524.0

62. Ministry of CSRK, Экспресс-информация №Э-41-02/159 от 29 апреля 2016 года, Валовой региональный продукт Республики Казахстан за 2015 год

63. Note: the products here and below are 4-digit product categories. The sectors are 1 or 2 digit category names.

Figure 33

Evolution of Product space for Kyzylorda region 2003–2014

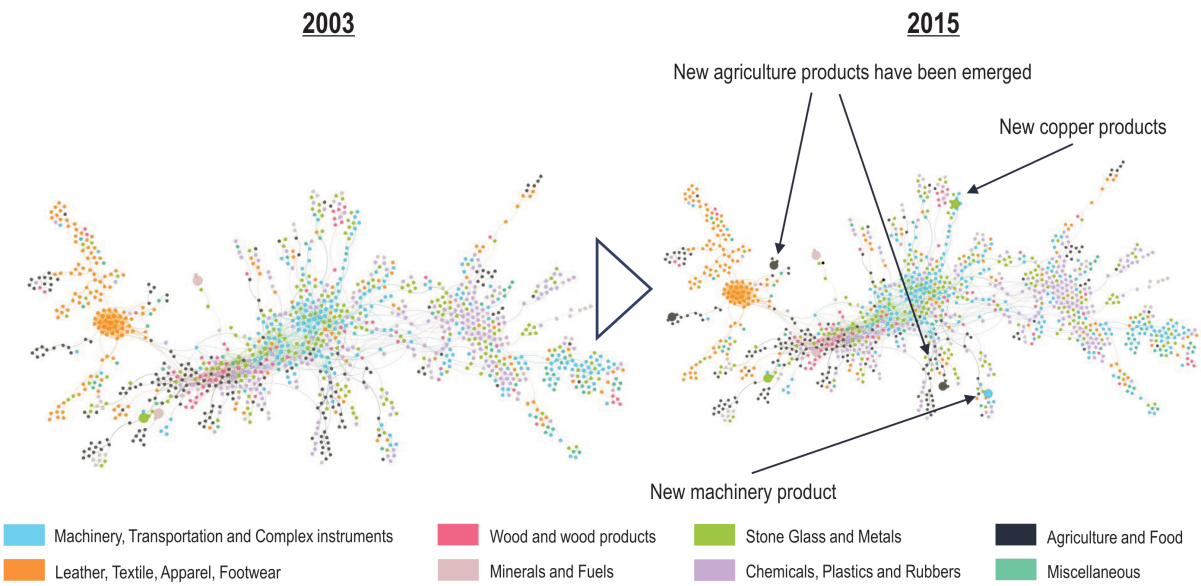


Figure 34

Missing products for Kyzylorda region — Agriculture

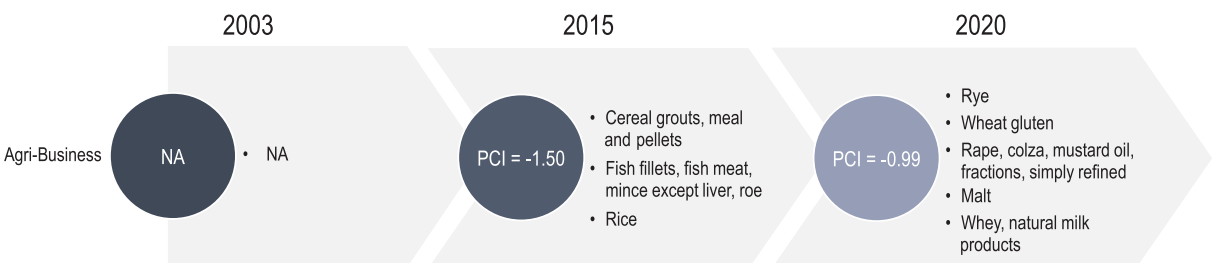


Figure 35

Missing products for Kyzylorda region — Stone, Glass and Metals

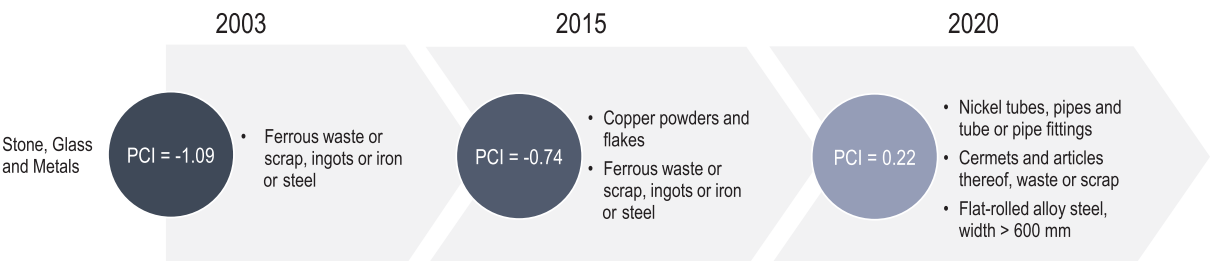
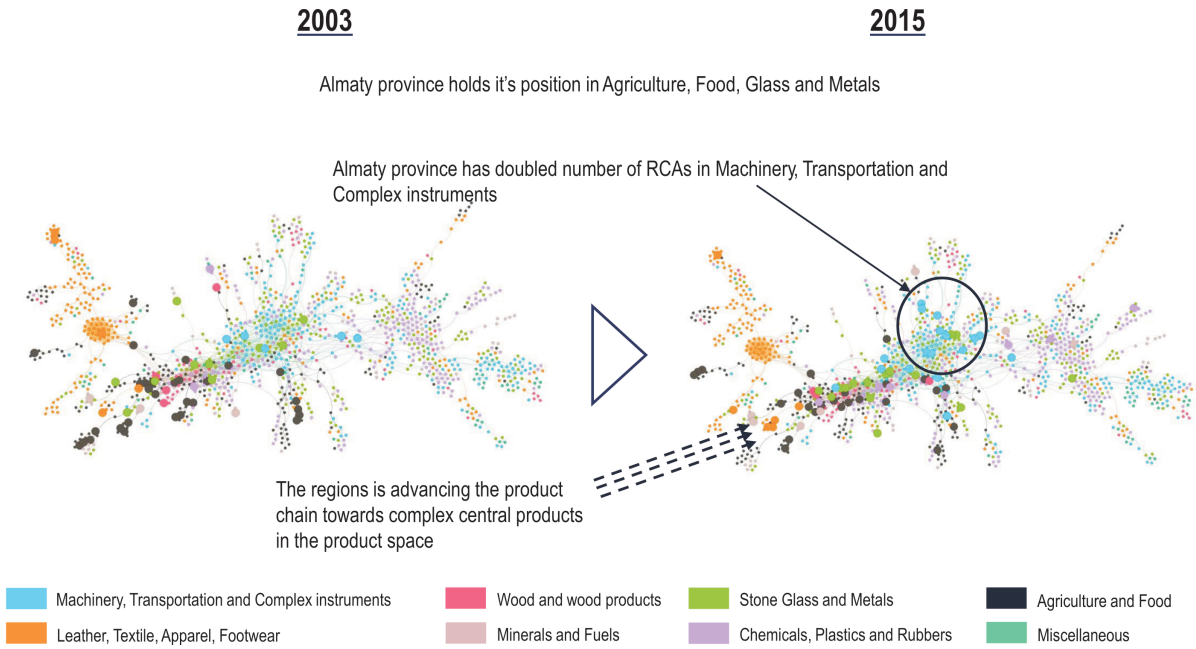


Figure 36

Evolution of Product space for Almaty region 2003—2014



High diversity and complexity of the Almaty Region. As we have already seen, the Almaty Region demonstrates a relatively high degree of economic diversity and complexity compared to other regions. In fact, between 2003 and 2015, it has developed new positions of strength in machinery and textile, building on its existing positions of agriculture, food, glass and metals (see Figure 36 Evolution of Product space for Almaty region 2003-2014). Not only does the Almaty Region hold strong positions in a number of sectors, it has an impressive number of growing RCAs within the sectors. Kyzylorda could take a similar path of diversification into machinery and textile once it has raised the complexity of its existing sectors of agribusiness as well as stone, glass and metals. The Aktobe region's ability to diversify into agribusiness by also raising the complexity of its offering in this sector is another example for Kyzylorda to follow (see Box 2 below on the Aktobe region).

Within the stone, glass and metal sector, for instance, RCAs for the Almaty Region have increased from 10 to 18 and 2 to 8 in chemicals, plastic and rubbers. Machinery transportation and complex instruments have been declining for the Almaty region, however, moving from five to two RCAs.

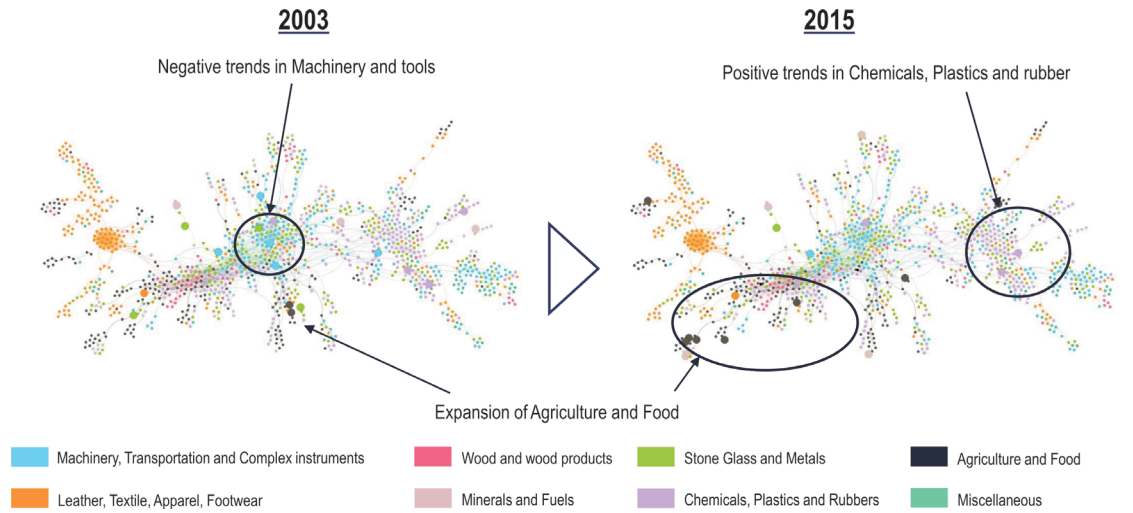
The Almaty Region has made significant progress diversifying and moving up the value-chain. In particular, in the stone, glass and metals sector the number of products with RCAs has increased and average complexity of the sector has improved as well. Over 2003-2014, the region moved from 'simple' articles of glass, iron and steel to stainless steel, stoves and glassware. Moreover, capabilities were developed in several new sectors[64] like plastics and rubbers as well as pharmaceuticals.

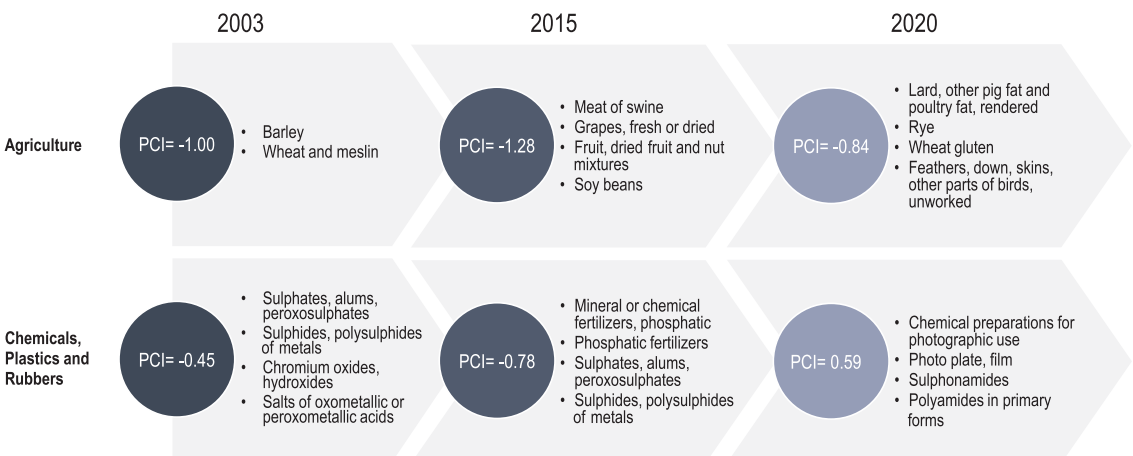
Building upon current capabilities, the Almaty Region can further expand in glassware for medical and scientific use and processing of other metals, like copper and lead. It can also expand its chemicals offering and develop new types of machinery and complex instruments, namely steam turbines or equipment to measure fluid flow. These missing product opportunities for the Almaty Region also represent future potential orientations for Kyzylorda's development pathway (see Figure 37 Missing products for Almaty region).

64. Note: the sector is considered 'new', if the region did not have RCAs in it in 2003. This doesn't mean that the products were not produced at all.

Box 2

Product space and missing products for Aktobe region, 2015





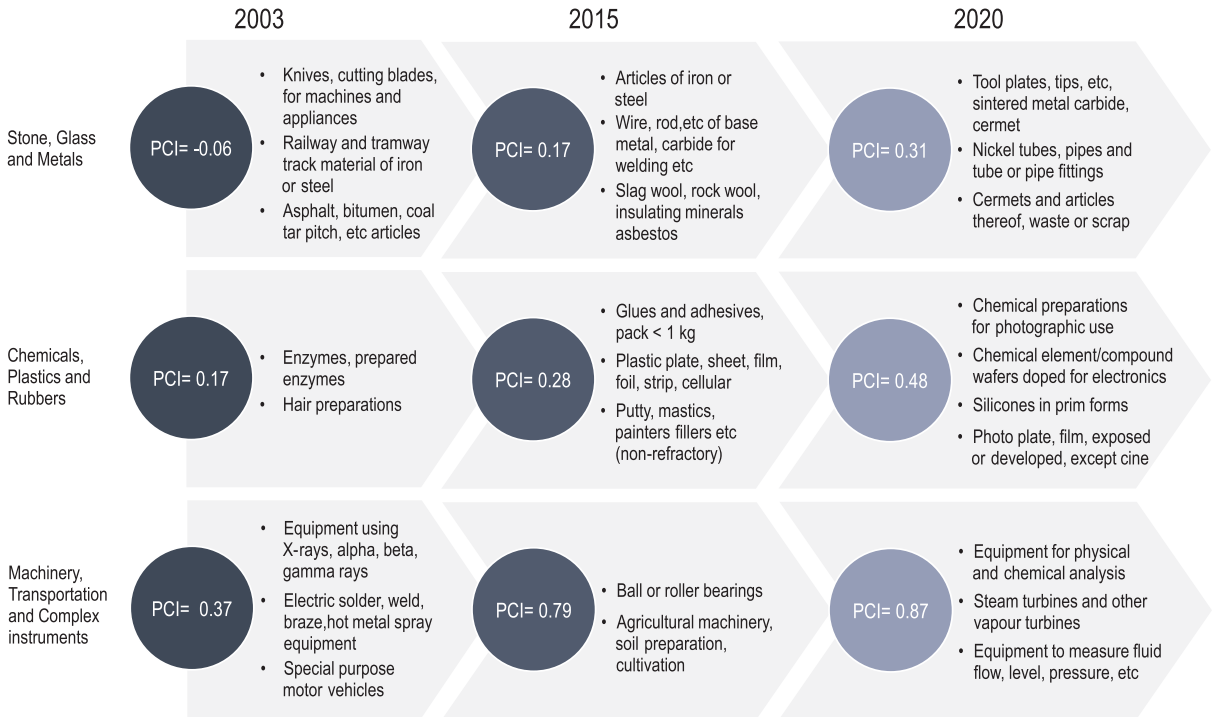
Aktobe's main achievement for the last 11 years is the diversification of the agricultural sector. Starting from 2 RCAs it has jumped to 8 RCAs in 2014, also slightly increasing the average PCI of the sector. Additional products to develop in the future include lard, poultry fat, rye, wheat gluten, and feathers.

