

Health and the Health-related Sustainable Development Goals: Progress, problems and prospects for Kyrgyzstan

Christopher J Gerry, Saule Chalbasova, Mariia Ianova

Abstract

The primary health-related Sustainable Development Goal (SDG) for Kyrgyzstan is SDG 3, which aims to ensure healthy lives and promote well-being for all ages, including through reducing maternal and child mortality, combating infectious diseases, and addressing non-communicable diseases. This report demonstrates that, as things stand, Kyrgyzstan will struggle to achieve SDG 3, by 2030. Kyrgyzstan's prevailing health policy, outlined in the "Healthy Person – Prosperous Country" 2019-2030 program, in scope, aligns with the health-related SDGs by emphasizing universal health coverage, quality healthcare services, primary healthcare, maternal and child health, and the combat of non-communicable diseases. Accordingly, progress has been made in reducing child and maternal mortality rates, improving access to essential health services, and enhancing healthcare quality. However, many challenges remain - including inadequate financing, limited human resources, poor infrastructure, a disconnect between policy and practice, and the fragmentation of the health system. Most recently, despite strong economic growth, a nutritional crisis has emerged and this, allied with the effects of COVID-19, has contributed to a downgrading in the country's likelihood of being able to achieve SDG 3.

Bios

Christopher J Gerry is the Rector, Dean of the Graduate School of Development (GSD), and Full Professor at the University of Central Asia (UCA). Prior to joining UCA, Professor Gerry was Head of Oxford University's School of Global and Area Studies and Full Professor in Public Health and Health Economics of Eastern Europe and Central Asia. Since completing his PhD in 2002, his research has focused on the economics of health, welfare, inequality and labour markets in Eurasia, and he has published widely in many of the leading journals in Public Health, Health Economics and Area Studies.

Saule Chalbasova is a Strategic Initiatives and Projects Lead at the Graduate School of Development, UCA. She holds a master's degree in international law and economics from the World Trade Institute, University of Bern and a bachelor's degree in Economics from the American University of Central Asia. Her research interests include socio-economic development, economics of health, international trade and agriculture.

Mariia Ianova is a Research Associate at the Institute of Public Policy and Administration of the University of Central Asia. She holds a BA in Economics from the American University of Central Asia. Her expertise includes socio-economic development, food security and nutrition, gender assessment, health economics and development economics.

Key words: Healthcare, health-related SDGs, Kyrgyzstan

JEL codes: I15, I18

Contents

Objectives & Methodology.....	2
Health and health-related SDG (HHSDG) programmes and policies	3
Background and Context	4
Progress according to the Data	5
Current state of the art in policy implementation	6
Health Expenditures.....	6
Access and coverage	7
Human Resources in healthcare	8
Climate change & Health	8
Environmental health	9
Mental Health.....	10
Gender Equality	12
Challenges and Bottlenecks	13
Recent developments related to the SDGs: poverty and nutrition	13
Interim Recommendations and Next Steps.....	15
Conclusion.....	16
References	17

Objectives & Methodology

This report provides a comprehensive overview of the current situation in Kyrgyzstan regarding health-related Sustainable Development Goals (SDGs), with a particular focus on climate change, mental health and gender equality. We conducted an extensive review on the status of the health-related SDGs in Kyrgyzstan, utilizing official reports, policy statements related to the 2030 SDG Agenda, secondary data from the National statistical committee and other sources, and conducted a systematic review of the available literature.¹

The systematic review, of the post-2015 literature, was conducted through Google Scholar, Research Rabbit and Consensus, using 147 separate search terms² focusing on the health and health-related SDGs, including terms for mental health, climate (change) and gender. The former is well-known as a web search engine that indexes scholarly literature available on the internet and, while not an efficient way to search conventionally published academic literature, it provides good access to the ‘grey’ literature not published in traditional outlets. Research Rabbit and Consensus are from a newer class of Artificial Intelligence tools that serve to map the literature. These tools allow for a more comprehensive search through scholarly databases, including PubMed, Lens.Org (Research Rabbit) and Semantic Scholar (Consensus). In addition, they offer supplementary features based on the use of seed papers and research networks which draw on citation-based techniques to further expand the search. To further expedite the search process, we used SciSpace - an AI tool that allows for rapid identification of the content of research papers. The search identified 36 reports and 120 research papers or articles linked to the health-related SDGs in Kyrgyzstan.

¹ Despite progress in data collection and reporting, Kyrgyzstan still lacks regionally disaggregated data for monitoring and accountability.

² See annex 1.

Even with this comprehensive search strategy, most of the identified sources do not directly address the Health and Health-related SDGs (HHSDGs) themselves. Rather, the majority are related to specific topics within the health-related SDG framework. These topics include issues such as air, soil, and water pollution, domestic violence, nutrition, poverty, the health workforce, HIV/TB, specific non-communicable diseases, early child development, health financing, and health systems. While many of these sources do not discuss HHSDGs explicitly, they are nevertheless valuable in identifying gaps and challenges within these areas, including how they relate to the HHSDGs.

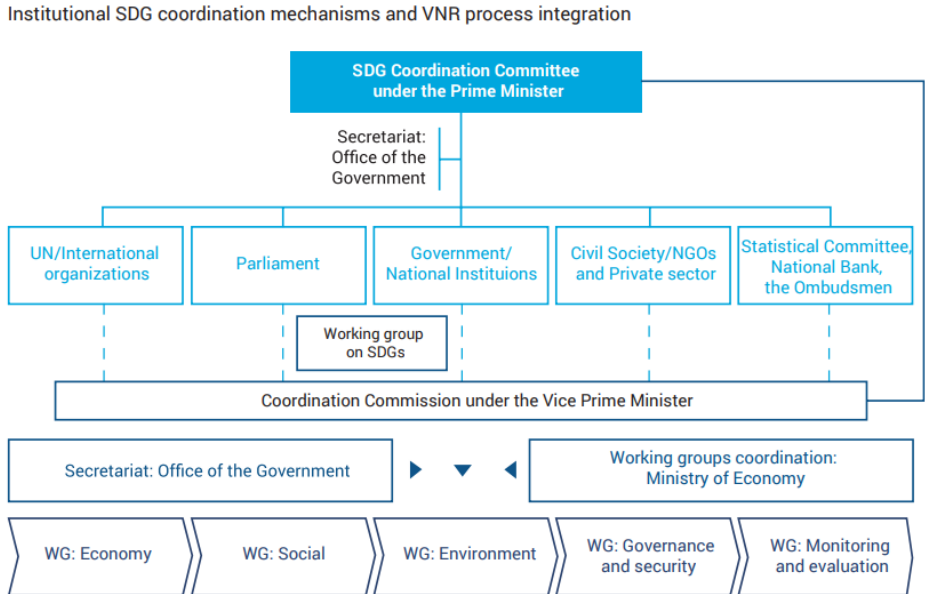
In combining these sources, we are able to shed light on Kyrgyzstan’s progress and challenges with regard to the HHSDGs and with specific focus on climate change, mental health and gender equity.

Health and health-related SDG (HHSDG) programmes and policies

The main SDG related to health is SDG 3 which challenges governments to "Ensure healthy lives and promote well-being for all at all ages". However, achieving this goal requires a comprehensive approach and is closely linked to progressing in several other SDGs. For instance, SDG 1 (poverty), SDG 2 (hunger), SDG 5 (gender equality), SDG 6 (clean water and sanitation), SDG 7 (affordable and clean energy), SDG 8 (decent work and economic growth), SDG 10 (inequalities), SDG 13 (climate action), and SDG 16 (justice and strong institutions) are all closely implicated in the eventual health outcomes for the population. In this section we explore whether, how and to what extent the health-related elements of the SDGs are now incorporated into the policy framework which shapes population health in Kyrgyzstan.

Public health is regulated by the 2009 Law “On Public Health” in Kyrgyzstan. The main health-oriented policy document that reflects the health and health-related SDGs and aims to achieve universal health coverage by 2030 is the Programme on Public Health Protection and Health Care System Development for 2019–2030: “Healthy Person – Prosperous Country”. This Programme was developed to implement and pursue the National Development Strategy, 2018-2040 and the Development Programme 2018-2022. It emphasizes strengthening universal health coverage, enhancing the quality of healthcare services, focusing on primary healthcare, addressing maternal and child health, and combatting communicable and non-communicable diseases (NCDs). To promote the transition to the SDG-oriented health policy, Kyrgyzstan has developed the Sustainable Development Transition Programme of the Kyrgyz Republic for 2013-2017 with a subsection 4.3. “Healthcare”.

Figure 1: SDG Governance in Kyrgyzstan



“Healthy Person – Prosperous Country” 2019-2030 is the country’s fourth health programme that represents an update and a continuation of previous strategies, including “Den Sooluk” 2012-2018, “Manas Taalimi” 2006-2010, and “Manas” 1996-2006. The new programme sets more specific targets to improve health outcomes and increase access to healthcare, aligning with SDGs. Compared to previous programmes, it places even greater emphasis on achieving universal health coverage and strengthening primary healthcare. Maternal and child health remains an important priority for Kyrgyzstan but nonetheless the new programme has a greater focus on broader reproductive health issues such as family planning. While previous programmes had begun to address NCDs, the new programme places a greater focus on NCD prevention and control to address the growing burden of NCDs in Kyrgyzstan. Furthermore, the new programme includes specific goals for the development and implementation of digital health solutions.