Another trend observed in Aktobe is the development of the Chemicals, Plastics and Rubber sector. The region has gained one additional RCA in this sector and there are further opportunities for diversification in chemical preparations for photographic use, photo plates, sulphonamides, polyamides in primitive forms.

Some sectors, such as the Machinery, Tools and Transportation, are on the decline, however. Actions to compensate the loss of the 4 RCAs could involve the production of equipment for photographic laboratories, machines to draw, cut manmade textile fibres, microscopes, single/multifraction transfer machine, etc.

Figure 37

Missing products for Almaty region

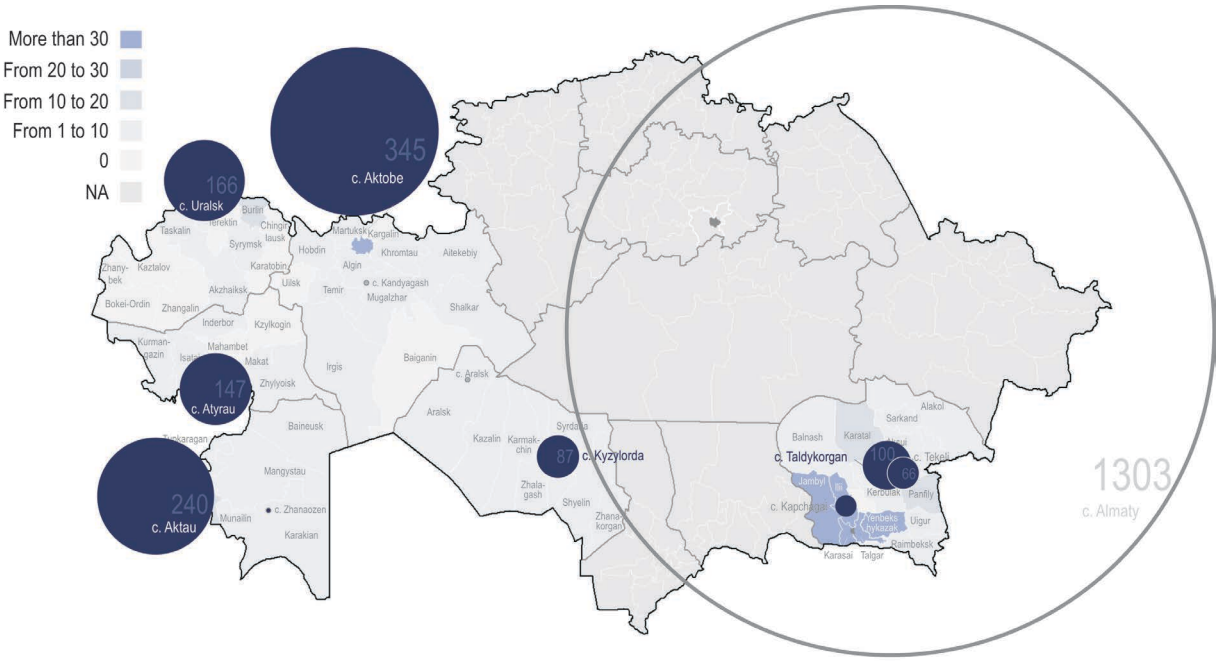


The high number of companies producing low-medium, medium and medium-high tech products in the Almaty products suggest strong spill-over effects generated by the combination of diversification and complexity (see Figure 38).

Industry and innovation in the Almaty Region is supported through special economic zones and techno parks. SEZ "Khorgos" is located near the Kazakhstan-Chinese border in Almaty Region supporting logistics and trade. The Technological Park Alatau is one of the 8 technological parks of the National agency for Technological Development JSC. It aims at supporting and incubating technology companies. Kyzylorda should consider expanding its techno parks along similar lines to the Almaty Region.

Figure 38

Concentration of knowledge sector companies in Almaty Region and Kyzylorda[65]



65. Source: Ministry of National Economy of RK, CSRK. Note: Size of the bubble reflects number of companies in each location. Locations with at least 100 knowledge sector companies were selected. Included companies of all sizes that belong to medium-low to high tech sectors, based on OECD methodology, ISIC rev. 3 classification. Due to unavailability of ISIC rev.3 -OKED correspondence table Whiteshield staff judgment was applied to identify corresponding OKED codes. Source: http://stat.gov.kz/faces/wcnav_externalId/home NumbersBusinessRegisters-Reestr?lang=ru&_afrLoop=3788179601852 7541#%40%3F_afrLoop%3D378 81796018527541 %26lang%3Dru% 26_adf.ctrl-state%3Dops91 hlaq_4, https://www.oecd.org/sti/ind/48350231.pdf, Whiteshield Partners Analysis

3.5 Current policies: A focus on industrial zones

Kyzylorda has already put in place several initiatives to address gaps in capabilities and sustainable development. The Programme for the Development of the Territory of the Kyzylorda Region 2016-2020[66] and the Strategy for the development of Kyzylorda region cover both social and economic challenges to be addressed. To support the development of capabilities, each rayon is equipped with an industrial zone in which free land is available for industrial production with readily available utility facilities. The industrial zones include incentives such as financing 5% of the interest on investment loans. In order to increase occupancy rates and decrease entry costs for potential residents, the Chamber of Entrepreneurs together with Akimat of Kyzylorda region is developing a concept of construction readily available for rent facilities on the territory of industrial zones.

Promotion of Kyzylorda with the private sector is done semi-annually through the Baikonur Investment Forum.

Recent private sector investments in the production of agriculture machinery, glass, cement and calcium sodium (Aral region) and potentially ferroalloys are encouraging signs of increasing processing and machinery activity. Some plants have modernised and transformed. For instance, one of the largest zinc production sites has been transformed into a new hydrometallurgical complex with the capacity to produce 4 million tons of copper-zinc per year.

In the agribusiness sector, Kyzylorda now accounts for 90%[67] of total rice production in the country. It has also begun to develop animal breeding and the processing of meat.

In the area of sustainable development challenges addressing, Kyzylorda has put in place initiatives to improve education, access to healthcare and foster gender diversity in accordance with corresponding national programmes.

The key programme for education development in the region is the application of the Central Government Programme for Education Development[68]. This programme involves an approach to "follow the student" through per capita financing schemes, 12 year education, learning three languages, and inclusive education.

The region claims to reach target of 100% enrolment for critical preschool education in 2015. Initiatives have been undertaken to repair school buildings in critical conditions and invest further in CAPEX and teacher training. Many of the specialisations offered in college are administered in collaboration with the private firms, which also offer internships to students that leave college. Orientation of students towards specialisations in demand from local business remains a challenge, however. Moreover, funding for many initiatives – such as the evolution to inclusive education by 2019 – is still too limited.

Healthcare system development is based on the State health development programme "Densaulyk"[69] for 2016-2020, which targets incidence levels of the most prevalent diseases including oncological, cardio vascular, hepatitis B, tuberculosis and improving prenatal help. The programme also involves close cooperation with other institutions, obligatory medical insurance to be introduced by the end of the year, and a certain degree of budget decentralization.

To support gender equality Kyzylorda was guided by the strategy for Gender Equality in the Republic of Kazakhstan 2006-2016, which is going to be updated for 2017-2030. Among other initiatives, an important information campaign with sub regional akimats was launched to induce women to run for office and the share of women in Maslikhats after the 2016 elections has increased from 10 to 20%. Further empowerment of women has been achieved through business associations such as DAMU Association of business ladies "Successful me". The EBRD also provides information services to women in business.

The UN Agencies have contributed to a number of initiative addressing family planning, reduction of violence against women and children, and how to reduce the mortality rate for women giving birth. It should be noted that a number of these initiatives have scarce financial resources and rely on limited staff, often on a volunteer basis.

66. http://e-kyzylorda.gov.kz/?q=en/content/programme-development-region, is a common project of the Ministry of Economic Development of Kazakhstan and a part of Regional Development Programme financed by EU. Pilot 5 year programmes were recently launched for three regions in Kazakhstan - Kyzylorda, Mangystau and East Kazakhstan. The programme is aligned with "100 steps" plan and targets industrial and innovation development, economic growth building public transparency and competences of public authorities

67. The Programme for the Development of the Territory of the Kyzylorda Region 2016-2020

68. http://edu.gov.kz/en/gosudarstvennaja_programma_razvitija_obrazovanija

69. http://www.npzdravrk.kz/index.php/health-c/112-2

3.6 Policy recommendations: The capability path

Addressing capability gaps: Kyzylorda should focus first on raising the complexity level in existing sectors

Over the 2003-2014 period the Almaty Region successfully diversified and increased the complexity of its exports. By contrast, Kyzylorda largely stagnated, with some limited expansion in the agribusiness and stone, glass and metal sector.

Kyzylorda clearly needs to boost its capabilities and aim to achieve the same level as the Almaty Region. In terms of development path, Kyzylorda could consider first upgrading the complexity within its existing sectors of agribusiness as well as stone, glass and metals, and then leveraging that higher level of complexity to diversify into other sectors. Agribusiness complexity in Kyzylorda could be enhanced by expanding into more sophisticated application of technologies, R&D, processing, packaging, certification, transportation, and other services. As these capabilities are further developed they can be also applied to other sectors. The target for Kyzylorda would be to move into the tier 1 of capabilities that has already been reached by the Almaty Region.

In terms SDGs, Kyzylorda has been performing relatively well at the individual level but less so at the enterprise level. By raising the complexity of its offering in existing sectors, Kyzylorda should attract new clusters of enterprises contributing to improve SDGs at the enterprise level. Kyzylorda's existing investment in individuals should provide a strong foundation to start moving up the value chain and expand sustainable enterprise development. Creating better knowledge and innovation infrastructure could facilitate overall capability building in Kyzylorda.

Kyzylorda should focus on the development of its capabilities by increasing economic complexity within the few sectors in which it has a revealed comparative advantage (RCA), namely agribusiness. Kyzylorda should develop a more extensive service offering in processing, packaging, branding, marketing, storage and distribution of farm products. Other activities to develop include certification, insurance and agribusiness financing.

As Kyzylorda is able to attract to increase the complexity of its agribusiness offering, it is likely to have a spill-over effect into other sectors, leading to further diversification. Moreover, its relatively strong position on human SDGs provides an excellent platform to achieve greater economic complexity. Building on the existing investment in its people, Kyzylorda must now leverage that investment to build a thriving community of private enterprises.

In order to facilitate Kyzylorda's development path towards greater economic complexity, policy makers should consider, among other actions, introducing the following measures (see Table 4 in Appendix for overall roadmap):

- Public-private partnerships for skills development in order to orient people's skills to enterprise-specific needs.
- The development of SME linkage programmes with foreign enterprises.
- Invest further public resources in sustainable infrastructure.
- Conduct targeted investment promotion in agribusiness, with an emphasis on multinationals that are able to transfer skills and knowhow into complex service offerings, including value-added IT services.
- Foreign Direct Investment could be further encouraged through special economic zones (SEZ) offering fast track logistics and exports processing.
- Kyzylorda could expand techno parks along similar lines to the Almaty Region.

Good governance will be an essential part of Kyzylorda's transformation. The trust of the citizens of Kyzylorda will need to be re-established through the greater transparency in policy choices and enhanced professionalism of the civil service. Transparency can be increased through the online publication of planned projects and draft legislation and the expanded adoption of e-Government and mobile-Government. Kyzylorda's civil service can be made more professional through additional training, the adoption of codes of conduct and the application of penalties to those that do not comply with common standards. Civil servants need to be recruited on a competitive and merit-based system and will need to receive the appropriate training to coordinate and implement complex policy projects. Increasing the proportion of women in civil service should also help limit the influence of patronage networks, and raise the effectiveness of governance. Expanding "one-stop shops", namely in the field of service delivery, investment, tax administration, and education, should help increase the efficiency of the administration and reduce the opportunities for corruption.

Ten Overall Recommended Points for Action

Based on the above analysis, below are ten overall action points for Kyzylorda:

- Launch targeted investment promotion campaigns in agribusiness & stone, glass and metals, focusing on flagship multinationals that are capable of attracting other enterprises.
- Put in place a one-stop-shop to support SME registration, licensing, incubation, linkages and promotion of exports.
- Expand the use of e-Government and mobile-Government in key Government departments such as tax administration, customs administration and public procurement.
- Strengthen commercial linkages with other regions involved in the agribusiness value chain through improved transport infrastructure and pooling of access to certification on sanitary and phyto sanitary standards.
- Launch gender awards and communication campaigns to support the participation of women in technical fields.
- Pool resources with several other regions to develop a joint teacher training programme that emphasizes the dissemination of practical work skills.
- Complete the liberalisation of the labour code to provide greater flexibility for firms to hire and dismiss employees.
- Launch triple helix partnerships in agribusiness and stone, glass and metals sectors in partnership with the three leading universities and the top 3 firms investing in both sectors.
- Launch a Government communication campaign and practical suggestions for all citizens on water, gas and electricity efficiency measures.
- Put in place systematic recycling in key municipal areas of Kyzylorda.

As Kyzylorda moves up the chain of economic complexity and starts to diversify through spill-over effects to other sectors, it will generate a stronger economic foundation to continue investing in people.

Ultimately, Kyzylorda's pathway to development is to move up the level of the Almaty Region on capabilities and then to the right on the enterprise and human SDGs.

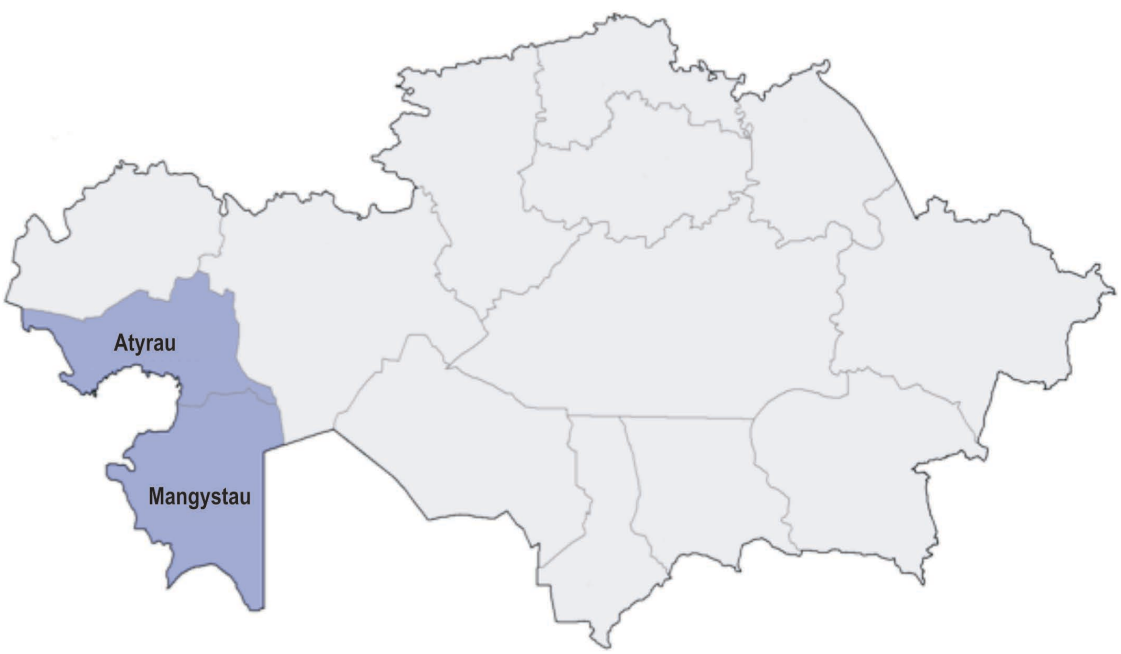
4 SDGS AND CAPABILITIES CASE STUDIES: MANGYSTAU VS ATYRAU - THE CASE FOR SDG DRIVEN DEVELOPMENT

4.1 General characteristics of the selected regions: why Mangystau vs Atyrau

Mangystau and Atyrau are two extracting regions with comparable resource endowment and petroleum products comprising 97% and 99% of their total export in 2014. Ranked 2nd and 1st by the value of exported production, Mangystau and Atyrau accounted for 13% and 39% of Kazakhstan's export in 2014 respectively. Both regions thus have a strong dependence on oil and gas exports and relatively limited economic diversification. Although the levels of population are similar (600 000 people), GDP/capita for Atyrau is twice the level of Mangystau. Whereas the contribution to services is relatively high for Mangystau and Atyrau, respectively 0.96 and 1.08, the contribution to the processing sector is limited for both regions, respectively 0.30 for Mangystau and 0.36 for Atyrau (Figure 39).

Figure 39

Key Indicators for the Mangystau and Atyrau regions[70]



70. Source: stat.gov.kz, Whiteshield Partners analysis

	Mangystau	Atyrau
Capabilities		
Regional economic complexity Ix, 2015	-2.32	-2.67
Contribution to service sector, 2014 (vs avg)	0.96	1.08
Number of regional revealed comparative advantages, 2015	5	7
Contribution to processing sector, 2014 (vs avg)	0.30	0.36
RCI rank	16	15
Economic size / structure		
Population, K people (2014)	607	581
GRP per Capita, K KZT (2015)	3 325	7 042
Export value, mn USD 2014	9 686	28 588
Export value rank	2	1
SDGC		
RSDGC Ix Rank	14	11
Enterprise (scaled 1-100)	49	55.8
Human (scaled 1-100)	38.5	40.1

The key questions addressed in this case study are:

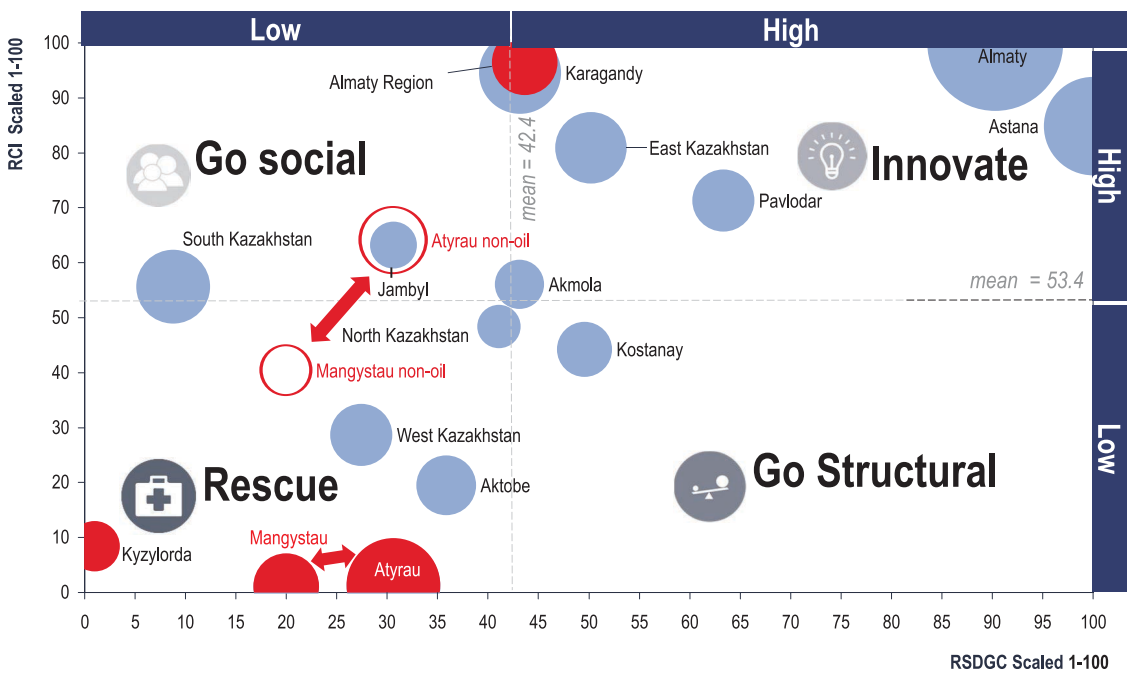
- Is economic development in these two regions driven by capabilities, sustainable development or both?
- Based on historical development and the example of Atyrau, which pathway to development should Mangystau follow?
- Are the capabilities of both regions driven by complexity or diversity?
- Is sustainable development in both regions driven by individuals or enterprises?
- Which policies can make a difference to foster better capabilities and sustainable development?

4.2 Capabilities vs sustainable development challenges: Which focus?

Weak capabilities in both regions but Atyrau holds up through complexity and is somewhat stronger on SDGs. Both regions have weak capabilities linked to losing their comparative advantages or stagnating in productive sectors (see Figure 40 Regions of Kazakhstan ranked by RCI and SDG score78) Mangystau is compensating the RCI score looking for new opportunities in other manufacturing sectors, while Atyrau is defending its RCI position due to its successful development of the services sector. Atyrau's service oriented strategy has been more effective in holding the fall of RCI. Moreover, Atyrau's investments in human and enterprise SDGs has produced results in meeting SDG targets.

Figure 40

Regions of Kazakhstan ranked by RCI and SDG score[71]



71. Note: Please see methodology for RSDGC and RCI calculation; Source: Whiteshield Partners Analysis

4.3 Sustainable development challenges: Human vs Enterprise – Which focus?

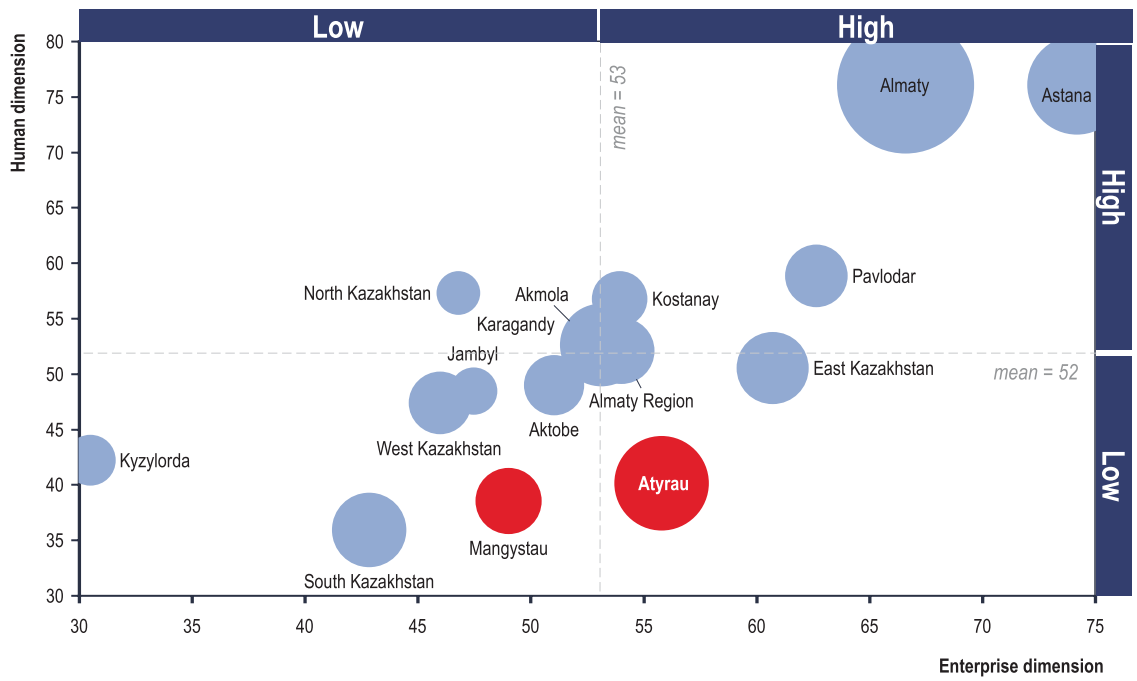
Mangystau trails Atyrau on SDGs and is weakest on human SDGs: Mangystau is close to Atyrau on human SDGs but is far behind Atyrau on those related to enterprises (see Figure 41). At the human SDG level, the region performs poorly on access to healthcare (SDG 3), disparities in education level (SDG 4) and gender inequality (SDG 5).

An overall question is how can Mangystau reach the same enterprise development as Atyrau in order to build human capabilities and move up the value chain?

72. Note: Please see methodology for RSDGC calculation; Source: Whiteshield Partners Analysis

Figure 41

Positions of the Mangystau and Atyrau regions on Enterprise and Human dimensions of the RSDG[72]

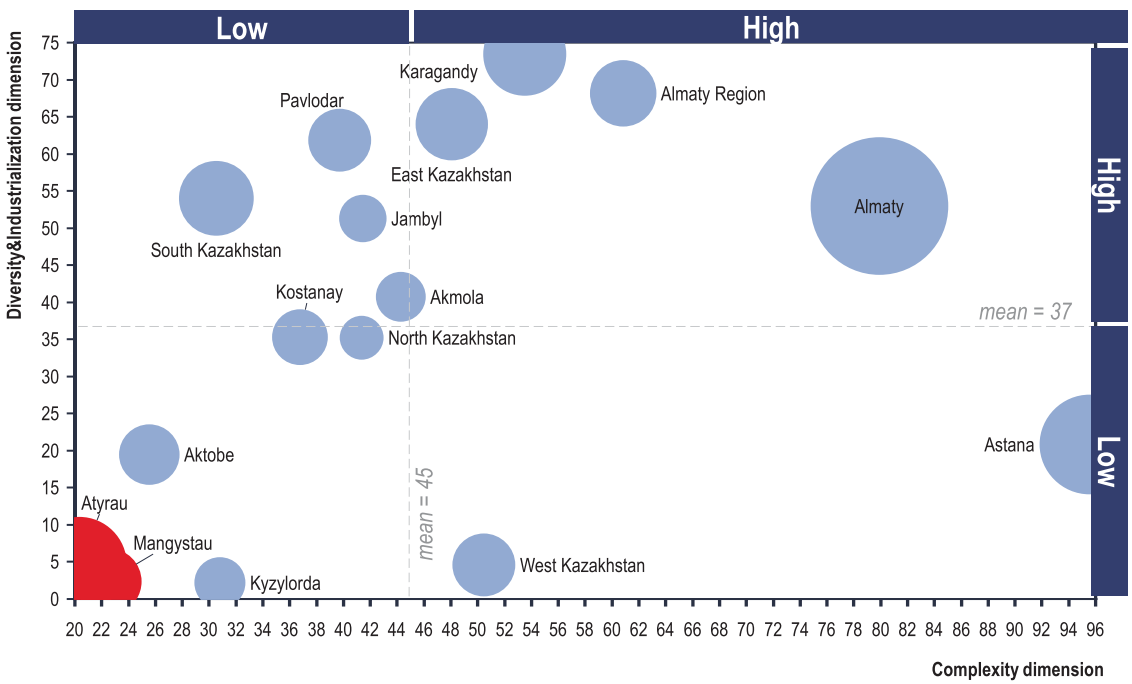


4.4 Capabilities: diversity vs complexity – A strong development basis

Both Mangystau and Atyrau are relatively weak in their capabilities. Rich extracting regions such as Atyrau and Mangystau have more limited incentives to develop a strong knowledge economy and both regions were among the last in the RCI ranking in 2014 (see Figure 42 Regional Complexity vs Diversity Index – Positions of the Mangystau and Atyrau Regions). Due to the overconcentration on resource exports, both regions have low diversity and economic complexity scores, as well as low contribution to processing. Yet Atyrau is attracting more investment and developing capabilities in services, which stand at 39.7% of GRP compared 32.4% of GRP for Mangystau.

Figure 42

Regional Complexity vs Diversity Index — Positions of the Mangystau and Atyrau Regions[73]



73. Note: Please see methodology for RCI calculation; Source: Whiteshield Partners Analysis

From the dynamic perspective, Atyrau appears to be stagnating and losing its advantages outside of the fuel extracting industries. By contrast, Mangystau is looking to limit its RCA losses by finding new capabilities in other complex manufacturing sectors. Thus, Atyrau has lost 4 non-oil products out of 14. Mangystau, in turn, has gained several RCAs since 2003. While both regions have a different positioning in the manufacturing sector, both are still declining on the Regional Economic Complexity Index.

Atyrau's service sector, which is close to 40% of GRP and was the 3rd largest services sector across Kazakhstan in 2014, is the main driver behind the development of capabilities. This is a result of positive trends, observed in Atyrau since 2014. The services sector has been constantly growing since then. Building on its capabilities, Atyrau has managed to attract a relatively important level of investment (605 bn KZT in 2015). Atyrau also has the highest investment in fixed capital in the country[74]. Mangystau is beginning to increase its contribution to services sector, but more needs to be done to encourage this trend and reach the same level as Atyrau. One specific action would be to encourage further investment in broadband internet access and pre-equipped office space.

74. FCI (Fixed Capital Investment) of Atyrau accounted for 1.0 bln KZT in 2013 out of 6.1 bln KZT for the whole country in 2013. Source: CSRK.

The decline of the manufacturing sectors has resulted in an overall decrease in the complexity dimension, negatively impacting the RCI. Mangystau has lost 8 points in the Complexity ranking, while Atyrau went down only by 3 points. This suggests that a focus on services rather than on manufacturing could turn out to be a better policy choice for a region Mangystau.

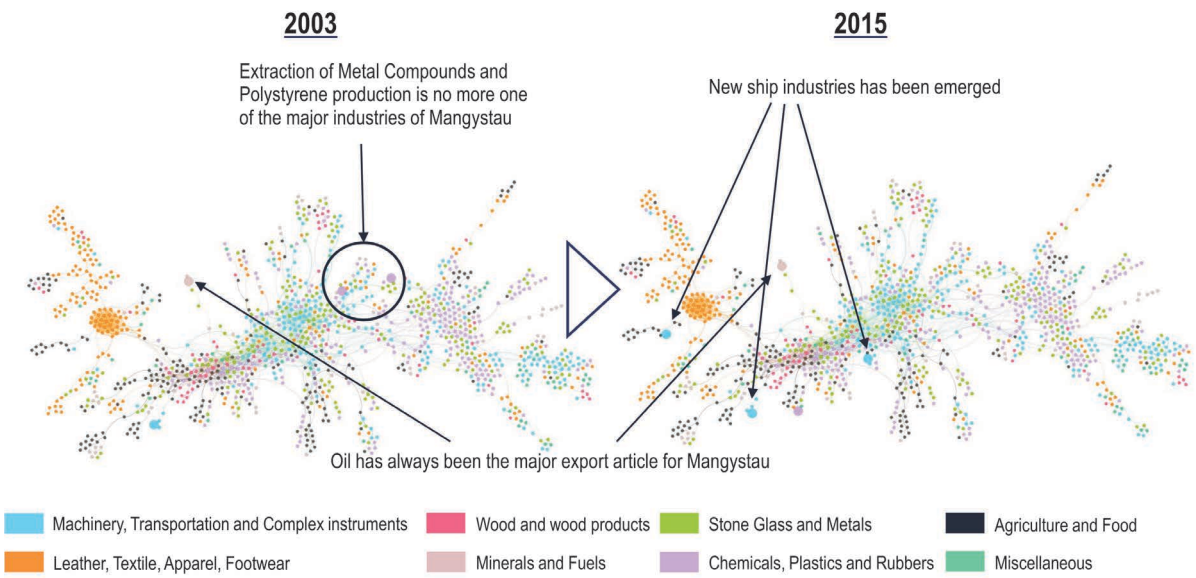
A Product space analysis reveals a high concentration on oil & gas exports with low diversification. Compared to the other regions, Mangystau and Atyrau clearly have low diversification and a high concentration of oil and gas exports. As seen from Figure 43, both regions have advantages scattered on the periphery of the Product Space. Such a pattern makes the capability development process slower and more complicated due to the lack of products in proximity to current RCAs.