In governance terms, Kyrgyzstan has established a SDG Coordination Committee, under the Prime Minister and a series of Working Groups and related monitoring mechanisms to ensure that concern for the SDGs remains at the heart of government decision making. Figure 1 above summarises this governance structure.

Background and Context

Kyrgyzstan's existing policy priorities broadly align with the spirit of the 17 SDGs. Specifically, there is a strong emphasis on a people-centred policy framework and the principle of "leave no one behind", which entails promoting inclusivity, improving quality of life, and protecting fundamental rights for all individuals, including marginalized and vulnerable groups. In general terms, Kyrgyzstan has made significant progress in eliminating extreme poverty (SDG 1), advancing universal health coverage, reducing child mortality (SDG 3), and ensuring inclusive and accessible compulsory education (SDG 4). Furthermore, promoting gender equality (SDG 5) has emerged as a key priority, with initiatives focused on advancing women's rights, reducing gender-based discrimination and violence, and ensuring equal opportunities and representation for women in all spheres of society.

Kyrgyzstan stands out as one of the pioneering nations globally for fully resolving the issue of statelessness, embodying a commitment to inclusiveness, and seeking to enable equal access to political participation, economic empowerment, and social development. In the climate sphere, Kyrgyzstan – a largely mountainous country – emphasizes the importance of mitigating the impacts of climate change and addressing disaster risk reduction by developing and implementing strategies to adapt to climate change, to promote sustainable practices, and to build resilience against natural disasters. To specifically address the impact of climate change on public health and the economy, Kyrgyzstan developed a "Green" Economy Development Programme for 2019-2023. The main objective of this programme was to foster sustainable economic growth and development while minimizing environmental risks and promoting public health.

Relatively lower priority has been given to sustainable inclusive and safe cities (SDG 11), water management (SDG 6), sustainable consumption and production (SDG 12), and affordable and clean energy (SDG 7). Moderate progress has been made in prioritizing sustainable ecosystems (SDG 15), and food security and nutrition (SDG 2), though the latter is now coming under increased scrutiny.

The UNDP Rapid Integrated Assessment (RIA) findings indicate that the alignment of the SDGs with national strategic development planning in the Kyrgyz Republic is at 82%. Goal 1 (Poverty), Goal 2 (Hunger), Goal 3 (Health), Goal 5 (Gender), Goal 7 (Energy), Goal 9 (Infrastructure and Industrialization), and Goal 15 (Lands) were found to be fully compliant with global targets. On the other hand, Goal 10 (Inequalities between and within countries), Goal 13 (Climate Change), and Goal 17 (Partnerships) were observed to have the least integration, at around 60%.

Overall, it is not unreasonable to argue that the commitment made to the SDGs has definitively influenced Kyrgyzstan's policy by shaping its priorities towards inclusivity, human development, poverty eradication, climate change mitigation, and gender equality. The SDGs have been incorporated into the National Development Strategy for 2018-2040, the National Development Programme for 2021-2026, and were

reflected in the Development Programme "Unity. Trust. Creation", 2018-2022. According to RIA, in a survey conducted in 2020 in the Kyrgyz Republic, more than 70% of the relevant SDGs and targets were integrated into the long-term 2040 Strategy and the 2018-2022 Programme. Additionally, several other national strategies and programmes have been developed to complement the realization of targets and contribute to progress in achieving the SDGs.

Progress according to the Data

Our analysis provides important insights into Kyrgyzstan's journey towards achieving the SDGs, based on empirical evidence from 4 papers and 8 analytical reports. The headline findings from these are well-captured in Kyrgyzstan's 'official' SDG dashboard (Figure 2) summarising progress on the SDGs.

Figure 2: SDG Dashboard and Trends for Kyrgyzstan



Source: <https://dashboards.sdindex.org/profiles/kyrgyz-republic>

Figure 2 shows that Kyrgyzstan has made progress in fulfilling its commitments and meeting the targets outlined in Agenda 2030. As of 2024, the country has achieved a score of 74.2 (regional average, 70.6), placing it in 48th position among 167 nations. According to these latest data, Kyrgyzstan had made 'sufficient' progress in just three SDGs - 4, 11 and 13 (green arrows in Figure 2), with moderate improvements observed in SDGs 1, 3, 7, 9, 10, and 17 (yellow arrows). However, the data show stagnation in SDGs 2, 5, 6, 8, 12, 15 and 16 (orange arrows). There are five SDGs in which major challenges remain, four with significant challenges remaining and the remainder with challenges remaining. No SDGs have been achieved. It is noteworthy and of concern that these data show a deteriorating trend as compared to the 2023 and 2022 equivalent data.

Turning to SDG 3 specifically, Figure 2 shows that 'major challenges' remain, and that progress is 'moderate'; meaning that – as things stand – Kyrgyzstan will not achieve SDG 3. In 2022, the same data indicated a higher ranking of 'significant challenges' remaining. This is in part explained by SDG 2 (zero hunger) which demonstrates a corresponding deterioration in status and reflects the emergence of a nutritional crisis in Kyrgyzstan.³

In perhaps the most fundamental indicator – life expectancy – Kyrgyzstan has seen significant improvements over time. Between 2010–2019, life expectancy increased from 71.7 to 74.7 years for females and from 63.5 to 67.4 years for males. In the two subsequent years, life expectancy fell for both males (65.9) and females (72.7) as the COVID-19 pandemic swept through the country and the number of deaths recorded increased by 20%. The latest data for 2022 and 2023 show that Kyrgyzstan has rebounded from the COVID setback and life expectancy is now above the previous peak recorded in 2019, standing at 68.2 for males and 75.2 for females. The overall (2023) life expectancy for Kyrgyzstan of 71.7, is well below the European (79.1), Western

³ The data provided for the dashboard are not the latest data and so we may expect to see improvements in subsequent iterations as new data emerge. This is discussed further below.

European (82.2) and Eastern European (74.6) levels, but only marginally lower than the overall figure for Central Asia (72.7).⁴

Life expectancy, which is potentially back on track to achieve its long-run objective, is one of 14 sub-targets which are tracked as part of the SDG monitoring programme. Of these, the majority are on track to achieve the required level, but significant challenges remain around key issues, including universal coverage, the incidence of tuberculosis, NCDs and deaths due to traffic.

Current state of the art in policy implementation

As described previously (page 3), Kyrgyzstan has largely incorporated the SDGs into the National Development Strategy for 2018-2040, the National Development Programme for 2021-2026, the National Health Programme for 2019-2030 "Healthy Person – Prosperous Country", and the Development Programme "Unity. Trust. Creation" for 2018-2022. However, the implementation of policies has been hindered by significant limitations. At the policy level, there is insufficient political commitment, a brain drain of skilled workers, inadequate financing, and a lack of effective intersectoral collaboration. These factors have resulted in delays or non-delivery of planned activities and targets. Additionally, there are challenges in monitoring the extensive number of goals and indicators, highlighting the need for prioritization.

The previous health policy, reflected in the "Den Sooluk" Programme for 2012-2016, in Kyrgyzstan had overseen progress in primary care, including increased rates of early-stage registration for pregnant women, high childhood vaccination rates, antenatal care coverage, and tuberculosis patients' treatment coverage. However, the primary healthcare system still faced challenges such as a weak material and technical base, inefficient management, and a lack of financial and human resources.

Kyrgyzstan has made significant progress in developing policies and achieving SDGs, particularly in reducing child and maternal mortality rates, improving access to essential health services, and enhancing the quality of healthcare. However, challenges and gaps in implementation persist. These include inadequate financing, limited human resources, poor infrastructure, and fragmentation of health systems. Previous policies lacked a holistic approach that takes account of the social determinants of health, including poverty, education, and gender inequality, as well as stronger partnerships and coordination across sectors. Consequently, these gaps and challenges have informed the development of the new National Development Strategy for 2018-2040 and the National Health Strategy for 2019-2030, which prioritizes a more comprehensive and equitable approach to health system strengthening. How this influences the trajectory and speed of progress remains to be seen.

Kyrgyzstan struggles with cross-sectoral integration and interaction between state and non-state agencies. The roles and participation of other governmental and local authorities in addressing public health issues are not regulated by existing state health legislation. There is a lack of interconnection among industry and sectoral development programmes coordinated by other ministries and agencies, resulting in a failure to implement norms for protecting people's health. For example, the country lacks policies to raise awareness and implement preventive measures, control prices, ensure the quality and quantity of unhealthy products as well as promote healthy diets and lifestyles.

Health Expenditures

Kyrgyzstan's state expenditures (SDG 3.c.) on health represent a small proportion (10.9% in 2021 and 8.6% in 2022) of the total expenditures. As a percentage of GDP, the Kyrgyz state budget expenditures on healthcare were 2.9% in 2021 and 2.7% in 2022.⁵ In Kazakhstan, the corresponding indicator was 3.9% in 2021. For comparison, the average OECD health expenditure was 9.7% in 2021 and 9.2% in 2022.⁶ Although there was

⁴ Source: <https://population.un.org/wpp/Download/Standard/MostUsed/>

⁵ National Statistical Committee of the Kyrgyz Republic.