Figure 43

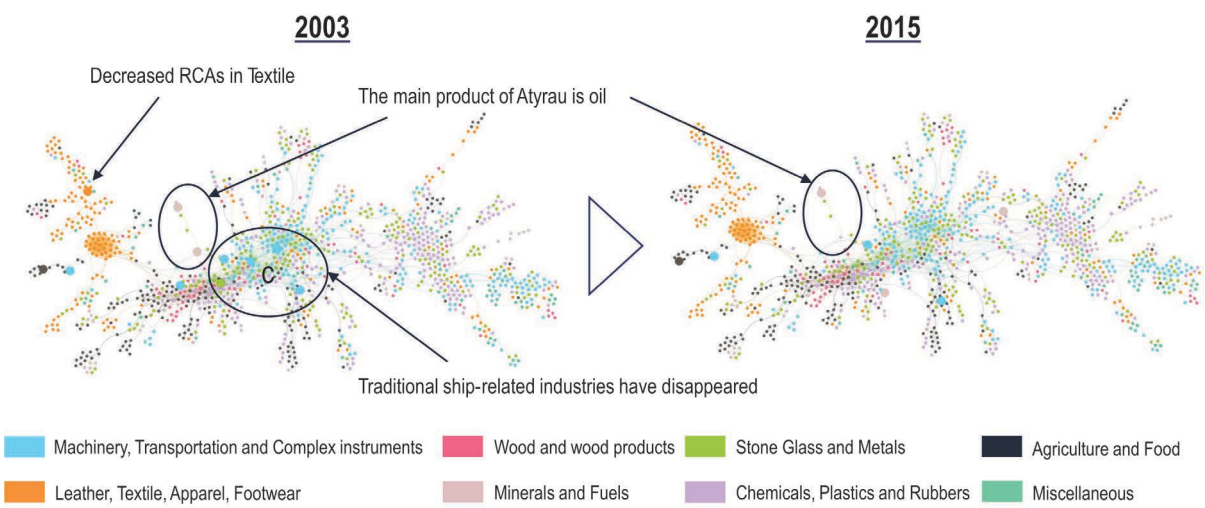
Evolution of Product Spaces for Mangystau and Atyrau, 2003 vs.2015[75]

Bubbles correspond to HS-4 product codes, larger bubbles highlight regional RCAs, colours correspond to product sectors. Dashed ovals mark areas with RCAs of same product sectors

Mangystau



Atyrau[76]



75. Source: Whiteshield Partners' analysis.

76. For both years the threshold for treating a product as RCA has been decreased in order to get a non-zero result and to be able to build recommendations for future products. See the section 5.3 for more details on the methodology

In 2015, Atyrau had RCAs just in 7 products[77] scattered across the Product Space with 95% of export concentrated in crude oil and 4% in non-crude oil.

In 2015, Mangystau had a very similar export structure to Atyrau, with petroleum products dominating other sectors of economy. However, unlike Atyrau, Mangystau had 80 percent of RCAs in non-oil products 2015.

Both regions have been losing RCAs in the period from 2003 to 2015, but in different sectors. Mangystau has lost its metal compounds industry as well as the industry of polystyrene. At the same time, Atyrau has lost some machinery products, including the ship building industries.

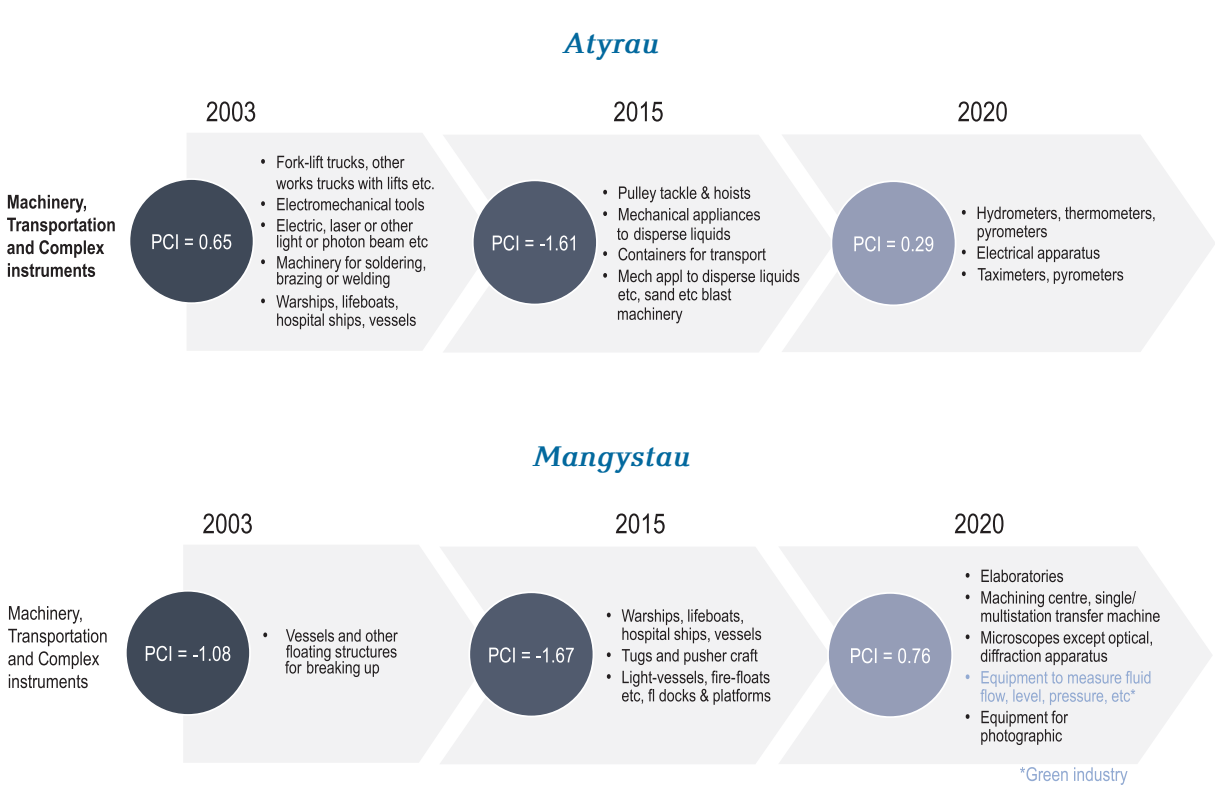
Mangystau is compensating its loss of plastic and metal industries by starting the production of ships, while Atyrau is expanding its services sector. Atyrau's service led strategy is having a better effect on the RCI in the shorter term.

77. These are product categories by HS 4 digit classification.

78. For 2015 and 2020 the threshold for treating a product as RCA has been decreased in order to get a non-zero result and to be able to build recommendations for future products. See the section 5.3 for more details on the methodology; Source: http://www.oecdbookshop.org/browse.asp?pid=title-detail&lang=fr&ds=&ISB=9789264173651

Figure 44

Missing products for Atyrau and Mangystau regions[78]



4.5 Current policies: focus on infrastructure

Mangystau is already implementing initiatives to enhance its capabilities and sustainable development.

The Programme for the Development of the Territory of the Mangystau Region 2016-2020[79] covers both social and economic challenges, with the support of the state programme of industrial-innovative development of Kazakhstan for 2015-2019 and its related roadmap. Mangystau has been working on the direct promotion[80] and attraction of investors in processing, oil sector servicing, chemicals production, logistics, construction and tourism.

The region has the Free Economic Zone MorPort Aktau based on the port facility under construction, which offers access to infrastructure and land along with tax benefits.

It has also planned a first industrial zone building based on an old plastics plant.

The development of the healthcare system is based on State health development programme "Densaulyk"[81] for 2016-2020, with targeted incidence levels of the most prevalent diseases including oncological, cardio vascular, hepatitis B, tuberculosis and improving prenatal help. The programme involves close cooperation with other institutions, obligatory medical insurance to be introduced by the end of the year, and budget decentralization, among other things.

Access to healthcare is hampered by a shortage of staff – there are currently 300 doctors positions vacant, 170 of which are for highly specialized professions.

The key programme for education development in the region is Central Government Programme for Education Development[82]. The programme involves "follow the student" per capita financing schemes, 12 year education and inclusive education.

The Commission on Women's Rights and Family and Demographic Policy for the Akim Region works with the National Commission for Women's Affairs to offer recommendations on how to improve gender diversity. Some successful initiatives include the "School of women leadership", attended every year by 100 women in the rural areas. The Commission cooperates with the Council of Business Women, UNDP, women NGOs, women's fashion houses, and with other public bodies.

79. http://e-kyzylorda.gov.kz/?q=en/content/programme-development-region, is a common project of the Ministry of Economic Development of Kazakhstan and part of Regional Development Programme financed by EU. Pilot 5 year programmes were recently launched for three regions in Kazakhstan - Kyzylorda, Mangystau and East Kazakhstan. The programme is aligned with "100 steps" plan and targets industrial and innovation development, economic growth building public transparency and competences of public authorities

80. Targeting potential of establishing direct links via foreign consulates and embassies missions to the region

81. http://www.npzdravrk.kz/index.php/health-c/112-2

82. http://edu.gov.kz/en/ gosudarstvennaja_programma_razvitija_obrazovanija

4.6 Policy recommendations: The SDG path

Developing capabilities yet focusing much further on SDGs

Atyrau and Mangystau fall into the "Energy based" cluster: regions that have a high GDP per capita but below average GDP per capita growth. These regions could benefit from vertical policies to boost their level of R&D, innovation and productivity and reach higher levels of growth in wealth creation.

The identification of productive capabilities outside of the mining sector is critical for both Atyrau and Mangystau so that they decrease their dependence and vulnerability to external shocks. Diversification in existing sectors based on identified "missing products" could improve the knowledge-based economy in these two regions.

Mangystau and Atyrau have different future capabilities in the Machinery and Transportation sector. In Atyrau, the number of RCAs in this sector has fallen from 7 to 5. In 2003, Atyrau was exporting Fork-lift trucks, Electromechanical tools, Machinery for soldering, brazing or welding, Warships, lifeboats, hospital ships, vessels etc. However, Atyrau is now losing positions in the Machinery and Transportation sector. Detailed analysis of capabilities and missing products for the other knowledge sectors are provided in section 6.4 of the Appendix.

Over the same period, Mangystau has increased the diversity of ships it is producing. Apart from vessels, Mangystau is now also exporting lifeboats, tugs and other special purpose ships, opening up new opportunities. Based on the "missing products" analysis, Mangystau could start producing equipment for photographic laboratories, machining centers, microscopes and equipment to measure fluid flows. These nearest products to the current Mangystau's portfolio will yield the highest increase in the complexity of the economy. Mangystau could start producing these commodities and improve the complexity of the sector from -1.67 to 0.29.

Overall, opportunities for these two regions to improve on the Product Space are limited due to the lack of RCAs in manufacturing. However, some positive trends in Mangystau's machinery sector should enable it to develop further RCAs. Beyond capabilities, Mangystau will need to place a greater emphasis on SDGs.

Reducing sector specific policy barriers to unlock the potential in services and manufacturing sectors and targeting human based SDGs

Thanks to some of the largest oil fields in the world, Kashagan and Tengiz, Atyrau attracts international investors and a skilled work force. The positive effect of this concentration of financial and human capital is an improved business climate. Atyrau was able to build on its strong oil positions to develop more complex services such as financing, processing and transport of oil and gas. In order to support human development, Atyrau also invested in schools, hospitals, infrastructure and gender diversity.

Mangystau needs to invest further in human development, with specific policies to improve education, access to healthcare and gender diversity to build a more resilient workforce and progressively move up the value chain in terms of complexity and diversity[83]. In the area of education, Mangystau should consider the development of public-private partnerships for skills development to orient adult learning towards skills that are most relevant to business. Another important initiative would be to introduce school campaigns to encourage women to pursue technical and engineering fields of education, particularly related to oil and gas services.

Both Atyrau and Mangystau are heavily dependent on commodity extraction, which is typically a male dominated sector. Wage levels are further inflated by the commodity effect. Mining regions such as Atyrau and Mangystau should put in place proactive

83. Mangystau can also take inspiration from the UNDP project «Raising Competitiveness through Innovative Approaches to Regional Planning and Social Services: Using Semey as an Example», 2012

policies to promote the employment of women in the mining sector at comparable wage levels to those of men. Local Government communication campaigns and gender awards can help make firms more responsive to reducing the gender gap. Communication campaigns should also be in place at the high school and university level to encourage more women to pursue careers in engineering and mining.

Although its economy is highly dependent on exports of oil and gas, Mangystau has managed to develop a first level of economic complexity. However, Mangystau still needs to further diversify its economy and place a greater emphasis on addressing sustainable development challenges with emphasis on the well-being of its citizens.

Potential for diversification include sea ports, shipbuilding and tourism (for example, the recreational area of "Kendirli").

In order to strengthen its ability to meet the SDGs at the human level, Mangystau should consider the following policies (see Figure 48 for the summary roadmap):

- Channel more public investment into hospitals and the training of doctors and nurses
- Channel additional public investment into higher quality education, through better infrastructure, more training of teachers and better access to technology
- Promote gender equality through proactive policies to promote women in public leadership positions
- Launch public campaigns in high school and universities to encourage a higher proportion of women to follow a technical path and specialise in fields such as science, engineering and mathematics
- Launch gender equality campaigns targeted at firms to promote women in management positions and reduce the salary gap that stands at 40% on average. These campaigns can also be run through enterprise associations

As in the case of Kyzylorda, the ability of Mangystau to progress on its development path will also depend on the quality of its governance. Government institutions, namely those administering healthcare, education and social security, will need to abide by rigorous standards of conduct to ensure equally effective treatment for all the citizens of the region. Transparency in policy can be increased through public information campaigns and the digital dissemination of planned policy projects and draft legislation. Additional training of civil servants will be critical at all levels, both for new recruits as well as existing staff. Raising the number of qualified teachers in universities will need to be accompanied by actions to prevent corruption in the university system. The expansion of "one stop shops", e-Government and mobile-Government should help raise the level of effectiveness and transparency. Finally, a greater number of women will need to be incorporated in the civil service through affirmative action with an objective of reaching 50% of staff at all levels over the next decade.

Ten Overall Recommended Points for Action

Based on the above analysis, below are ten overall action points for Mangystau:

- Negotiate Public Private Partnerships (PPPs) for education with five multinationals in key sectors such energy related services and ship building. The PPPs should be at least 50% co-funded by the state.
- Draw up a plan for more public investment and potential public-private partnerships in hospital infrastructure and complete investment in three new hospitals.
- Invest in the development of new schools and new university with an objective for them to rank one of the top in the country in terms of quality of infrastructure and teaching.
- Draft, adopt and enforce legislation to limit salary discrimination of women in the workforce and launch gender awards and communication campaigns to support the participation of women in technical fields.

- Put in place an affirmative action programme with a target to have women in 50% of all Government positions within a decade.
- Expand the use of e-Government and m-Government in key Government departments such as tax administration, customs administration and public procurement.
- Pool resources with several other regions to develop a joint teacher training programme that emphasizes the dissemination of practical work skills.
- Launch targeted investment promotion campaigns in services related to financing, processing and transport of oil and gas and other new services, focusing on flagship multinationals that are capable of attracting other enterprises.
- Promote investment to attract multinationals in shipbuilding and strengthen commercial linkages with other regions involved in the shipbuilding value chain through improved transportation and linkage programmes.
- Launch a Government communication campaign and practical suggestions for all citizens to reduce their consumption of water, gas and electricity.