⁶ OECD Health Statistics 2023.

some improvement in the proportion of state and private expenditures on health by 2012, it regressed to the level of the 2000s by 2018. Expenditures on medications continue to be the highest component of total out-of-pocket household health expenditures. However, there is a lack of control over medication prices and financing in the health system, leading to issues such as overprescribing, the presence of low clinical efficacy generic medicines, and monetary incentives for doctors to prescribe certain expensive medicines. Kyrgyzstan experiences a high prevalence of out-of-pocket health spending. In 2021 out-of-pocket expenditures were 40.7% of current health expenditure.

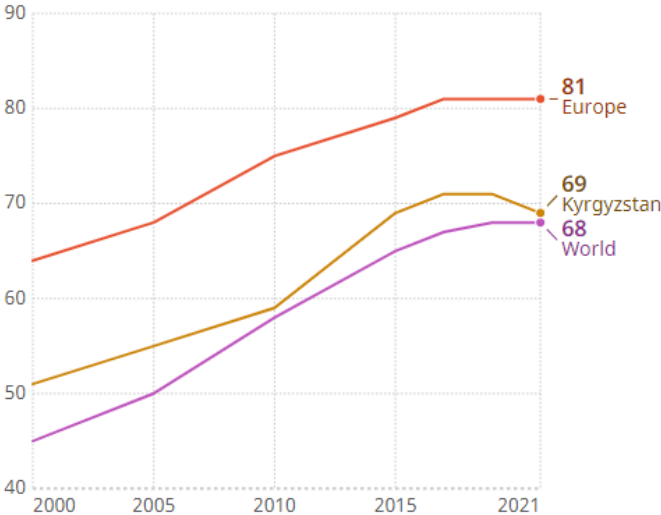
Within the health reforms and the Programme of State Guarantees for Providing Citizens with Medical and Sanitary Care, Kyrgyzstan is formally committed to ensuring population access to primary health services. A key component of this commitment is the operation of the Mandatory Health Insurance Fund (MHIF) since 1997. The primary objective of the MHIF is to enhance healthcare system resources by consolidating public funds. It plays a crucial role in comprehensive health sector reform by providing funding for essential health services (e.g. the SGBP) and introducing copayments. This system aims to improve the availability of drugs and medical supplies while reducing informal and out-of-pocket payments.

To regulate prices on services not covered by MHIF funding, Kyrgyzstan continuously develops and adapts the Tariff Schedule for Paid Medical Services. This measure is designed to ensure transparency and standardization in the pricing of healthcare services.

Access and coverage

The universal health coverage index, a global measure tracking progress towards SDG 3, target 3.8.1, regarding the coverage of essential health services, rose from 51 (out of 100) in 2000 to 69 in 2021, having peaked at 71 in 2018/19 (Figure 3). This places Kyrgyzstan just above the world average of 68, but well below the European average of 81.

Figure 3. Universal health coverage index



Source: WHO, 2024a

The State Guaranteed Benefits Programme (SGBP) and the Additional Drug Package specify the services funded through the mandatory health insurance system. This system is primarily (over 70%) funded by the national health budget rather than health insurance contributions. The Mandatory Health Insurance Fund (MHIF) allocates 80% of public spending via contracts with health facilities at all care levels to provide the services covered by the SGBP and the Additional Drug Package. The MHIF also finances tertiary care facilities. The public is entitled to essential health services, including emergency, primary, and inpatient care, but the scope of covered services is limited. Inpatient care involves co-payments, and not everyone is enrolled in the mandatory health insurance scheme. The Additional Drug Package covers only 50% of the basic price of certain

medicines in primary care, with patients paying the difference out-of-pocket. In 2018, 34.5% of people enrolled with family doctors were not covered by mandatory health insurance. Moreover, there is confusion among patients and providers about the specifics of the publicly covered services.⁷

The 2019-2030 Programme on Public Health represents a significant shift in priorities compared to previous health programmes, as it places greater emphasis on strengthening primary healthcare and advancing universal health coverage. It recognizes the significance of addressing social determinants of health and acknowledges the need for stronger partnerships and coordination across various sectors. By focusing on primary healthcare, the 2030 Health Programme aims to provide comprehensive and accessible health services to all individuals, with a particular focus on those residing in rural and remote areas. This includes efforts to strengthen the health workforce, enhance health infrastructure, and expand access to essential medicines and technologies. Moreover, the Programme acknowledges the necessity of adopting a holistic approach to health that considers broader social, economic, and environmental factors influencing health and well-being.

Individuals with disabilities face challenges in accessing essential health, educational, and social services, hindering their potential and well-being. Addressing discrimination and reducing stigma against socially marginalized groups is crucial for disease prevention and for achieving the SDGs.

Human Resources in healthcare

The remuneration of healthcare workers in Kyrgyzstan is regulated by the Law "On Medical Worker Status" from 2013 and the Resolution on "Remuneration of Healthcare Workers in the Kyrgyz Republic" from 2011. These regulations establish guidelines for fair and appropriate compensation for healthcare professionals. Additionally, Kyrgyzstan has implemented a policy that provides additional monetary incentives for doctors working in remote and rural areas. This measure aims to address disparities in healthcare access and incentivize healthcare professionals to serve in underserved areas.

To improve the quality of provided services and motivate professional development, Kyrgyzstan has developed the Programme on the Development of Nursing Practice and Education for the period of 2019-2023. This programme focuses on enhancing nursing practice and education, and on ensuring competent and skilled nursing professionals within the healthcare system. Furthermore, the Concept for the Development of Continuous Medical and Pharmaceutical Education for the period of 2022-2026 has been introduced. This concept aims to promote ongoing professional development among medical and pharmaceutical professionals to ensure the delivery of high-quality healthcare services. It is too early to evaluate the impact of these schemes.

Climate change & Health

Climate change and its effects on health have been prioritized in national policy due to international commitments, but the implementation of policy plans has been hindered by poor management, inadequate financing, and a lack of coordination measures. Between 2014 and 2022, a total of 633 deaths were attributed to natural disasters, including mudflows, floods, avalanches, major fires, strong winds, major road accidents, earthquakes, and landslides (Figure 4, below). Moreover, the number of deaths is increasing each year. Out of these, 418 deaths were males, predominantly due to their higher involvement in driving activities, where avalanches and mudflows frequently occur on roads and highways. Most of these fatalities occurred in the southern Batken, Osh and Jalal-Abad regions, and in northern Chui and Issyk-Kul regions (Map 1, below). This indicates high vulnerability of populations residing in these regions to natural disasters.

Recently, Kyrgyzstan has given special importance to the impact of climate change (SDG 13) on population health and the national economy through policies focused on minimizing environmental risks and promoting public health. Various concepts such as clean energy, green agriculture, green industry, ecological clean

⁷ WHO, European Observatory on Health Systems and Policies, *Health Systems in Action, Kyrgyzstan*, 2022 Edition.

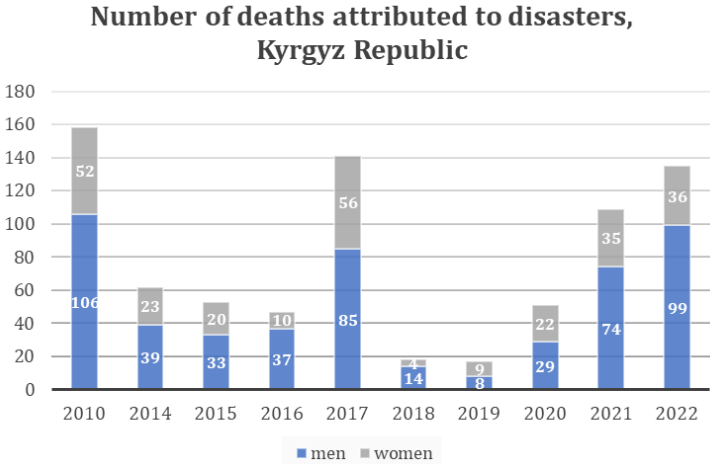
transportation, sustainable tourism, waste recycling, and green cities are being implemented. However, the current “green” policy is still in the process of implementation and lacks assessment.

Map 1. Kyrgyz Republic



Source: <https://www.nationsonline.org/oneworld/map/kyrgyzstan-administrative-map.htm>

Figure 4. Number of deaths attributed to disasters, by gender



Source: Ministry of Health, KR

The impacts of climate change, including heat-related illnesses, changing disease patterns, and food and water security concerns, further compound the challenges faced by the energy sector. Air pollution from burning fossil fuels is a significant issue in many Central Asian countries, including Kyrgyzstan, affecting both climate change and public health.

Climate change and its consequences disproportionately affect vulnerable groups, such as children born to poor or rural mothers, individuals with limited adaptive capacities, and those residing in areas prone to drought and environmental hazards. The impacts of climate change on health and agriculture exacerbate existing inequalities in access to resources and services, including food, water, and healthcare.

Environmental health

Kyrgyzstan has implemented various policies to address the issue of hazardous chemicals and to promote environmental safety. These policies cover a wide range of areas and aim to protect public health and the environment from the risks associated with exposure to hazardous substances.

One such policy is the Programme for the Prevention of Diseases Related to Exposure to Asbestos Dust for 2016-2020. This programme focused on raising awareness about the dangers of asbestos and implementing preventive measures to minimize the risks associated with asbestos exposure. In 2016, Kyrgyzstan introduced the Regulation on Decontamination and Radiation Control of Motor Vehicles with Elevated Radiation Levels Imported from Japan. This regulation ensures that motor vehicles imported from Japan, which may have been exposed to elevated radiation levels due to the Fukushima nuclear accident, undergo proper decontamination and radiation control measures to prevent any potential health risks.

To address the proper management of medical waste and the handling of mercury-containing devices in healthcare organizations, Kyrgyzstan has adopted the Regulation on Management of Medical Waste and Handling of Mercury-Containing Devices in Healthcare Organizations in 2019. This regulation provides guidelines and procedures for the safe handling and disposal of medical waste and mercury-containing devices to prevent environmental contamination.

To address radiation safety and environmental protection comprehensively, Kyrgyzstan has adopted several laws and technical regulations. These include the Laws "On Radiation Safety," "On Tailings and Waste Dumps," and "On Environmental Protection," as well as the Technical Regulation on Radiation Safety and the Technical Regulation on Ensuring Environmental Safety. These legislative measures provide a regulatory framework for handling radioactive substances, managing waste, and ensuring radiation safety in various sectors.

Air pollution is a major risk factor for mortality. In 2019, it was responsible for 12% of all deaths in Kyrgyzstan, a significantly higher percentage than in the European Union (EU) and the WHO European Region.⁸ The state's strategies and actions to address air pollution issues are outlined in its laws and policies. The Law of the Kyrgyz Republic on the Protection of Atmospheric Air, enacted on June 12, 1999, includes general provisions regarding air quality standards, maximum permissible emissions of pollutants and harmful effects, fines for emissions, and the use of air for industrial purposes. It also regulates emissions from both stationary and mobile sources, sets requirements for the construction and commissioning of facilities, and mandates the monitoring and control of air quality. Additionally, the law specifies the types of air pollution violations and the corresponding measures of responsibility, whether criminal, administrative, or otherwise. Nevertheless, air pollution in Kyrgyzstan has got worse over time and presents a major health risk to the population, particularly children.⁹

Kyrgyzstan faces significant challenges in water supply and sanitation. Weak governance and inadequate infrastructure hinder access to satisfactory drinking water and sanitation services, especially in rural areas. Disparities in access persist, and many health facilities and residents in rural areas lack adequate water, sanitation, and hygiene services. Overall, 90% of the population have access to safe drinking water, but half a million rural citizens do not have safe access. Most urban water supply systems were built before the 1980s and the network requires urgent restoration and repair, hindered by a substantive financing gap.¹⁰

Mental Health

According to the WHO, in 2019, one in every eight people globally, or 970 million people, live with a mental disorder. In 2020, the number of people suffering from anxiety and depressive disorders increased significantly due to the COVID-19 pandemic.¹¹

In Kyrgyzstan, there was a decline in the official prevalence of mental health disorders among adults and adolescents by 2020. However, a concerning shift occurred through the COVID-19 period. There was a

⁸ Moldoisaeva S, Kaliev M, Sydykova A, Muratalieva E, Ismailov M, Madureira Lima J, Rechel B. Kyrgyzstan: Health system review. *Health Systems in Transition*, 2022; 24(3): i-152.

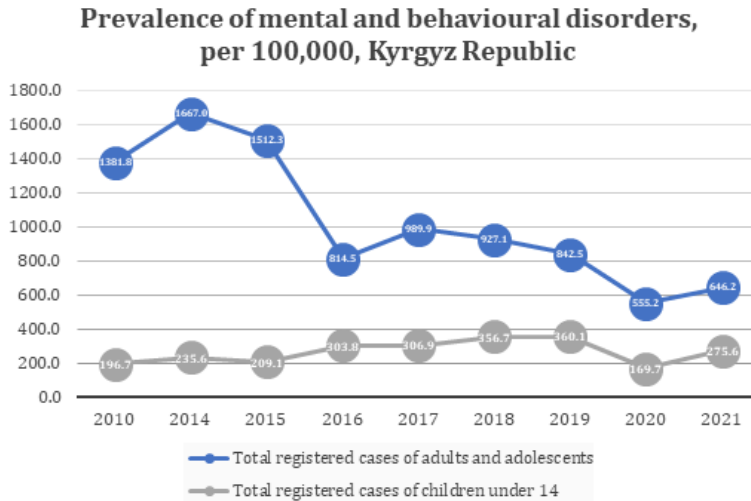
⁹ [Air pollution in Kyrgyzstan causes major health impacts for children | UNICEF Europe and Central Asia](#)

¹⁰ Vinokurov, E. (ed.), Akhunbaev, A., Chuyev, S., Adakhayev, A., Sarsembekov, T. *Drinking Water Supply and Sanitation in Central Asia*. Report 24/5. 2022. Almaty: Eurasian Development Bank.

¹¹ [Mental health \(who.int\)](#)

significant increase of 16% from 555.2 per 100,000 persons to 646.2 in 2021 (Figure 5). The prevalence of mental health disorders among children under 14 years also experienced a staggering 62% increase in 2021 (275.6 per 100,000). These trends are observed simultaneously in the incidence of mental health disorders among both adults and children, measured per 100,000 persons. More generally, there is a growing acceptance that mental health disorders, in the broadest sense, are on the increase.¹²

Figure 5. Prevalence of mental and behavioural disorders, per 100,000 population



Source: Ministry of Health, KR

Over the years, certain mental health disorders have emerged as prevalent in Kyrgyzstan. Among adults, psychological disorders related to substance use and somatoform disorders have remained significant concerns. Similarly, among children under 14, autism and somatoform disorders have been observed to be prevalent. Bishkek city, Naryn, and Chui regions have consistently reported the highest number of registered cases of mental health disorders among both adults and children.

The prevalence and incidence of mental health disorders among women in Kyrgyzstan align with the overall country trend, albeit at a rate slightly below the country average. However, since 2017, the rate of newly registered cases of mental health disorders among girls has exceeded the country average rate of cases per 100,000. This suggests that while women in general have lower registered prevalence and incidence of mental health disorders in the country, there has been an increase in cases among girls in recent years.

The 2019-2030, "Healthy Person – Prosperous Country", Public Health Programme acknowledges the importance of addressing mental health and sets a target to decrease the suicide mortality rate from 7.0/100,000 in 2015 to 5.0/100,000 by 2030. This programme recognizes the importance of addressing mental health concerns and integrating mental health services into comprehensive healthcare approaches. Nonetheless, it does not include specific measures to achieve this objective and enhance the mental well-being of the population. Additionally, there is no established system for early detection and response to mental health disorders. Overall, the national policy review reveals an awareness of mental health issues, particularly the problem of suicide among children, adolescents, and youth. However, they lack implementation, funding, financing, and intersectoral coordination and collaboration. Consequently, according to the Action Plan on Measures for the Prevention of Suicides, Offenses, and Crimes among Children and Youth in the Kyrgyz Republic, adopted in 2019, the programme failed to achieve 87% of its objectives by the end of the first year of implementation.

In addition to the national policy on suicide prevention, Kyrgyzstan has implemented a set of policies addressing mental health. These policies aim to promote mental health, provide psychological services, and

¹² [Number of people suffering from mental disorders grows annually in Kyrgyzstan - | 24.KG](#)

ensure effective treatment for mental health disorders. For example, Kyrgyzstan developed the 2018-2030 Programme on Mental Health Protection, which focuses on mental health regulations, the provision of psychological services, and the treatment of mental health disorders. The programme also emphasizes the importance of preventive care in promoting mental well-being. Furthermore, a series of practical and clinical recommendations targeting mental health have been adopted, including guidelines such as "Maintaining Mental Health for the General Population and for Healthcare Workers during COVID-19" in 2020, "Diagnosis and Treatment of Anxiety Disorders" from 2018, "Provision of Psychological Assistance to Individuals Affected by Gender-Based Violence" from 2017, "Diagnosis and Treatment of Mental Health Disorders Requiring Urgent Interventions" from 2018, and "Providing Psychological Assistance to Children who have Experienced Violence" from 2018.

Notwithstanding these programmes, the treatment of patients with mental disorders is still provided substantively through mental health centres, while psychosocial services at the community level have only recently been developed, prompted mostly by private sector initiatives and NGOs.¹³ A Kyrgyz mental health expert, Burul Makenbaeva, captures the priority, or lack of priority assigned to reform in this sector, in stating that the "Ministry of Health does not consider the issue of mental health in a broad sense. Inside the department, the resolution of issues is given to psychiatrists, and for them the understanding of the issue is narrow".