As Mangystau promotes the sustainable development and well-being of its citizens, so these individuals will contribute to boosting the capabilities of its firms to compete at the national and international level and raise the RCI level.

Higher levels of investment in individuals should help Mangystau deepen the complexity of its existing sectors and generate opportunities for greater diversification of its economy in the future.

In conclusion, Kyzylorda and Mangystau, should adopt two different development paths, one driven by capabilities and the other by sustainable development

Kyzylorda should place an emphasis on first building its capabilities, upgrading the complexity within its existing sectors of agribusiness as well as stone, glass and metals, and then leveraging that higher level of complexity to diversify into other sectors. Agribusiness complexity in Kyzylorda could be enhanced by expanding into R&D, processing, packaging, certification, transportation, and other services. As Kyzylorda is able to attract to increase the complexity of its agribusiness offering, namely through targeted investment promotion and special economic zones, it is likely to have a spillover effect into other sectors, leading to further diversification. Kyzylorda's existing investment in individuals should provide a strong foundation to start moving up the value chain and expand sustainable enterprise development. The target for Kyzylorda would be to move into the tier 1 of capabilities that has already been reached by the Almaty Region.

The region of Mangystau, by contrast, should pursue a development path that focuses first on individual well-being, and then build on the product space analysis to pursue a path of diversification outside of the mining sector. Specific policies to improve education, access to healthcare and gender diversity would help build a more resilient workforce to then help Mangystau move up the value chain in terms of diversity and complexity. In the area of education, Mangystau should consider the development of public-private partnerships for skills development to orient adult learning towards skills that are most relevant to business. Another important initiative would be to introduce school campaigns to encourage women to pursue technical and engineering fields of education, particularly related to oil and gas services. Moreover, local Government communication campaigns and gender awards can help make firms more responsive to reducing the gender gap.

Policies to promote human development in Mangystau will need to be accompanied by horizontal and vertical policies to boost their level of R&D, innovation and productivity and reach higher levels of complexity and diversification in both manufacturing and services.

5 CONCLUSION AND POLICY LEARNING: A CHOICE BETWEEN TWO DEVELOPMENT PATHS AT THE REGIONAL LEVEL

In order to move to tier 1 on capabilities and sustainable development, Kazakhstan should follow both a "top down" national approach and "bottom up" approach driven by regions

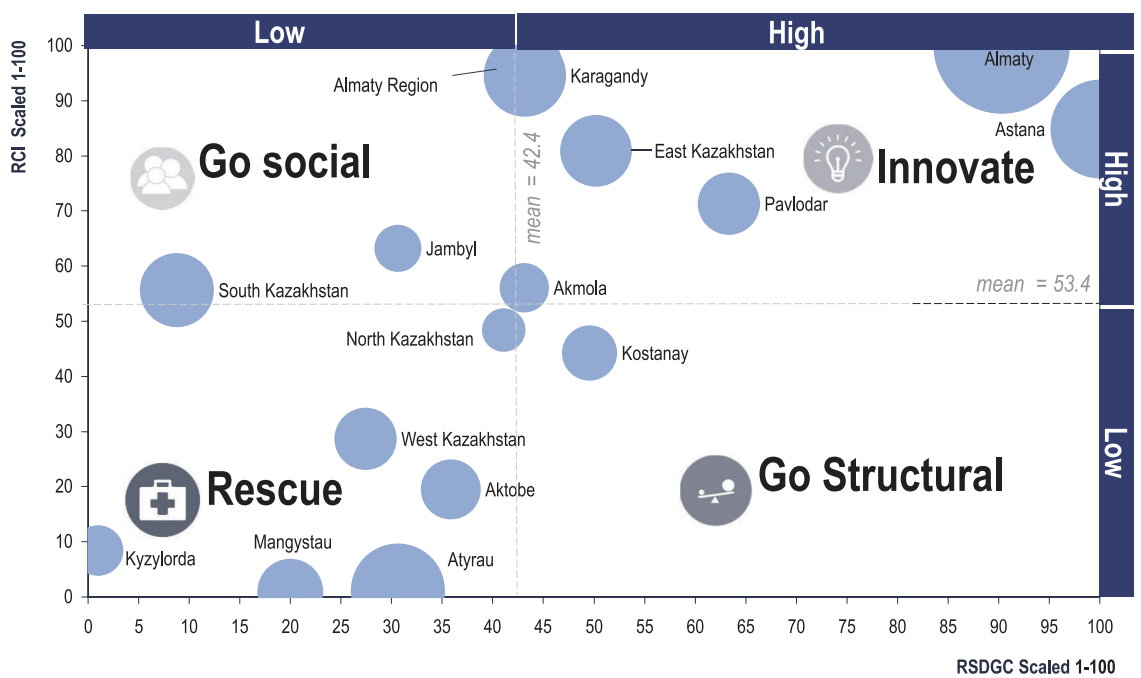
At the national level, the country should place an emphasis on building next generation capabilities so that it can compete more effectively on a global scale. National actions include further investment in R&D and innovation from both Government and business, investment promotion targeted at the most innovative multinationals (with an emphasis on skills and technology transfer), strengthening the legal and fiscal framework for venture capital and angel investing, and accelerating the development of triple helix partnerships between Government, universities and the private sector. Specific policies should be implemented to strengthen the contribution of SMEs to GDP and exports through FDI - SME linkage programmes, as well as the expansion of incubators and credit guarantee schemes to boost access to finance for investment. Moreover, structural reforms to enforce competition policy and product market liberalisation will also be fundamental to creating the right conditions for small and medium sized enterprises to thrive. As Kazakhstan raises its level of economic complexity, it will also further diversify into new sectors and invest in a broader set of factors such as sustainable production and consumption, combating climate change, and building resilient infrastructure.

However, national policies will not be effective without "bottom up" regional policies to ensure more balanced and equitable growth between regions

Based on the SDG Index and Capability Index results, it is clear that not all regions are following the same development path. While some regions are more advanced in terms of capabilities, others are ahead on sustainable development (see Figure 45 Regions of Kazakhstan ranked by RCI and RSDG Score below).

Figure 45

Regions of Kazakhstan ranked by RCI and RSDG Score



The challenge is to help regions strike a better balance between capabilities and sustainable development within regions while reducing the gaps between regions.

Two types of development path were identified – the Capability path and the Sustainable Development path - as well as four types of policy responses

The two regions that were case studies for this report highlighted two main development paths: capability and sustainability driven (see Figure 46 and Figure 47).

The capability path: most regions in Kazakhstan first follow a capability driven path to development, moving up on the RCI Index and then right on the RSDG Index (see Figure 46 Share of regions that moved up their tier group on RCI (2003-2015) or on RSDG (2010-2015)). These regions have first invested in building the complexity and diversity of their manufacturing and services before turning to improving infrastructure, SME development, employment creation, access health, education, and gender equality. Regions that have followed a capability driven path to development include the Almaty Region, and East Kazakhstan.

The Sustainability path (social path): Once minimum capabilities are established, it is also possible for regions to take a sustainability driven path to development. These regions place a greater emphasis early on in investing in people and sustainable enterprises. Kostanai is an example of a region that has followed this path.

Figure 46

Share of regions that moved up their tier group on RCI (2003–2015) or on RSDG (2010–2015)

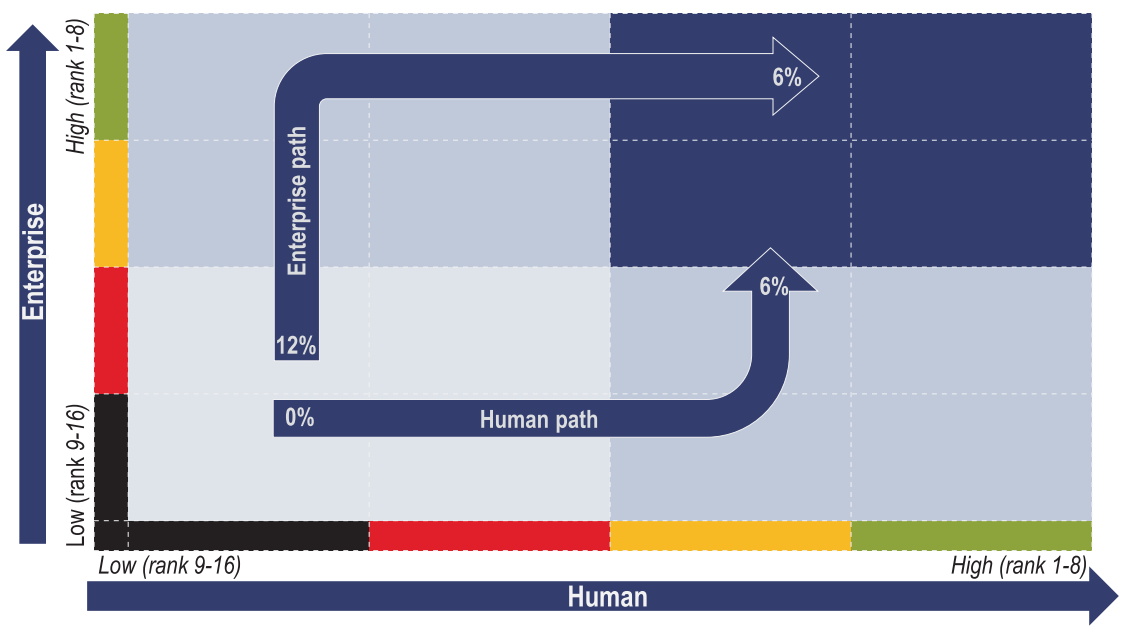
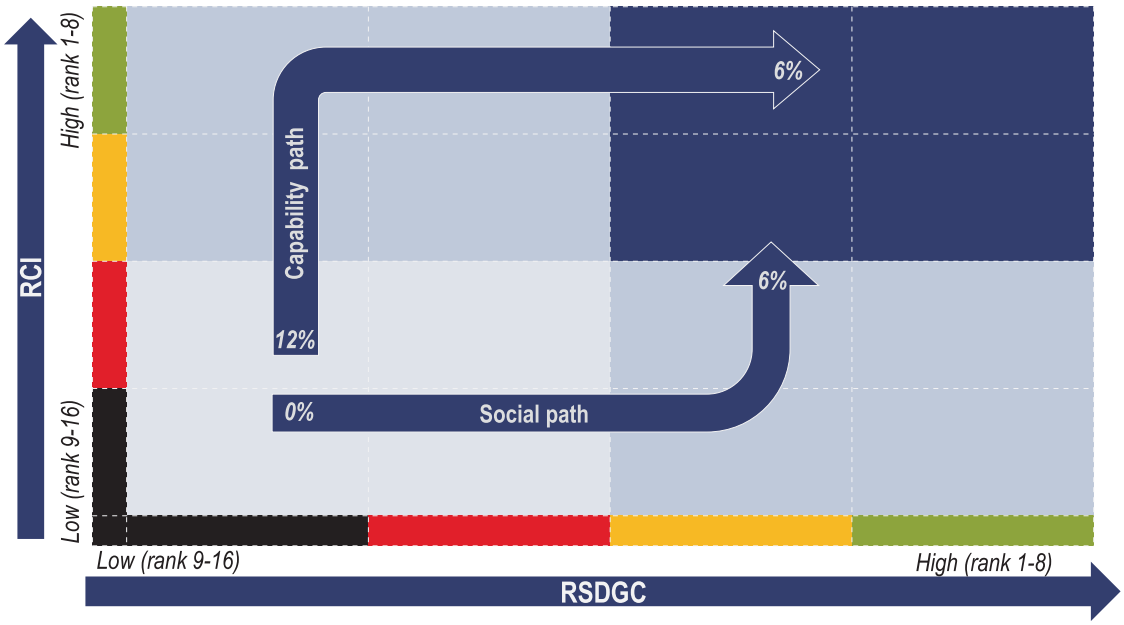


Figure 47

Share of regions that move up the tier group on either the human or enterprise dimension (2010–2015)



Enterprise based development approach prevails initially but should be followed by human development: Regions that follow a sustainability path will typically first focus on enterprise SDGs before turning to human SDGs. The enterprise development approach involves moving upwards and then to the right (see Based on the SDG Index and Capability Index results, it is clear that not all regions are following the same development path. While some regions are more advanced in terms of capabilities, others are ahead on sustainable development (see Figure 47 Regions of Kazakhstan ranked by RCI and RSDG Score below). Actions to support enterprise SDGs involve investment promotion, the development of techno parks, active labor policies, infrastructure investment and public investment in R&D and innovation. Aktobe and Mangystau, which were low on both SDG dimensions, started to rise through the enterprise dimension. The Almaty Region, once if was high on the enterprise dimension, shifted over to the human dimension. Following an initial investment in enterprises, the human development dimension involves investing in people early on before shifting back to enterprises. In graphical terms, the human development approach, adopted by regions such as Kostanay, involves moving to the right on the human dimension before moving up on the enterprise dimension.

In the longer run, both capability driven and sustainability driven regions should converge to a tier 2 or tier 1 positioning on both the RCI and RSDG Index.

Both development paths have been demonstrated through a 10 years analysis of RECI and SDGI for all regions of Kazakhstan. Within the framework of these two development paths, there are four segments of policy responses that can be adopted by regions (see Table 7 in Appendix):

"Innovate": for regions with strong results on both the Economic Complexity Index and SDG Index must focus on R&D support, strengthening linkages between private enterprises and universities, encouraging cross-border R&D collaboration, and attracting FDI that is targeted towards innovation and skills transfer.

"Go Structural": regions that have a high score on the SDG Index but a much lower one on the Economic Complexity Index must implement measures to upgrade their capabilities through more open competition, FDI-SME linkages, export promotion and public-private partnerships for skills development.

"Go Social": regions with a high score on the Economic Complexity Index but low score on the SDG Index have not invested sufficiently in human development and sustainability. These regions must focus further on investment in education, healthcare, social security, gender equality and sustainable forms of production and consumption.

"Rescue": for regions that demonstrate weak results on both the SDG Index and the Economic Complexity Index there is a need for a combination of horizontal and vertical policies to progressively move up the value chain and generate the financing for sustainable development.

Key policy learnings: The need to move from central to regional SDG development policies to be effective

- Although capabilities drive sustainable development in the longer term, and both should be balanced and aligned, in the shorter term there can be strong variations between the two which can be addressed through different development paths, either driven by capabilities or sustainable development
- A successful and sustainable development path at the national level depends on both a "top down" national approach and "bottom up" regional approach with effective coordination between the two levels
- National and regional averages can hide important structural differences that need to be addressed through targeted policies
- More advanced regions on capabilities and sustainable development can provide a model development path for other regions to follow

At the national level, Kazakhstan will need to consider the following additional projects to complement initiatives at the regional level:

SDG 10: Conduct an in-depth review of the five poorest regions in the country to help define an appropriate development path taking into account the experience and lessons learned from other regions. The Government should then consider co-financing the key projects designed to implement the policy roadmap.

SDG 9: Implement "triple helix partnerships" between local Government, business and universities in all Kazakhstan's regions that are below the national average on capabilities.

SDG 8: Implement a "Youth Guarantee Scheme" at the national level to ensure that all youth between 14 and 29 are guaranteed a training or employment experience within 6 months of completing their formal education experience, including through internships.

SDG 5: Launch a national gender award for the firms that demonstrate the greatest gender diversity and the ones that demonstrate most progress in this area.

SDG 4: Launch a nation wide campaign to proportion of digital learning and access to computer equipment in all high schools.

SDG 3: Introduce universal access to healthcare to ensure that all the citizens of Kazakhstan have equal access to healthcare.

In order to offer a more extensive analysis and policy recommendations related to SDGs, policy makers could also consider extending the SDG Index prepared for this report from 6 SDGs to all 17 SDGS. The comprehensive SDG Index could be used to compare SDG performance of regions both within and outside Kazakhstan in order to draw policy recommendations on the optimal development path the pursue.

6 APPENDIX

6.1 Economic Complexity approach at the global level

Key concepts

There are three basic principles behind the theory of Economic Complexity[84]:

1. Products are combinations of a large number of factors, including regulations, different forms of physical capital, organisations and human capital. We cannot measure them all explicitly, but we refer to them all as 'capabilities'.

2. Countries have some of these capabilities and lack the others.

3. Countries produce products if they have all required capabilities.

The Diversity of a country, i.e. the number of products exported by the country with Revealed Comparative Advantage (RCA)[85] is the first important measure of the capabilities it possesses.

Products also differ in the number and type of capabilities required to produce them. For example, in 2011, both Pakistan and South Korea have approximately the same number of RCAs. However, we expect that they produce products that require different sets of capabilities. Thus, it is reasonable for each product to look at the number of countries, which produce it. This is the second building block of the analysis called Ubiquity (the number of countries, which have RCA in this product). We can expect that products, which require a small set of capabilities (for example, meat and milk products) will be exported by many countries. At the same time, X-ray machinery requires very complex technologies possessed only by a minority of countries.

Moreover, capabilities often overlap. If a country can produce X-ray machinery, it is also likely to produce other kinds of machinery and equipment. On the other hand, if it exports bananas, it will probably also export mangoes, but not cars.

But what about exporting diamonds? If the production of diamonds required many different capabilities, we would expect that countries that have these capabilities are also able to produce many other different things. But this is not true: all exporters of diamonds have low diversity. Thus, we conclude, that ubiquity of this product is low not because it is complex, but rather because it is rare.

Summing up all these considerations, we expect that countries possessing many capabilities are able to produce many products that can only be produced by a few other countries, which in turn are also well diversified. We end up with a recursive process when diversity of countries and ubiquity of products are recursively corrected by one another. On the first step, we examine how many products the country exports with advantage. On the second step, each of these products is weighed by its ubiquity. The resulting indicator is then corrected by diversity of countries that also have RCA in these products, and so on. The process converges, and the resulting two indicators – the Economic Complexity Index (ECI) for countries and Product Complexity Index (PCI) for products – are the outcome measures of various capabilities embedded in the production process.

Capabilities of a country can be mapped on a Product Space, a graph, which visualizes world trade in terms of proximities between products. Proximity between two products *A* and *B* is a conditional probability of a country to have RCA in product *A* if it has RCA in product *B*[86]. On the Product Space, two nodes (products) have an edge between them if their proximity above 0.5, or if the edge was forced by the Maximum Spanning Tree algorithm. Thus, products form clusters based on the underlying capabilities.

Technical summary

Export data for the global level Economic Complexity analysis was taken from the UN Comtrade database.[87] Analysis covered 180 countries and economies[88] and 1215 products classified by HS 1996 4 digit codes.

The definition of Revealed Comparative Advantage (RCA) of a country c in product p is the following (Balassa, 1986):

84. Source: C. Hidalgo, R. Hausmann (2009) "The building blocks of economic complexity", Harvard University, Cambridge, C. Hidalgo, R. Hausmann et al (2011):"The Atlas of Economic Complexity", Harvard, MIT

85. Definition of RCA is taken from Balassa (1986): RCA of a country C in product P equals to the share of this product in C's total exports divided by P's share in total world exports. It is considered that a country has RCA in product P, if its RCA in P is above one.

86. Note: If a pair of products require similar institutions, capital, infrastructure, or technology, they are likely to be produced in tandem. Thus, they will have high proximity.

87. Source: http://comtrade.un.org/db/

88. Note: Economies like Hong Kong and Taiwan regions

$$RCA_{cp} = \frac{X_{cp}}{\sum_{c} X_{cp}} / \frac{\sum_{p} X_{cp}}{\sum_{c,p} X_{cp}}, \quad (1)$$

where X stands for the value of export.

We say that country c has RCA in product p, if RCA_{cp} is above 1

The world export structure is represented by matrix M_{cp}:

$$M_{cp} = \begin{cases} 1, RCA_{cp} \geq 1; \\ 0, otherwise. \end{cases} \quad (2)$$

To estimate Economic Complexity Index, two simple measures of Diversity and Ubiquity were introduced:

$$Diversity = k_{c,0} = \sum_{p} M_{cp} \quad (3)$$

$$Ubiquity = k_{p,0} = \sum_{c} M_{cp} \quad (4)$$

Diversity of country c stands for the number of products, in which the country c has Revealed Comparative Advantage. Ubiquity of product p is the total number of countries, which have RCA in product p.

The measure of Economic Complexity is obtained via recursion by correcting Diversity and Ubiquity by each other:

$$k_{c,N} = \frac{1}{k_{c,0}} \sum_{p} M_{cp} \cdot k_{p,N-1} \quad (5)$$

$$k_{p,N} = \frac{1}{k_{p,0}} \sum_{c} M_{cp} \cdot k_{c,N-1} \quad (6)$$

After inserting (6) in (5) we obtain:

$$k_{c,N} = \sum_{c'} \tilde{M}_{cc'} k_{c',N-2}, \text{ where:} \quad (7)$$

$$\tilde{M}_{cc'} = \sum_{p} \frac{M_{cp} M_{c'p}}{k_{c,0} k_{p,0}} \quad (8)$$

The process converges after a few iterations, and the quantitative measure of Economic Complexity is given by the eigenvector $\vec{K}$ of matrix $\tilde{M}_{cc'}$, corresponding to the second largest eigenvalue. By the definition of eigenvector, $\vec{K}$ can be found from the equation:

$$\tilde{M}_{cc'} \times \vec{K} = \lambda \vec{K},$$

where λ is eigenvalue of $\tilde{M}_{cc'}$, (9)

associated with $\vec{K}$

When $k_{c,N} = k_{c,N-2} = 1$ we have a trivial vector of ones associated with the largest eigenvalue. This vector is not informative, so the eigenvector $\vec{K}$, associated with the second largest eigenvalue of $\tilde{M}_{cc'}$, is chosen as an indicator of economic complexity. After standardisation of $\vec{K}$, we obtain Index of Economic Complexity (ECI):

$$ECI = \frac{\vec{K} - \langle \vec{K} \rangle}{stdev \langle \vec{K} \rangle}, \quad (10)$$

where $\langle \vec{K} \rangle$ is the mean and stdev $\langle \vec{K} \rangle$ is the standard deviation of $\vec{K}$.

Index of Product Complexity (PCI) is obtained calculated in the same way as ECI by transposing matrix M_{cp} and considering eigenvector $\vec{Q}$, associated with the second largest eigenvalue of the matrix $\tilde{M}_{pp'}$:

$$PCI = \frac{\vec{Q} - \langle \vec{Q} \rangle}{stdev \langle \vec{Q} \rangle}, \quad (11)$$

where $\langle \vec{Q} \rangle$ is mean and stdev $\langle \vec{Q} \rangle$ is standard deviation of $\vec{Q}$.

Product Space is a graph with nodes representing exported goods. Two nodes have an edge between them if their proximity is above 0.5. Also, in order to guarantee connectedness of the graph, we use the Maximum Spanning Tree algorithm to add some more links even though their proximity is below 0.5 Proximity between two products p and p' is the minimum of two conditional probabilities – the probability to have RCA in p' if there is

RCA in p and vice versa. Conditional probabilities are estimated based on frequencies in the RCA matrix:

$$\phi_{pp'} = \frac{\sum_c M_{cp} M_{cp'}}{\max(k_{p,0},\, k_{p',0})}, \qquad (12)$$

where M_{cp} is the matrix of Revealed Comparative Advantages, c is the number of the country, $k_{p,0}$ and $k_{p';0}$ are ubiquities of products p and p' respectively. The minimum probability (maximum of $k_{p,0}$ and $k_{p';0}$) is taken to avoid the asymmetry in conditional probabilities. For example, if product p is much more rare (has lower ubiquity) than p', the conditional probability P(p'|p) will be much higher than P(p|p'), though distance between products should be symmetrical by definition.

Based on Proximity matrix (formula [12]), Product Space was constructed by following algorithms:

1. 'Skeleton' of the graph: Maximum Spanning Tree algorithm was used to construct connected graph with (n – 1) edges with the maximum total proximity (n – number of products). 'Tissue' of the graph was obtained by adding to 'Skeleton' all links between products with proximity above 0.5

2. Force algorithm for graph layout to separate clusters of products.

6.2 Economic Complexity approach at the regional level

Regional level Economic Complexity analysis is based on Kazakhstan 2002, 2013 and 2014 export matrices, which integrate export of regions to the Eurasian Custom Union (data source – CSRK and to the rest of the world (State Revenue Committee). For both years, data were reported for the sixteen regions and around 1000 products. Products are classified by the HS 1996 revision 4-digit codes.

For both years, Kazakhstan export by region was combined with International export matrices due to the computational matters[89]. International export data is also classified by the HS 4-digit product codes (data source – BACI database). The resulting matrices contained about 240 regions and about 1000 products.

All the other steps follow the methodology described above. Revealed Comparative Advantages (RCAs) are assessed for the regions of Kazakhstan and the rest of the world by formula [1], treating Kazakhstan regions as independent participants of international trade (i.e. "countries"). In the same way, we say that a region or a country has RCA in some product, if its RCA in this product equals to one.

Economic Complexity Index and Product Complexity Index (PCI) were then calculated on the united Kazakhstan-World RCA matrix by the formula [10] and [11]. At this point, the rest of the world except Kazakhstan were excluded from the analysis. Economic complexity Index and the number of RCAs for the regions of Kazakhstan were scaled from 1 to 100 resulting in RECI and nRCA[90] indices respectively.

Regional Capability Index (RCI) lies in the core of the regional level capability-based approach. RCI is a combination of four indicators[91]:

- **Number of Revealed Comparative Advantages (nRCA)** is the total number of products, in which a region has Revealed Comparative Advantages. This indicator stands for Diversity, the first measure of capabilities. Even if the complexity of export is low, high diversification implies that the basis for future growth is in place, and the region needs to focus more on development of institutions to combine different sorts of knowledge to produce and export more complex goods.
- **Regional Economic Complexity Index (RECI)** reflects export potential of a region – the multiplicity of its productive knowledge. If a region has high RECI, it normally should be able to export many goods, because capabilities are in place. If, however, it is not the case, this implies that production process is costly and multiple barriers to business exist. In this case, policy-makers should pay more attention to development of markets and improving business environment in order to turn knowledge into products.
- If the nRCA of a region falls into the first quartile of the corresponding empirical distribution (that is below 5 for the scaled nRCA), RECI of such regions is supposed to be between 1 and 30 (after 1-100 scaling) and assigned to the average RECI in the sample, i.e. 15. It is hardly possible to adequately assess economic complexity in case of very low diversification.
- **Contribution to Services Sector Index (CS)** is included in the RCI as an alternative to product complexity for services. It is calculated as a ratio between the share of services in GRP of a certain region to an average share of services in national GRP. If the region is leading by the Contribution to Services Sector but lagging by other indicators, policy-makers should focus on capability building. Production process itself could be easier in these regions due to better institutions and welfare that are correlated with the level of service development. CS was assessed on the services and GRP data provided by CSRK of the Republic of Kazakhstan.
- **Contribution to Processing Sector Index** (PC) is constructed in the same way as Contribution to Services Sector but concerns the share of processing in GRP. For its calculation the data of GRP structure was used, also provided by CSRK.

89. Note: Economic Complexity indicators should be estimated on a rather big sample of regions or countries. In this way, 16 regions alone don't provide sufficient statistics.

90. Number of Revealed Comparative Advantages on the regional level

91. Source: Whiteshield Partners, based on Hausmann and Hidalgo methodology

In the **Regional Capability Index** (RCI), RECI and SC are combined into **Complexity** dimension. nRCA stands for **Diversity** dimension and PC stands for **Industrialization** dimension. RCI is a simple average of these four sub-indices:

$$RCI = 0.25 \cdot RECI + 0.25 \cdot SC + 0.25 \cdot nRCA + 0.25 \cdot PC, \quad (13)$$

where all four sub-indices are ranged on scale [1,100] by the following formula:

$$Ind_i = \frac{Ind_i - min(Ind)}{max(Ind) - min(Ind)} \times 9 + 1 \quad \text{for i = 1...16,} \quad (14)$$

where Ind_i is the sub-index value for i^{th} Kazakhstan region.

Capability Development Model represents regions' dynamics in terms of RCI and all four sub-indices. For this model we took data of 2002 and 2014 years in order to calculate RCI, RECI, nRCA, SC and PC 2003 and 2015 (as usually indices are named the next year after it was conducted).

Product Space for Kazakhstan regions is constructed in the same way as described in section 6.1, with the only difference that it is based on the regions' export matrix.

6.3 Tables

Table 1

Technical list of SDG indicators used in the RSDG challenge Index calculation

Challenge	Adjusted approach	SDG index (SDSN Working Paper)	Year
Challenge 1: Inequalities between regions (SDG 10)	Gini index	Gini index	2010-2015
Challenge 1: Inequalities between regions (SDG 10)	% of population below subsistence level	-	2010-2015
Challenge 1: Inequalities between regions (SDG 10)	Dev of GRP per capita	-	2010-2015
Challenge 1: Inequalities between regions (SDG 10)	Dev of GRP per capita growth - nominal	-	2010-2015
Challenge 2: Uneven development of innovation and infrastructure (SDG 9)	Non-raw materials exports as % of total exports	-	2012-2014
Challenge 2: Uneven development of innovation and infrastructure (SDG 9)	% of innovation GRP	-	2012-2014
Challenge 2: Uneven development of innovation and infrastructure (SDG 9)	Mobile broadband subscriptions per 100 inhabitants	Mobile broadband subscriptions per 100 inhabitants	2011-2014
Challenge 2: Uneven development of innovation and infrastructure (SDG 9)	Proportion of the population using the internet (%)	Proportion of the population using the internet (%)	2011-2014
Challenge 2: Uneven development of innovation and infrastructure (SDG 9)	Research and development expenditure (% of GDP)	Research and development expenditure (% of GDP)	2010-2014
Challenge 2: Uneven development of innovation and infrastructure (SDG 9)	R&D worker per 100 000 population	-	2010-2014
Challenge 2: Uneven development of innovation and infrastructure (SDG 9)	Road density km per 000 square km	-	2010-2014
Challenge 3: Uneven levels of growth, productivity and employment (SDG 8)	Unemployment (% of total labor force, simple avg 2010-2015)	Unemployment (% of total labor force)	2010-2015
Challenge 3: Uneven levels of growth, productivity and employment (SDG 8)	Average youth unemployment rate over the last 5 years. %	-	2010-2015
Challenge 3: Uneven levels of growth, productivity and employment (SDG 8)	Average real GRP growth over the last 5 years	GDP Growth Deviation	2010-2015
Challenge 3: Uneven levels of growth, productivity and employment (SDG 8)	GRP / employed population, mn tenge	-	2010-2015
Challenge 3: Uneven levels of growth, productivity and employment (SDG 8)	GRP / employed population growth (real), CAGR %	-	2010-2015
Challenge 3: Uneven levels of growth, productivity and employment (SDG 8)	Small enterprise output as % of GRP	-	2010-2014
Challenge 3: Uneven levels of growth, productivity and employment (SDG 8)	Exports as % of GRP	-	2012-2014
Challenge 4: Regional disparities in levels of health and access to healthcare (SDG 3)	Mortality rate, under-5 (per 1,000 live births)	Mortality rate, under-5 (per 1,000 live births)	2010-2014
Challenge 4: Regional disparities in levels of health and access to healthcare (SDG 3)	Physician density (per 1,000 people)	Physician density (per 1,000 people)	2010-2014
Challenge 4: Regional disparities in levels of health and access to healthcare (SDG 3)	Life expectancy at birth, total (years)	Healthy life expectancy at birth, total (years)	2010-2014
Challenge 4: Regional disparities in levels of health and access to healthcare (SDG 3)	-	General wellbeing	2010-2014
Challenge 4: Regional disparities in levels of health and access to healthcare (SDG 3)	Adolescent fertility rate (births per 1,000 women ages 15-19)	Adolescent fertility rate (births per 1,000 women ages 15-19)	2010-2014
Challenge 5: Disparities in education levels (SDG 4)	Avg years of schooling	Expected years of schooling	2006
Challenge 5: Disparities in education levels (SDG 4)	PISA score (average across subjects)	Literacy rate of 15-24 year olds, both sexes, percentage	2012
Challenge 5: Disparities in education levels (SDG 4)	Number of children per 100 preschool places	Net primary enrolment rate (%)	2010-2013
Challenge 5: Disparities in education levels (SDG 4)	RCI scaled 1-100	-	2003-2015
Challenge 6: Gender inequality (SDG 5)	% of women in both public positions (regional, subregional and city	Proportion of seats held by women in national parliaments	2013
Challenge 6: Gender inequality (SDG 5)	Salary gap between men and women, %	Gender Inequality Index	2010-2014
Challenge 6: Gender inequality (SDG 5)	Difference between level of economic activity, men - women, pp	-	2014
Challenge 6: Gender inequality (SDG 5)	Difference between unemployment rates, men - women, pp	-	2014