While mental health has an essential impact on overall wellbeing, it also affects other SDG targeted objectives. In addition to suicide (SDG 3.4), poor mental health is linked with substance and tobacco addiction (SDG 3.5 and 3.a.) as individuals with mental health disorders may be more vulnerable to developing addiction issues as a means of coping. Conversely, substance and tobacco addiction can exacerbate mental health problems. Furthermore, mental health plays a role in dietary disorders and malnutrition (SDG 2). Conditions such as depression and anxiety can impact an individual's relationship with food, leading to unhealthy eating patterns and nutritional imbalances and can exacerbate underlying eating disorders. Poor mental health is also associated with an increased risk of cardiovascular diseases (SDG 3.4.), as psychological stress, anxiety, and depression can negatively affect cardiovascular health.

Gender Equality

Gender inequalities (SDG 5) are another area of focus in Kyrgyzstan's policy efforts. The government adopted the Law "On State Guarantees of Equal Rights and Opportunities for Men and Women" in 2008 and 2011. In line with the UN Resolution 1325 on Women, Peace, and Security, policy documents were developed in 2013 to provide psychological and psychiatric assistance to individuals affected by gender-based violence during emergency situations. The Practical Guidance on "Providing Psychological Assistance to Victims of Gender-Based Violence" is an example of such policy implementation. Additionally, Kyrgyzstan adopted the National Strategy on Achieving Gender Equality until 2020, which was later extended to the National Strategy on Achieving Gender Equality until 2030. These strategies promote reproductive health services, non-discrimination, awareness of health and reproductive health, protection from gender-based violence, and social support for individuals with health disabilities.

The relationship between gender and health is complex and our literature search shows that it has been the focus of 8 articles and 2 analytical reports since 2015. Kyrgyzstan has not ignored gender-related challenges, but significant barriers and challenges persist. Gender-based violence (GBV) is a particular concern, with implications for women's health and well-being among other things. Survivors of domestic violence face structural and legal barriers in seeking help, including financial dependence on the abuser, stigma, and inadequate enforcement of laws. GBV can have severe physical and mental health consequences, leading to chronic pain, depression, anxiety, and PTSD (post-traumatic stress disorder). Intimate partner violence (IPV) is also prevalent in Kyrgyzstan, with factors such as rigid gender roles, notions of manhood, and acceptance of

¹³ Molchanova ES, Kosterina EV, Yarova OV, Panteleeva LYu. Outpatient services for people with mental disorders in the Kyrgyz Republic: what is next? Consortium Psychiatricum 2022;3(1):98–105. doi: 10.17816/CP133.

violence contributing to the risk, while education, alcohol use, and history of violence are identified as risk factors for IPV. IPV has wide-ranging physical, emotional, sexual, and health consequences and experiences of violence, including witnessing it, are associated with gynaecological symptoms and health anxiety among women. Despite a comprehensive legal framework, the implementation of child rights protection and prevention of violence against women and children faces challenges. Social acceptance of physical violence remains an issue, with a significant portion of the population finding ‘wife-beating’ to be acceptable.

Gender inequities are further amplified by other inequality markers. Women in rural settings often experience poverty and insufficient access to basic services such as drinking water, electricity, justice, and healthcare. Traditional views and customary arrangements contribute to unequal land ownership and control over productive resources, giving men more decision-making power.

Addressing these gender-related challenges requires sustained efforts to enforce laws, combat social acceptance of violence, promote gender equality, challenge social norms and improve access to essential services and resources for women. It is crucial to raise awareness, provide support services for survivors, and foster an environment that values gender equality and respect.

Maternal mortality, neonatal mortality and family planning remain pressing challenges, and the reproductive rights of women appear to be under threat, especially among the rural population and younger women. Moreover, in the WHO European Region, Kyrgyzstan exhibits the highest incidence of tuberculosis, one of the lowest densities of medical doctors and midwives, one of the highest probabilities of premature deaths from NCDs and estimated road traffic deaths rate, the highest age-standardized death rate attributed to ambient air and household pollution, and the second highest proportion of ever-partnered women and girls subjected to physical and/or sexual violence. Further, in 2021, only 71.7% of children under 5 were developmentally on track in health, learning and psychological well-being, while about 75% of children aged 1-14 experienced violence.

Challenges and Bottlenecks

Despite the progress made in the early 2000s, Kyrgyzstan now faces challenges due to a lack of political and financial investment, leading to a limited quality of healthcare services and a decline in trust in primary healthcare (PHC) services. Insufficient funding remains a significant constraint, hindering the country's progress in achieving the SDGs. Kyrgyzstan relies heavily on external donors and lacks additional domestic financing to effectively implement the HHSDGs. There is also limited integration of the HHSDGs into subnational budgeting processes. The declining levels of funding for the health sector have resulted in weakened PHC services, further contributing to public dissatisfaction. This issue was exacerbated during the COVID-19 pandemic, as the government struggled to meet the increased demand for social services. Consequently, individuals bypassed the PHC system and sought direct hospital care, as the PHC system was ill-prepared to address their needs.

Recent developments related to the SDGs: poverty and nutrition

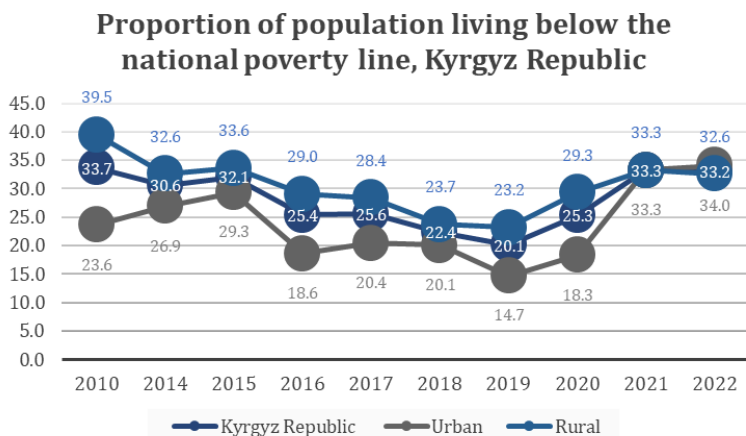
While the general trend, as captured in Figure 2, is broadly positive in progress towards the SDGs, including health and while, as we have discussed, there are many policy initiatives and programmes related to progressing the SDG agenda in Kyrgyzstan, in the last 2-3 years, worrying trends have emerged with respect to poverty and nutrition. In part, the turning point was the COVID-19 pandemic, which gave rise to negative developments in HIV and tuberculosis incidence, mortality from unsafe water, all forms of poverty, undernourishment, anaemia, and prevalence of mental health disorders.

Poverty

The level of poverty in Kyrgyzstan has been observed to increase, reaching the highest level since 2010, in 2021 and 2022, when around one-third of the population were estimated to be below the national poverty line (Figure 6). In 2022, the level of poverty among the urban population exceeded that of the rural population for the first time and around one-fifth of those in poverty are estimated to be in extreme poverty. Regionally,

poverty is observed to be most prevalent in Batken, Jalal-Abad, and Issyk-Kul while it is least prevalent in Bishkek city, Talas and Osh.

Figure 6. Proportion of population living below the national poverty line



Source: National Statistical Committee of the KR

Efforts to reduce poverty and expand social protection have a direct impact on improving the health and well-being of the population. Children living in poverty are at a higher risk of missing out on early education and schooling, facing limited access to healthcare, and experiencing higher rates of malnutrition and poor health outcomes. Rural households, dependent on agriculture, are even more vulnerable, as fluctuations or reductions in income can have long-term effects on the health and nutrition of children while leading to increased incidence of overweight among adults.

The significant increase in prices and the depreciation of the local currency have further contributed to food insecurity among the most vulnerable, reducing their purchasing power and hindering access to nutritious food, healthcare, and improved livelihoods. This highlights the need for efforts aiming to strengthen social protection systems and assistance programmes in Kyrgyzstan, particularly for vulnerable groups such as children, to ensure an adequate standard of living, improve health and well-being outcomes, and address malnutrition and food security.

Women in rural settings often experience poverty and insufficient access to basic services such as drinking water, electricity, justice, and healthcare. Traditional views and customary arrangements contribute to unequal land ownership and control over productive resources, giving men more decision-making power.

Nutrition

The low level of material living standards and the high proportion of the population living in poverty, hinders access to adequate and nutritious food and is associated with undernutrition in young children and overnutrition in older children and adults, where a growing obesity problem is observed. The lack of adequate infrastructure for food safety and quality contributes to the consumption of unsafe and low-quality food products.

Behind the rise in poverty, is a complex mix of global insecurity, COVID-19 and local specificities. Between 2020 and 2022, overall inflation reached 32.9%, with food inflation climbing to 45.5%. Global crises, market panic, and food trade bans contributed to instability in food markets. The agri-food sector faced escalating costs for resources such as fertilizers, fuels, and essential imported food items like vegetable oil, sugar, wheat flour, and poultry meat. Consequently, the rise in poverty has worsened nutrition among the poor.¹⁴

¹⁴ Tilekeyev, K. "Poverty and Food Security in Kyrgyzstan – Recent Changes and Challenges." Presentation at IPPA, GSD, University of Central Asia and National Statistical Committee, 2023. *Poverty in Kyrgyzstan in 2022. Food Security and Nutrition Bulletin in Kyrgyzstan. Prices in Kyrgyzstan*, Bishkek, Kyrgyzstan.