Table 2

Examples of correlations between the UN SDGs and the 100 Steps

Dimension	Challenge / Subdimension	President Nazarbayev's 100 Steps
SDG		
Corporate		
SDG 10: Reduced inequalities	**SDG specific challenge 1: Inequalities between regions**	
	Reduce outcome inequalities	
	Reduce income inequality and poverty	
SDG 9: Industry, Innovation and Infrastructure	**SDG specific challenge 2: Uneven development of innovation and infrastructure**	
	Develop quality, reliable, sustainable and resilient infrastructure	51. Expanding regional electricity network companies. This will help to increase reliability of energy supplies, reduce costs of supplying electricity to other regions and prices for consumers.
		52. Implementation of new electricity tariffs to attract investments to the industry. The new tariff will cover both the financing of capital expenditure and generating costs for the power used.
		58. Attracting strategic (anchor) investors to establish a single operator maintaining and developing road infrastructure.
		65. Further integration of Kazakhstan into the international transport and communication routes. Launch of the project to establish a multi-modal "Eurasian transcontinental transport corridor", which will allow free transit of freights from Asia to Europe. The transport corridor will include routes through Kazakhstan, Russia and further into Europe; through Kazakhstan from Khorgos to the Aktau port and through the Caspian Sea to Azerbaijan, and Georgia. We will aim to work with the Asian Infrastructure Investment Bank.
	Increase access to information and communications technology	94. Introduction of "the open Government". Law on access to information that will allow access to any information of state agencies except for highly confidential state documents and other information protected by the law.
	Support domestic technology development, research and innovation	63. Development of two innovative clusters to accelerate the creation of a knowledge-based economy. Scientific centers and laboratories will be established at the Astana business campus of the Nazarbayev University to conduct joint scientific and research projects, their development, testing and commercialization. They will be encouraged to cooperate with local and foreign high-tech companies.
		64. Development of the law "On commercialization of the results of science and (or) science and technical activities", which defines the process of financing innovation in industry. The focus of scholarly grant and programme structure will be reformed to reflect the needs of the State Programme of Accelerated Industrial and Innovative Development.

Dimension	Challenge / Subdimension	President Nazarbayev's 100 Steps
SDG 8: Decent work and economic growth	**SDG specific challenge 3: Uneven levels of growth, productivity and employment**	
	Achieve full and productive employment and decent work	83. Liberalization of labour relations and development of a new labour code.
	Achieve higher levels of economic productivity and per capita economic growth	54. Strengthening the institute of the business ombudsman to protect the interests of entrepreneurs. The institute will include business representatives and the national chamber of entrepreneurs.
		35. Privatising agricultural land in order to improve its efficient use. Introducing amendments to the land code and other legal acts.
Human		
SDG 3: Good health and wellbeing	**SDG specific challenge 4: Regional disparities in levels of health and access to healthcare**	
	Increasing life expectancy and reducing some of the common killers associated with child and maternal mortality	81. Development of private health care, corporate management for health facilities. Introduction of corporate governance at healthcare organizations in order to enhance accessibility and quality of the healthcare services through competition among the organizations for financing within the healthcare insurance. Encouragement of privatization of the public healthcare organizations and extension of the guaranteed healthcare package provided at private healthcare organizations.
	Increase health financing and the recruitment, development, training and retention of the health workforce	80. Implementation of mandatory social health insurance. Strengthening financial sustainability of the health system through the principle of mutual responsibility of the state, employers and citizens. Priority financing of the primary health care. Primary care will be the core of the national healthcare for prevention and early fight against diseases.
SDG 4: Quality of Education	**SDG specific challenge 5: Disparities in education levels**	
	Increasing enrolment rates in schools	76. Increasing the quality of human capital on the basis of the OECD countries' standards. Stage-by-stage implementation of 12 years of secondary education, improving the standards of school education in order to develop higher literacy standards. Introducing per capita financing for high schools and establishing a system of expanding successful schools. 79. Stage-by stage transition to the use of the English language in the education system. The main aim is to increase competitiveness of students when they leave and position the educational sector as attractive for international students.
	Increase the number of youth and adults who have relevant skills	76. Increasing the quality of human capital on the basis of the OECD countries' standards. Stage-by-stage implementation of 12 years of secondary education, improving the standards of school education in order to develop higher literacy standards. Introducing per capita financing for high schools and establishing a system of expanding successful schools.

Dimension	Challenge / Subdimension	President Nazarbayev's 100 Steps
	Provide safe, nonviolent, inclusive and effective learning environment	
	Increase the supply of qualified teachers	77. Training highly qualified staff in the top 10 leading colleges and 10 higher education institutions that focus on six key sectors of the economy. Sharing their experience with other educational institutions in the country
SDG 5: Gender equality	**SDG specific challenge 6: Gender inequality**	
	Representation of women in political decision-making processes	99. Strengthening the role of public councils under state agencies and Akims. They will discuss the implementation of strategic plans and regional development programmes, as well as budgets, reports, achieving stated objectives, draft legal acts concerning rights and freedoms of citizens and draft programme documents. Legally establishing these public councils will enhance transparency of state decision-making.
SDG 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels		13. Strengthening the fight against corruption, including development of new legislation. Establishment of a special unit in the Agency for Civil Service Affairs and Fighting Corruption dealing with systemic prevention and measures against corruption. 19. Strengthening accountability of judges. Development of a new code of ethics for judges, which can be used by citizens to appeal a specially established judicial board under the Supreme Court against judges' actions that they consider improper.
SDG 7: Ensuring access to affordable, reliable, sustainable and modern energy for all		59. Attracting strategic investors to the energy saving industry. Their main task will be to encourage the development of companies in the private sector to provide energy saving services with the return of their expenditures and financial profit arriving from the reduction of energy costs.

Table 3

Positions of the Kyzylorda and Almaty Regions on Regional Capability Index

Regions	Complexity		Diversity	Industrialisation	RCI	RCI scaled 1-100	Ranking by RCI 2014	Complexity dimension	Diversity& Industrialisation dimension
	RECI	Contribution to services sector (CS)	Number of RCAs	Contribution to processing sector (CP)					
Almaty	0.1	1.6	85	0.4	66.4	100.0	1	79.9	52.9
Almaty Region	0.3	0.8	79	1.5	64.5	96.5	2	60.8	68.1
Karagandy	0.2	0.6	42	3.1	63.5	94.5	3	53.5	73.4
Astana	0.0	2.1	37	0.2	58.2	84.9	4	95.5	20.8
East Kazakhstan	-0.2	0.6	56	2.1	56.0	80.9	5	48.1	63.9
Pavlodar	-0.3	0.4	39	2.6	50.8	71.3	6	39.8	61.8
Jambyl	-0.4	0.5	58	1.3	46.4	63.3	7	41.5	51.3
Akmola	-0.5	0.7	38	1.4	42.5	56.1	8	44.3	40.7
South Kazakhstan	-1.0	0.5	53	1.6	42.3	55.7	9	30.6	54.0
North Kazakhstan	-0.3	0.5	44	0.8	38.3	48.4	10	41.4	35.1
Kostanay	-0.7	0.5	40	1.0	36.0	44.3	11	36.8	35.2
West Kazakhstan	0.0	0.6	6	0.4	27.5	28.7	12	50.5	4.6
Aktobe	-1.4	0.5	16	0.9	22.5	19.5	13	25.6	19.4
Kyzylorda	-1.2	0.6	6	0.2	16.5	8.5	14	30.8	2.1
Atyrau	-2.7	1.1	7	0.4	12.5	1.2	15	20.4	4.7
Mangystau	-2.3	1.0	5	0.3	12.4	1.0	16	22.5	2.3

Table 4

Five–year Policy Roadmap for Kyzylorda

Dimension	Challenge / Subdimension	Project name	Project Description	Project status	Key goals	Employ-ment impact	President Nazarbayev's 100 Steps
SDG							
Corporate							
SDG 9: Industry, Innovation and Infra-structure	**Challenge 2: Uneven development of innovation and infrastructure**	**The Programme for the Development of the Territory of the Kyzylorda Region 2016-2020 (PDTKR)**	**Comprehensive programme to monitor regional progress through a series of socio-economic indicators**	**In progress**			
	Develop quality, reliable, sustainable and resilient infrastructure	PDTKR transport infrastructure project	*Increase share of roads in good condition*	In progress	Higher % of quality roads per 1000 pop	High	58. Attracting strategic (anchor) investors to establish a single operator maintaining and developing road infrastructure. 65. Further integration of Kazakhstan into the international transport and communication routes. Launch of the project to establish a multi-modal "Eurasian transcontinental transport corridor", which will allow free transit of freights from Asia to Europe. The transport corridor will include routes through Kazakhstan, Russia and further into Europe; through Kazakhstan from Khorgos to the Aktau port and through the Caspian Sea to Azerbaijan, and Georgia. We will aim to work with the Asian Infrastructure Investment Bank.
	Increase access to information and communications technology	PDTKR ICT project	Increase the share of people using internet	In progress	% access pop to ICT	Medium	94. Introduction of "the open Government". Law on access to information that will allow access to any information of state agencies except for highly confidential state documents and other information protected by the law.
	Support domestic technology development, research and innovation	Techno parks	Develop techno parks along the model of the Almaty Region (longer term)	Longer term (2-5 years)	R&D spending SME contribution to GRP of 15% Five new techno parks	Medium	63. Development of two innovative clusters to accelerate the creation of a knowledge-based economy. Scientific centers and laboratories will be established at the Astana business campus of the Nazarbayev University to conduct joint scientific and research projects, their development, testing and commercialization. They will be encouraged to cooperate with local and foreign high-tech companies. 64. Development of the law "On commercialization of the results of science and (or) science and technical activities", which defines the process of financing innovation in industry. The focus of scholarly grant and programme structure will be reformed to reflect the needs of the State Programme of Accelerated Industrial and Innovative Development.

Dimension	Challenge / Subdimension	Project name	Project Description	Project status	Key goals	Employment impact	President Nazarbayev's 100 Steps
		Triple helix partnerships	Launch triple helix partnerships in agribusiness and stone, glass and metals sectors		% of contribution to processing in agribusiness	Medium	63. Development of two innovative clusters to accelerate the creation of a knowledge-based economy. Scientific centers and laboratories will be established at the Astana business campus of the Nazarbayev University to conduct joint scientific and research projects, their development, testing and commercialization. They will be encouraged to cooperate with local and foreign high-tech companies.
SDG 8: Decent work and economic growth	**SDG specific challenge 3: Uneven levels of growth, productivity and employment**	**The Programme for the Development of the Territory of the Kyzylorda Region 2016-2020 (PDTKR)**	**Comprehensive programme to monitor regional progress through a series of socio-economic indicators**	**In progress**	**KPIs**		
	Achieve full and productive employment and decent work	SME linkage programme	Set up linkage programmes between SMEs and FDI, targeting specific sectors such as agribusiness	Short term (< 2 years)	SME contribution to GRP of 15%	Medium	
		SME agency	Set up a one stop shop SME agency to support the new companies with accelerated registration and licensing, training, access to incubation, support in access to finance and information regarding export promotion	Longer term (2-5 years)	SME contribution to GRP of 15%	High	
		PDTKR employment project	Reduce the level of unemployment through liberalization of labour code	In progress	Unemployment rate	High	83. Liberalization of labour relations and development of a new labour code.

Dimension	Challenge / Subdimension	Project name	Project Description	Project status	Key goals	Employ-ment impact	President Nazarbayev's 100 Steps
		Youth Guarantee Scheme	Put in place a youth guarantee scheme that offers youth between the ages of 18 and 25 the opportunity to have an access to additional training or a paid position within 6 months of leaving their formal education	Longer term (2-5 years)	% of youth not in employ-ment or training / education (NEET)	High	
	Achieve higher levels of economic productivity and per capita economic growth	One stop shop investment	Set up a one stop shop for investment promotion and facilitation	Longer term (2-5 years)	FDI inflows	Medium	
SDG							
Human							
SDG 3: Good health and wellbeing	**SDG specific challenge 4: Regional disparities in levels of health and access to healthcare**	**The Programme for the Development of the Territory of the Kyzylorda Region 2016-2020** **State health development programme "Densaulyk" for 2016-2020**	**Comprehensive programme to monitor regional progress through a series of socio-economic indicators** **Central Government programme with regional plan**	**In progress**	**KPIs**		
	Increase life expectancy and reduce some of the common killers associated with child and maternal mortality	PDTKR / Densaulyk Health project	Programme targets the most prevalent diseases, maternal and infant mortality	In progress		Low	81. Development of private health care, corporate management for health facilities. Introduction of a corporate governance at healthcare organizations in order to enhance accessibility and quality of the healthcare services through competition among the organizations for financing within the healthcare insurance. Encouragement of privatization of the public healthcare organizations and extension of the guaranteed healthcare package provided at private healthcare organizations.

Dimension	Challenge / Subdimension	Project name	Project Description	Project status	Key goals	Employ-ment impact	President Nazarbayev's 100 Steps
	Increase health financing and the recruitment, development, training and retention of the health workforce	Marketing campaign for doctors	Prepare a communication campaign to encourage doctors to serve more remote regions such as Kyzylorda and consider options to offer additional incentives (lodging, tax advantages etc)	Longer term (2-5 years)	50 doctors per 10,000 pop	Low	
		Universal healthcare	Insurance based healthcare system, "follow the patient" financing	In progress	100% healthcare coverage for the population	Low	80. Implementation of mandatory social health insurance. Strengthening financial sustainability of the health system through the principle of mutual responsibility of the state, employers and citizens. Priority financing of the primary health care. Primary care will be the core of the national healthcare for prevention and early fight against diseases
	Provide safe, nonviolent, inclusive and effective learning environment	CGPED Inclusivity project CGPED Financing project	Adopt schools for inclusive education (CAPEX, staff) "Follow the student " financing scheme	Laun-ched Laun-ched for pre-schools and par-tially for tertiary educa-tion	Inclusive education by 2019	Medium	
	Increase the supply of qualified teachers		Better teacher training and financial incentives for teachers to move to region (longer term)	Partially in progress, not sufficient		Medium	77. Training highly qualified staff in the top 10 leading colleges and 10 higher education institutions that focus on six key sectors of the economy. Sharing their experience with other educational institutions in the country.