Interim Recommendations and Next Steps

Challenges remain in effectively combating discrimination and reducing inequalities in Kyrgyzstan. Strategies need to focus on raising awareness, promoting inclusivity, and ensuring equal access to opportunities and services for all individuals.

There is a need for comprehensive approaches that consider the impact of climate change, genetic diversity, and changing food systems on nutrition and health outcomes. Policy revisions, improvements in infrastructure, and increased awareness of healthy nutrition are necessary to ensure food security and improve the nutritional health of the population.

To improve the healthcare system in Kyrgyzstan and achieve universal health coverage, several actions are needed. These include investing in healthcare infrastructure, technology, and human resources to enhance the quality and accessibility of services. Financial barriers must be addressed by expanding mandatory health insurance coverage and reducing out-of-pocket expenses. Additionally, efforts should focus on improving provider performance, addressing workforce shortages, and implementing governance and quality control mechanisms to ensure accountability and patient safety.

The healthcare system in Kyrgyzstan is characterized by an inefficient use of resources, poor quality of health services, high rates of unjustified hospitalization and overprescribing practices, overloaded hospitals, underutilized primary care facilities, lack of specialized post-treatment and disease prevention facilities, old technologies, and insufficient funds for medication and nutrition. To address these challenges and improve health outcomes, it is crucial to shift from out-of-pocket health expenditures to pooled funding.

Although not directly targeted by a specific SDG, recognizing the importance of mental health and implementing appropriate policies and interventions can significantly improve individuals' overall health and quality of life. So, there is a need to promote mental well-being in Kyrgyzstan involving a multi-faceted approach, encompassing legislation, interagency collaboration, awareness campaigns, improved access to services, and the development of guidelines that can result in the widespread modernisation of services. Continued commitment to these strategies is crucial for effectively addressing mental health issues and their effects, beyond addressing the suicide rate. The mental health policy has been in place since 2001, but limited progress has been made, particularly in terms of public awareness, preventive measures, early detection of mental health disorders, and intersectoral coordination. There is a need to expand the utilization of innovative institutional forms of mental health care, such as the Medical Rehabilitation Unit, Intensive Mental Health Care Unit, Psychiatric Dispensaries, and Outpatient Psychiatric Rooms, in the context of dispensary monitoring. Furthermore, it is crucial to further develop and prioritize the most effective and cost-efficient methods of delivering psychiatric care. This includes enhancing outpatient services, fostering inter-agency collaboration, and integrating psychiatric services with other areas of regional health and social protection.

Regarding the environmental risks to human health, a comprehensive set of policy actions should encompass ongoing monitoring of air quality to identify and respond to pollution levels, as well as the timely implementation of necessary legislative norms to regulate and mitigate environmental hazards. It is crucial to inform the population about the current environmental situation and provide them with knowledge about preventive measures they can take. In addition, the planning and development of settlements should take into account polluted areas, ensuring that appropriate measures are in place to minimize exposure and protect the health of residents. Efforts should be made to enhance the resilience of local communities and ecosystems, building their capacity to withstand and adapt to environmental risks.

Gender-related challenges require sustained efforts to enforce laws, combat social acceptance of violence, promote gender equality, challenge social norms and improve access to essential services and resources for women. It is crucial to raise awareness, provide support services for survivors, and foster an environment that values gender equality and respect.

Challenges on water and sanitation require sustained investment in infrastructure development, improved governance and coordination, and targeted interventions to ensure equitable access to safe drinking water and sanitation services throughout the country, particularly in rural areas. Additionally, addressing issues such as waterborne diseases, inadequate sanitation facilities in schools, and water shortages in health facilities is crucial for promoting public health and well-being.

Affordable and clean energy requires investment in infrastructure maintenance and development, transition to clean and sustainable energy sources, and improved governance in the energy sector. Enhancing access to reliable and affordable energy, particularly in rural areas, is essential for women's empowerment, economic opportunities, and improved quality of basic services. Additionally, addressing the impacts of climate change on the energy sector and implementing effective adaptation and resilience measures are crucial for ensuring a sustainable and healthy future for Kyrgyzstan.

In sum, Kyrgyzstan has made moderate progress in several key areas related to health and the SDGs. However, there are areas where progress has been hindered or even where it has been reversed, particularly due to the COVID pandemic. There are significant challenges and disparities that highlight the need for sustained efforts and strategic interventions to further advance towards achieving the SDGs and improving overall health outcomes. Regional disparities in healthcare access and outcomes emphasize the importance of targeted interventions and resource allocation to ensure equitable healthcare services across all regions.

Moving forward, Kyrgyzstan must prioritize efforts to address the remaining challenges, including maternal, infant and neonatal mortality, infectious disease incidence, mortality from NCDs, substance use, environmental risk, mortality from unsafe water, health workforce capacity, poverty, prevalence of undernourishment and anaemia, growing trends towards obesity, prevalence of domestic violence and mental health disorders.

Conclusion

In conclusion, Kyrgyzstan has shown considerable progress in collaborating with development partners and UN agencies, effectively securing support in areas such as planning, institutional development, and capacity building. The country's efforts to align national priorities with SDG goals and adapt SDG indicators to the national context have earned it recognition as progressive in this domain. However, despite strong formal political commitment and a comprehensive understanding of the importance of health and health-related sustainable development goals (HHSDGs) within the national development agenda, the translation of these commitments into tangible actions remains a significant challenge.

Several obstacles hinder progress, including a lack of coordination between different levels of government and stakeholders, the absence of a well-designed communication strategy, and limited engagement of civil society representatives and academia in the implementation of HHSDGs. Kyrgyzstan's formulation of significant strategies in 2018, such as the National Development Strategy for the Kyrgyz Republic 2018-2040 and the Health Strategy "Healthy Person - Prosperous Country" for 2019-2030, aimed to integrate SDG goals and indicators, including nutrition-related aspects of SDG 2. While these strategies serve as a foundation for developing programs in health priority areas, their effectiveness is limited, and there are insufficient explicit connections with non-health SDGs.

A comprehensive approach is needed, along with innovative and multi-faceted assessment metrics for economic development and poverty that consider factors such as inequality, human well-being, and environmental and climate-related impacts. Kyrgyzstan remains committed to achieving its SDG targets and engaging in cooperation with international agencies while aligning its national policies. However, significant obstacles persist, including political instability, corruption, public disconnection, and governmental turnover, which pose significant bottlenecks at the policy level.

Financing challenges include a persistent funding gap, increased out-of-pocket health expenditures, and a lack of resources to finance surveys for monitoring progress. Within the healthcare system, issues such as poor retention and preparedness of health workers at the PHC level, uneven quality of healthcare services, and the

absence of a people-centred continuum of care, hinder progress. Achieving health equity remains a significant obstacle, particularly in rural and remote mountainous areas, and there is a lack of active engagement by the population in health promotion and disease prevention efforts.

In summary, while Kyrgyzstan has made significant strides in collaborating with international partners and aligning its policies with SDG goals, substantial challenges remain in effectively implementing these goals and creating an equitable and effective healthcare system. Unless Kyrgyzstan can rapidly focus its attention on the key health challenges related to tuberculosis, NCDs, pollution, road traffic safety, universal coverage, the reform of mental health care and gender equality, it is unlikely to meet its health and health-related SDGs.

References

- Abba, M.S., et al. "Association between Gender-based Violence and Hypertension among Women in the Kyrgyzstan Republic." *BMC Cardiovascular Disorders*, vol. 22, 2022, p. 547. doi:10.1186/s12872-022-02970-6.
- Abdibaitova, A. A., Tashmatova, N. K., Madiarova, Ch. A., & Daovlatova, F. M. "Improving Food Security of the Southern Regions of Kyrgyzstan by Reducing the Harmful Impact of Industrial Enterprises." In *Growth Poles of the Global Economy: Emergence, Changes and Future Perspectives*, edited by (Editor's Name), pp. 251-261, January 2020. doi:10.1007/978-3-030-15160-7_26.
- Abdraimova, A., Besançon, S., Portocarrero, J., Ramaiya, K., Dunganova, A., Ewen, M., Hogerzeil, H., Lazo-Porras, M., Laing, R., Lepeska, M., Nchimbi, H., Sidibé, A., Swai, A., Tenorio-Mucha, J., Yudkin, J. S., Zafra-Tanaka, J. H., Zurdinova, A., & Beran, D. "Management of type 1 diabetes in low- and middle-income countries: Comparative health system assessments in Kyrgyzstan, Mali, Peru and Tanzania." *Diabetic Medicine*, vol. 39, no. 8, August 2022, e14891. doi:10.1111/dme.14891. Epub 2022 Jun 6. PMID: 35621029; PMCID: PMC9543552.
- Aftab, W., Siddiqui, F. J., Tasic, H., et al. "Implementation of health and health-related sustainable development goals: progress, challenges and opportunities – a systematic literature review." *BMJ Global Health*, vol. 5, 2020, e002273.
- Aftab, Wajiha, et al. "Implementation of Health and Health-related Sustainable Development Goals: Progress, Challenges and Opportunities – A Systematic Literature Review." *BMJ Global Health*, vol. 5, 2020, article e002273.
- Akhmatova, A., and Joldoshbek kyzy, M. "The Content of Heavy Metals in Environment of Tailing Dumps in Kyrgyzstan." *Bulletin of Science and Practice*, vol. 5, no. 6, June 2019, pp. 60-67. doi: 10.33619/2414-2948/43/8409.
- Akpysharov, N. "Improving Mental Health Care as the Most Pressing Public Health Issue." Osh Regional Mental Health Center, Osh, Kyrgyzstan. ORCID: 0000-0002-9031-282X.
- Alam, M., Hickie, I. B., Poulsen, A., Ekambareshwar, M., Loblay, V., Crouse, J., Hindmarsh, G., Song, Y. J. C., Yoon, A., Cha, G., Wilson, C., Sweeney-Nash, M., Troy, J., & LaMonica, H. M. "Parenting app to support socio-emotional and cognitive development in early childhood: iterative codesign learnings from nine low-income and middle-income countries." *BMJ Open*, vol. 13, no. 5, May 16, 2023, article e071232. doi:10.1136/bmjopen-2022-071232.
- Anuarbekov, K. K., et al. "Assessment of Social and Environmental Damage Caused by Sewage and Collector-Drainage Water Pollution in the Lower Reaches of the Syrdarya River." *Series of Geology and Technical Sciences, National Academy of Sciences of the Republic of Kazakhstan*, vol. 1, no. 445, 2021, pp. 46-51. doi: 10.32014/2021.2518-170X.7.