Dimension	Challenge / Subdimension	Project name	Project Description	Project status	Key goals	Employ-ment impact	President Nazarbayev's 100 Steps
SDG 5: Gender equality	**SDG specific challenge 6: Gender inequality**	**Strategy for Gender Equality in the Republic of Kazakhstan 2006-2016**	**Central Government programme with regional plan**	**Complet-ed, new to be launched**	**Move from declarative to factual**		
	Representation of women in political decision-making processes	Political rep-resentation of women	Directive from central Government supported by Akimat	Initiated	Increase representation of women in local maslikhats to 30%	Low	
	Representation of women in technical fields	Gender awards	Gender awards & communication campaign to encourage women to pursue technical fields	Short term (< 2 years)	Gender wage gap of 25%	Medium	
	Representation of women in economic decision making	Labour force discrimina-tion	Stricter legislation regarding discrimination of women in the labor force	Longer term (2-5 years)	Gender wage gap of 25%	Medium	
Capability							
Comp-lexity							
	Increase Regional Economic Complexity	Investment promotion	Targeted investment promotion in agribusiness & stone, glass and metals (short term) PPPs for skills development (short term)	Short term (< 2 years)	Complexity index of 60	High	
	Increase contribution to services sector	PPPs for skills	Targeted investment promotion in the services sector	Short term (< 2 years)	Services 10% of GRP	High	
Diversity							
	Increase number of RCAs	Special economic zones	Create special economic zones and techno parks to support further diversification into agribusiness & stone, glass & metals (s/t) Create special economic zones and techno parks to support further diversification into machinery and textile as well as value added services driven by IT and technology (longer term)	Longer term (2-5 years)	Agribusiness 5% of GRP Stone, glass & metals 5% of GRP Machinery & textile 2% GRP	High	

Table 5

Positions of the Mangystau and Atyrau Regions on Regional Capability Index

Regions	Complexity		Diversity	Industrialisation	RCI	RCI scaled 1-100	Ranking by RCI 2014	Complexity dimension	Diversity& Industrialisation dimension
	RECI	Contribution to services sector (CS)	Number of RCAs	Contribution to processing sector (CP)					
Almaty	0.1	1.6	85	0.4	66.4	100.0	1	79.9	52.9
Almaty Region	0.3	0.8	79	1.5	64.5	96.5	2	60.8	68.1
Karagandy	0.2	0.6	42	3.1	63.5	94.5	3	53.5	73.4
Astana	0.0	2.1	37	0.2	58.2	84.9	4	95.5	20.8
East Kazakhstan	-0.2	0.6	56	2.1	56.0	80.9	5	48.1	63.9
Pavlodar	-0.3	0.4	39	2.6	50.8	71.3	6	39.8	61.8
Jambyl	-0.4	0.5	58	1.3	46.4	63.3	7	41.5	51.3
Akmola	-0.5	0.7	38	1.4	42.5	56.1	8	44.3	40.7
South Kazakhstan	-1.0	0.5	53	1.6	42.3	55.7	9	30.6	54.0
North Kazakhstan	-0.3	0.5	44	0.8	38.3	48.4	10	41.4	35.1
Kostanay	-0.7	0.5	40	1.0	36.0	44.3	11	36.8	35.2
West Kazakhstan	0.0	0.6	6	0.4	27.5	28.7	12	50.5	4.6
Aktobe	-1.4	0.5	16	0.9	22.5	19.5	13	25.6	19.4
Kyzylorda	-1.2	0.6	6	0.2	16.5	8.5	14	30.8	2.1
Atyrau	-2.7	1.1	7	0.4	12.5	1.2	15	20.4	4.7
Mangystau	-2.3	1.0	5	0.3	12.4	1.0	16	22.5	2.3

Table 6
Five Year Policy Roadmap for Mangystau

Dimension	Challenge / Subdimension	Project name	Project Description	Project status	Key goals	Employ-ment impact	President Nazarbayev's 100 Steps
SDG							
Corporate							
SDG 9: Industry, Innovation and Infra-structure	**Challenge 2: Uneven development of innovation and infrastructure**	**The Programme for the Development of the Territory of the Mangystau Region 2016-2020 (PDTMR)** **The state programme of industrial-innovative development of Kazakhstan for 2015-2019 (SPIIDK)**	**Complex document covering targets on a number of different socio-economic indicators** **Central Government programme with regional plan**	**In progress**			
	Develop quality, reliable, sustainable and resilient infrastructure	SPIIDK investment projects	Close collaboration between Akimat, Chamber of Entrepreneurs and Foreign Embassies on attracting investment funding for infrastructure projects	In progress		High	51. Expanding regional electricity network companies. This will help to increase reliability of energy supplies, reduce costs of supplying electricity to other regions and prices for consumers. 52. Implementation of new electricity tariffs to attract investments to the industry. The new tariff will cover both the financing of capital expenditure and generating costs for the power used. 58. Attracting strategic (anchor) investors to establish a single operator maintaining and developing road infrastructure. 65. Further integration of Kazakhstan into the international transport and communication routes. Launch of the project to establish a multi-modal "Eurasian transcontinental transport corridor", which will allow free transit of freights from Asia to Europe. The transport corridor will include routes through Kazakhstan, Russia and further into Europe; through Kazakhstan from Khorgos to the Aktau port and through the Caspian Sea to Azerbaijan, and Georgia. We will aim to work with the Asian Infrastructure Investment Bank.

	Increase access to information and communications technology	IT project		In progress		Medium	94. Introduction of "the open Government". Law on access to information that will allow access to any information of state agencies except for highly confidential state documents and other information protected by the law.

Dimension	Challenge / Subdimension	Project name	Project Description	Project status	Key goals	Employment impact	President Nazarbayev's 100 Steps
SDG 8: Decent work and economic growth	**SDG specific challenge 3: Uneven levels of growth, productivity and employment**	**The Programme for the Development of the Territory of the Mangystau Region 2016-2020 (PDTMR) The state programme of industrial-innovative development of Kazakhstan for 2015-2019 (SPIIDK)**	**Complex document covering targets on a number of different socio-economic indicators Central Government programme with regional plan**	**In progress**			
	Achieve full and productive employment and decent work	Labour market programme	Implement active labour market policies	Longer term (2-5 years)	Unemployment rate 5%	High	83. Liberalization of labour relations and development of a new labour code.
	Achieve higher levels of economic productivity and per capita economic growth	One stop shop SMEs	Set up a one stop shop for registration, licensing and post registration support of newly formed companies	Longer term (2-5 years)	% contribution SMEs to GRP	**High**	
	Better matching of demand and supply of skills	PPP for skills	Public-private partnerships for skills development (short term)	Short term (< 2 years)		**High**	

SDG							
Human							
SDG 3: Good health and wellbeing	SDG specific challenge 4: Regional disparities in levels of health and access to healthcare	State health development programme "Densaulyk" for 2016-2020	Central Government programme with regional plan	In progress			
	Increasing life expectancy and reducing some of the common killers associated with child and maternal mortality	Densaulik: Linkages with other authorities	Establish close collaboration with other Government authorities to improve impact and efficiency: education, internal affairs, etc.	In progress		low	81. Development of private health care, corporate management for health facilities. Introduction of a corporate governance at healthcare organizations in order to enhance accessibility and quality of the healthcare services through competition among the organizations for financing within the healthcare insurance. Encouragement of privatization of the public healthcare organizations and extension of the guaranteed healthcare package provided at private healthcare organizations.

Dimension	Challenge / Subdimension	Project name	Project Description	Project status	Key goals	Employ-ment impact	President Nazarbayev's 100 Steps
	Increase health financing and the recruitment, development, training and retention of the health workforce	Marketing campaign for doctors	Prepare a communication campaign to encourage doctors to serve more remote regions such as Mangystau and consider options to offer additional incentives (lodging, tax advantages etc)	Short term (< 2 years)	50 doctors per 10,000 pop	Low	
	Increase health financing and the recruitment, development, training and retention of the health workforce	Hospital infrastructure expansion	Draw up a plan for more public investment and potential public-private partnerships in hospital infrastructure	Longer term (2-5 years)		High	80. Implementation of mandatory social health insurance. Strengthening financial sustainability of the health system through the principle of mutual responsibility of the state, employers and citizens. Priority financing of the primary health care. Primary care will be the core of the national healthcare for prevention and early fight against diseases

SDG 4: Quality of Education	**SDG specific challenge 5: Disparities in education levels**	**Central Government Programme for Education Development (CGPED)**	**Central Government programme with regional plan**	**In progress**		
	Increasing enrolment rates in schools	Pre-school enrollment	Child access to preschool education	Longer term (2-5 years)	100% child preschool access	
	Increase the number of youth and adults who have relevant skills	PPP for education	Negotiate PPP for education with multinationals in key sectors such an agribusiness. PPPs can be co-funded between state and firms.	Longer term (2-5 years	Adult learning test results	76. Increasing the quality of human capital on the basis of the OECD countries' standards. Stage-by-stage implementation of 12 years of secondary education, improving the standards of school education in order to develop higher literacy standards. Introducing per capita financing for high schools and establishing a system of expanding successful schools.
	Provide safe, nonviolent, inclusive and effective learning environment	School investment	More public investment in schools	Longer term (2-5 years		
	Increase the supply of qualified teachers	Teachers project	New training programme to boost teacher qualifications	Longer term (2-5 years		77. Training highly qualified staff in the top 10 leading colleges and 10 higher education institutions that focus on six key sectors of the economy. Sharing their experience with other educational institutions in the country.

Dimension	Challenge / Subdimension	Project name	Project Description	Project status	Key goals	Employ-ment impact	President Nazarbayev's 100 Steps
SDG 5: Gender equality	**SDG specific challenge 6: Gender inequality**	**Strategy for Gender Equality in the Republic of Kazakhstan 2006-2016**	**Central Government programme with regional plan**	**Complet-ed, new to be launched**	**Move from declarative from to factual**		
	Representation of women in political decision-making processes	Political representation of women	Increase representation of women in political decision-making processes			*Low*	

	Representation of women in technical fields	Gender equality in technical fields	Gender awards & communication campaign to encourage women to pursue technical fields (short term)	Short term (< 2 years)	Gender wage gap of 25%	*Medium*	
	Representation of women in economic decision making	Gender discrimination in labour force	Stricter legislation regarding discrimination of women in the labor force (longer term)	Longer term (2-5 years)	Gender wage gap of 25%	*Medium*	
Capability							
Complexity							
	Increase Regional Economic Complexity	Service capabilities	Raise the complexity of capabilities related to services in areas such as financing, processing and transport of oil and gas.	Longer term (2-5 years)	Country average of 44 on complexi-ty index 40% con-tribution to services	*High*	
Diversity							
	Increase number of RCAs	RCA project	Expand diversification into ships	Longer term (2-5 years)	Country average of 37 on diversity index	*Medium*	
	Increase contribution to processing sector		Expand diversification into new services	Longer term (2-5 years)	40% con-tribution to services	*High*	

Table 7

Four types of Policy Responses for Kazakhstan's regions

Capabilities \ SDGs	Low	High
High	**"Go social"** Focus on improving people's lives through further investment in education, healthcare, social security, gender equality and other related measures	**"Innovate"** Focus on R&D support, public-private partnerships, university linkages and FDI targeted towards innovation and skills transfer
Low	**"Rescue"** Targeted horizontal and vertical policies to develop complexity in sectors building on existing comparative advantages while investing in human development	**"Go structural"** Focus on implementing measures to enhance capabilities through more open competition, FDI-SME linkages, export promotion and public-private partnerships for skills development

6.4 Capability and missing product' analysis for selected regions

Almaty Region

Sector	Past	Present	Future
Stone, Glass and Metals	Number of RCAs = 13 Average PCI = -0.10	Number of RCAs = 36 Average PCI = 0.03	Number of proximity products = 37 expected PCI = 0.34, maximum PCI = 0.62
	Existing complex RCAs:	New complex RCAs:	Top missing products:
	articles of asphalt or of similar material springs & leaves for springs, iron or steel padlocks, locks & keys & parts, of base metal glass containers for packing etc & glass closures knives & blades for machines & appliances	wire of stainless steel flat-roll stainless steel products, not und 600mm wide bars & rods, stainless steel, angles, stainless steel stoves, ranges, nonel domestic & parts, iron & steel glassware for table, kitchen, toilet	springs & leaves for springs, iron or steel glassware for lab, hygienic or pharmaceutical use millstones for grinding, various materials nails, tacks etc of copper etc, screws copper articles of lead
Chemicals, Plastics and Rubbers	Number of RCAs = 5 Average PCI = 0.33	Number of RCAs = 23 Average PCI = 0.30	Number of proximity products = 31 expected PCI = 0.48, maximum PCI = 0.70
	Existing complex RCAs:	New complex RCAs:	Top missing products:
	preparations for use on the hair preparations for oral or dental hygiene enzymes, prepared enzymes polishes & creams for leather, wood etc beauty, make-up & skin-care preparation, manicure etc	monofil, rods, sticks, plastics heterocyclic compounds carboxylic acid, added oxygen & articles of plastics (including polymers & resins) polyethers & polyesters, primary forms	silicones, in primary forms finishing agents etc for textiles, paper etc bandages coated or in retail medic etc natural rubber, balata, gutta-percha, guayule, chicle and similar natural gums, in primary forms or in plates, sheets or strip pickling preps for metal, soldering powder
Machinery, Transportation and Complex instruments	Number of RCAs = 12 Average PCI = 0.31	Number of RCAs = 29 Average PCI = 0.17	Number of proximity products = 62 expected PCI = 0.29, maximum PCI = 0.61
	Existing complex RCAs:	New complex RCAs:	Top missing products:
	gas, liquid or electric supply meters, parts parts of railway or tramway locomotives or stock works trucks, self-prop, no lift, stat tractors, measure or check flow, level chass	public-transport type passenger motor vehicles bookbinding machinery, book-sewing, parts medical, surgical, dental or tools for working in the hand, pneumatic etc, turntables, record & cassette players etc.	balances, sensitivity > =5 cg, milking machines & dairy machinery & parts electromagnets, permanent magnets & parts revolution & production count, taximeters etc, for physical etc analytical scales etc, microtome

Atyrau

Sector	Past	Present	Future
Stone, Glass and Metals	Number of RCAs = 0	Number of RCAs = 1 Average PCI = -0.10	Number of proximity products = 0
	Existing complex RCAs:	New complex RCAs:	Top missing products:
	----------	tanks etc, over 300 litter capacity, iron or steel	----------
Chemicals, Plastics and Rubbers	Number of RCAs = 1 Average PCI = 0.39	Number of RCAs = 0	Number of proximity products = 0
	Existing complex RCAs:	New complex RCAs:	Top missing products:
	paints & varnishes, water pigments for leather	----------	----------
Machinery, Transportation and Complex instruments	Number of RCAs = 7 Average PCI = 0.65	Number of RCAs = 6 Average PCI = -1.61	Number of proximity products = 29 expected PCI = 0.29, maximum PCI = 0.56
	Existing complex RCAs:	New complex RCAs:	Top missing products:
	electromechanical tools, working in hand, parts vessels including warship/ lifeboat row boats machines, solder etc, gas temper machines, pt electric, laser or other light or photon beam etc parts for machinery of headings 8425 to 8430 (HS-4 digit code)	pulley tackle & hoists (skip), winch etc, jaks producer gas, acetylene gas etc generators & parts mechanisms appl to disperse liquid etc, sand etc blast machinery survey, etc containers for one or more modes of transport	revolution & production counters, taximeters for physical analytical scales, microtome, hydrometers, thermometers, pyrometers etc, parts for engines of heading 8407 or 8408 (HS-4 digit code) electrical apparatus for switching etc, ov 1000v

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