- Atmaca, Serhat, and Bayrak, Metin. "The Impact of Government Spending On Economic Growth in Kazakhstan and Kyrgyzstan." Presented at the International Conference on Eurasian Economies, October 2017. doi:10.36880/C09.01974.
- Azfar, H. S., Dzhusupov, K. O., Orru, H., Nordin, S., Nordin, M., & Orru, K. "Cardiovascular Disease and Mental Distress Among Ethnic Groups in Kyrgyzstan." *Frontiers in Public Health*, vol. 9, 2021, p. 489092. doi: 10.3389/fpubh.2021.489092. PMID: 34017812; PMCID: PMC8129164.
- Bekbasarova, Chinara et al. "New Tobacco Control Policy in Kyrgyzstan." *Tobacco Prevention & Cessation*, vol. 8, no. Supplement, 2022, A90. doi:10.18332/tpc/151006.
- Bhutta, Z. A., Siddiqi, S., Aftab, W., et al. "What will it take to implement health and health-related sustainable development goals?" *BMJ Global Health*, vol. 5, 2020, e002963.
- Bjegovic-Mikanovic, Vesna, et al. "Assessment of the Training Needs and Interests Among Directors of Health Care Services in the Kyrgyz Republic." *South Eastern European Journal of Public Health*, vol. XVII, 2021. doi:https://doi.org/10.56801/seejph.vi.228.
- Brimkulov, Nurlan, et al. "Universal Human-Centered Health Coverage in the Central Asian Region." *Central Asian Journal of Medical Hypotheses and Ethics*, vol. 3, no. 3, November 2022, pp. 192-196. doi:10.47316/cajmhe.2022.3.3.06.
- Bykova, E. I., Gorborukova, L. P., Kostenko, E. S., & Namazbekova, S. Sh. (2006). "Man-Caused Uranium Contamination of Biosphere Objects in the Territory of Kyrgyzstan." *Journal of Environmental Science and Health Part A*, 41, 2665–2682. doi:10.1080/10934520600928102.
- Can, H., et al. "Environment-Based Impairment in Mineral Nutrient Status and Heavy Metal Contents of Commonly Consumed Leafy Vegetables Marketed in Kyrgyzstan: a Case Study for Health Risk Assessment." *Biological Trace Element Research*, vol. 199, no. 3, Mar. 2021, pp. 1123-1144. doi:10.1007/s12011-020-02208-6.
- Can, H., et al. "Multidimensional Scaling of the Mineral Nutrient Status and Health Risk Assessment of Commonly Consumed Fruity Vegetables Marketed in Kyrgyzstan." *Biological Trace Element Research*, vol. 200, no. 4, Apr. 2022, pp. 1902-1916. doi:10.1007/s12011-021-02759-2.
- Chechetova, et al. "Dynamics of Incidence of Vaccine-Preventable Infections over the Last 20 Years in Kyrgyzstan." 2022.
- Childress, S., Shrestha, N., Anekwe, K., Small, E., & McKay, M. "Barriers to Help-Seeking for Domestic Violence in Kyrgyzstan: Perspectives of Criminal Justice, Social, Health, and Educational Professionals." *Global Social Welfare*, vol. 9, no. 3, Sept. 2022, pp. 179-192. doi:10.1007/s40609-022-00226-x. Epub 9 June 2022. PMID: 37293550; PMCID: PMC10249667.
- Chun, H., et al. "Development of a Play Toolkit for Supporting Infant and Toddler Development in Kyrgyzstan with a Focus on the Symbolic Functioning and Fine Motor Development of Infants 6 to 36 Months Old." *Child Health Nursing Research*, vol. 25, no. 2, 2019, pp. 154-164. doi:10.4094/chnr.2019.25.2.154.
- Cutler, Paul, and Robert Hayward. "Researching Public Action and Development Concepts in the Context of Mental Health." *Development in Practice*, vol. 17, no. 2, 2007, pp. 301–306. JSTOR, <http://www.jstor.org/stable/25548209>. Accessed 18 Mar. 2024.
- Davlidova, S., Haley-Johnson, Z., Nyhan, K., Farooq, A., Vermund, S.H., & Ali, S. "Prevalence of HIV, HCV and HBV in Central Asia and the Caucasus: A Systematic Review." *International Journal of Infectious Diseases*, vol. 104, Mar. 2021, pp. 510-525. DOI: 10.1016/j.ijid.2020.12.068.

- Deryabina, A.P., and El-Sadr, W.M. "Optimizing HIV Prevention and Treatment Outcomes for Persons with Substance Use in Central Asia: What Will It Take?" *Current Opinion in HIV and AIDS*, vol. 14, no. 5, 2019, pp. 374-380. DOI: 10.1097/COH.0000000000000565.
- Djurupova, Bermet, Jusup Pirimbaev, and Gulmira Samatova. "Nutrition Problems in the Kyrgyz Republic and the Ways of Their Solution." June 2019. International Conference on Eurasian Economies. DOI: 10.36880/C11.02244.
- Dogan, Ilhan, et al. "Assessment of Pollution at the Former Uranium Waste Dumpsites near Kaji-Say Village, Kyrgyzstan: A Genetic and Physiological Investigation." *Journal of Radiation Research and Applied Sciences*, vol. 14, no. 1, December 2021, pp. 280-294. doi:10.1080/16878507.2021.1957397.
- Dusheeva, Nazira, et al. "KIX EAP Learning Cycle Case Study: Scaling Innovative Elements of a Preschool Education Project in Kyrgyzstan." December 2021.
- Dzhusupov, K., Lucero-Prisno III, D. E., Vishnyakov, D., Lin, X., & Ahmadi, A. "COVID-19 in Kyrgyzstan: Navigating a way out." *Journal of Global Health*, vol. 11, Jan 30, 2021, p. 03020. doi: 10.7189/jogh.11.03020. PMID: 33643630; PMCID: PMC7898654.
- Dzushupov, Kenesh O., et al. "Air Pollution in Bishkek, Kyrgyzstan: Driving Factors and State Response." *Public Health Challenges, Perspective*, 17 October 2022, doi:10.1002/puh2.22.
- Ebi, K. L., & Otmani Del Barrio, M. "Lessons Learned on Health Adaptation to Climate Variability and Change: Experiences Across Low- and Middle-Income Countries." *Environmental Health Perspectives*, vol. 125, no. 6, June 20, 2017, p. 065001. doi:10.1289/EHP405. PMID: 28632491; PMCID: PMC5743455.
- Economic and Agro-Industrial Development Bank (EADB). "Food Security and Agro-Industrial Potential of the Eurasian Region." 2023.
- Ejaz, Z., et al. "The Effects of Gestational Diabetes on Fetus: A Surveillance Study." *Cureus*, vol. 15, no. 2, 17 Feb. 2023, article e35103. doi:10.7759/cureus.35103.
- Esenamanova, M.K., Kochkorova, F.A., & Tsvinskaya, T. (2022). Recommendations on Nutrition to Improve Cardiovascular Health of Population of Kyrgyzstan in Light of AHA Dietary Guidance 2021. *Heart Vessels and Transplantation*, 6(Ahead of Print). DOI: 10.24969/hvt.2022.304.
- Fonken, P., Bolotskikh, I., Pirnazarova, G. F., Sulaimanova, G., Talapbek Kyzy, S., & Toktogulova, A. "Keys to Expanding the Rural Healthcare Workforce in Kyrgyzstan." *Frontiers in Public Health*, vol. 8, Aug. 2020, p. 447. doi:10.3389/fpubh.2020.00447. PMID: 32984244; PMCID: PMC7484043.
- Footman, K., et al. "The comorbidity of hypertension and psychological distress: a study of nine countries in the former Soviet Union." *Journal of Public Health (Oxford)*, vol. 35, no. 4, 2013, pp. 548-557. doi: 10.1093/pubmed/fdt019.
- Fritsche, G., & Peabody, J. (2018). "Methods to improve quality performance at scale in lower- and middle-income countries." *Journal of Global Health*, 8(2), 021002. doi:10.7189/jogh.08.021002. PMID: 30574294; PMCID: PMC6286673.
- GBD 2017 SDG Collaborators. Measuring progress from 1990 to 2017 and projecting attainment to 2030 of the health-related Sustainable Development Goals for 195 countries and territories: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet*. 2018 Nov 10;392(10159):2091-2138. doi: 10.1016/S0140-6736(18)32281-5. Epub 2018 Nov 8. Erratum in: *Lancet*. 2019 Jun 22;393(10190):e44. PMID: 30496107; PMCID: PMC6227911.

- Graeser, S., Djamangulova, T., Aidaralie, R., Matovic-Miljanovic, S. "Gender responsive health promotion and NCD prevention – challenges and solutions in Kyrgyzstan." *European Journal of Public Health*, vol. 30, issue Supplement_5, September 2020, ckaa165.847. doi:10.1093/eurpub/ckaa165.847.
- Habibov, Nazim, and Hakim Zainiddinov. "Effect of TV and radio family planning messages on the probability of modern contraception utilization in post-Soviet Central Asia." *International Journal of Health Planning and Management*, vol. 32, no. 1, Jan. 2017, pp. e17-e38. doi:10.1002/hpm.2318. Epub 2015 Oct 21. PMID: 26490393.
- Hayes, B.E., & Randa, R. "Parts Unknown: Risk Factors of Intimate Partner Violence in Azerbaijan, Kyrgyzstan, Tajikistan, and Moldova." *Journal of Interpersonal Violence*, vol. 36, no. 5-6, Mar. 2021, pp. NP3346-NP3368. DOI: 10.1177/0886260518772105.
- Imanbaev, S. K., & Karabaeva, I. "Informed Youth on HIV/AIDS Problem in Kyrgyzstan." *Society and Security Insights*, vol. 3, 2021, pp. 60-70. Altai State University. doi:10.14258/ssi(2021)3-04.
- Japarova, D. "Обязательное медицинское страхование в Кыргызстане: проблемы и развитие." *Reforma*, vol. 1, 2016, pp. 17-22.
- Japarova, Damira, and Baygonuşova, Damira. "The Quality of Medical Services in Kyrgyzstan." Presented at the International Conference on Eurasian Economies, August 2016. doi:10.36880/C07.01620.
- Japarova, Damira. "Allocation and Use of Financial Resources in Health Care in Kyrgyzstan." *Manas Sosyal Araştırmalar Dergisi*, vol. 6, no. 3, 2017, pp. 87-97.
- Japarova, Damira. "Diagnostics of Financing the System of Public Health in the Kyrgyzstan Republic and its Modernization." In International Conference on Eurasian Economies. Eurasian Economists Association, 2020. doi:10.36880/c12.02378.
- Jevtic, M., & Bouland, C. (2019). "Environmental Challenges as Mental Health Risks and Opportunities in the Light of SDGs." *European Journal of Public Health*, 29(Suppl_4), 073.
- Johnson, B.R. Jr., Maksutova, E., Boobekova, A., Davletova, A., Kazakbaeva, C., Kondrateva, Y., Landoulsi, S., Lazdane, G., Monolbaev, K., & Seuc Jo, A.H. "Provision of Medical Abortion by Midlevel Healthcare Providers in Kyrgyzstan: Testing an Intervention to Expand Safe Abortion Services to Underserved Rural and Periurban Areas." *Contraception*, vol. 97, no. 2, Feb. 2018, pp. 160-166. DOI: 10.1016/j.contraception.2017.11.002.
- Joshi, Manisha, and Sarah Childress. "A National Survey of Attitudes Toward Intimate Partner Violence Among Married Women in Kazakhstan, Kyrgyzstan, and Tajikistan: Implications for Health Prevention and Intervention." *Social Work in Health Care*, vol. 56, no. 4, Apr. 2017, pp. 294-319. doi:10.1080/00981389.2016.1268660.
- Kamali M, Wright JE, Akseer N, Tasic H, Conway K, Brar S, Imanalieva C, Maritz G, Rizvi A, Stanbekov B, Abduvalieva S, Toialieva E, Bhutta ZA. Trends and determinants of newborn mortality in Kyrgyzstan: a Countdown country case study. *Lancet Glob Health*. 2021 Mar;9(3):e352-e360. doi: 10.1016/S2214-109X(20)30460-5. Epub 2020 Dec 10. PMID: 33308422; PMCID: PMC7886658.
- Kazenin, Konstantin, and Vladimir Kozlov. "What Factors Support the Early Age Patterns of Fertility in a Developing Country: The Case of Kyrgyzstan." *Vienna Yearbook of Population Research*, vol. 18, 2020, pp. 185–214. JSTOR, <https://www.jstor.org/stable/27041936>. Accessed 19 Mar. 2024.
- Khachatryan, E., & Tilenbaeva, N. (2019). Scaling up and improving nutrition in Kyrgyzstan's school meals programme. *Nutrition Exchange*, 11, p. 18. Retrieved from www.enonline.net/nex/11/kyrgyzstanschoolmeals

- Khakimov, Parviz. "Climate Change in Afghanistan, Kyrgyzstan, and Tajikistan: Trends and Adaptation Policies Conducive to Innovation." University of Central Asia – Institute of Public Policy and Administration (IPPA) Working Paper No. 55, November 26, 2019. Available at SSRN: <https://ssrn.com/abstract=3806243> or <http://dx.doi.org/10.2139/ssrn.3806243>.
- Kim, Elena, and Karina Standal. "Empowered by electricity? The political economy of gender and energy in rural Naryn." *Gender, Technology and Development*, January 2019, Taylor & Francis. doi:10.1080/09718524.2019.1596558.
- Kim, H., Shon, S., & Shin, H. "Exploring the unmet needs for creating an enabling environment for nurturing care to promote migrant child health in Bishkek, Kyrgyzstan: A theory-guided community-based participatory action research." *Evaluation and Program Planning*, vol. 80, February 2020, p. 101802. doi:10.1016/j.evalprogplan.2020.101802. Epub ahead of print. PMID: 32109785..
- Kogay, V., & Itua, I. "Prevalence and Socio-Economic Factors Determining Use of Modern Contraception Among Married Men in Kyrgyzstan: Evidence from a Demographic and Health Survey." *Public Health*, vol. 142, Jan. 2017, pp. 56-63. DOI: 10.1016/j.puhe.2016.10.008.
- Kol, Suat, and Tunçel, Hilal İlknur. "Legal Foundations and Comparative Analysis of Early Childhood Education Practices in The Turkish World." *Jurnal Cita Hukum*, vol. 10, no. 2, 2022.
- Kosec, Katrina, and Song, Jie. "The Effects of Income Fluctuations on Rural Health and Nutrition." IFPRI Discussion Paper 1900, 31 Dec. 2019. SSRN, <https://ssrn.com/abstract=3523081> or <http://dx.doi.org/10.2139/ssrn.3523081>.
- Kosterina, E., Horne, S. G., & Lamb, S. "The Role of Gender-based Violence, Health Worries, and Ambivalent Sexism in the Development of Women's Gynecological Symptoms." *Journal of Health Psychology*, vol. 26, no. 4, Mar. 2021, pp. 567-579. doi:10.1177/1359105318825292.
- Kruk, M. E., Kelley, E., Syed, S. B., Tarp, F. "Measuring quality of health-care services: What is known and where are the gaps?" *Bulletin of the World Health Organization*, vol. 95, no. 6, June 2017, pp. 389-389A. doi:10.2471/BLT.17.195099.
- Laatikainen, T., Inglin, L., Chonmurunov, I., Stambekov, B., Altymycheva, A., & Farrington, J. L. (2022). "National electronic primary health care database in monitoring performance of primary care in Kyrgyzstan." *Primary Health Care Research & Development*, 23, e6. doi:10.1017/S1463423622000019. PMID: 35109952; PMCID: PMC8822322.
- Li, et al. "Spatiotemporal Distributions of Fluorine and Arsenic in Rivers With the Role of Mining Industry and Related Human Health Risk Assessments in Kyrgyzstan." 2021.
- Liang, L., Zhang, F., & Qin, K. "Assessing the Vulnerability of Agricultural Systems to Drought in Kyrgyzstan." *Water*, vol. 13, no. 21, 2021, p. 3117. doi:10.3390/w13213117.
- Liu, W., Ma, L., Li, Y. M., Abuduwaili, J., Uulu, S. A. "Heavy Metals and Related Human Health Risk Assessment for River Waters in the Issyk-Kul Basin, Kyrgyzstan, Central Asia." *International Journal of Environmental Research and Public Health*, vol. 17, no. 10, 2020.
- Makhmutkhodzhaev, S. A., Kydralieva, R. B., Altymysheva, A. T., Dzhakipova, R. S., Zhorupbekova, K. S., Ryskulova, S. T., Knyazeva, V. G., Kaliev, M. T., & Dzhumagulova, A. S. "[Prevalence of Risk Factors of Non-Communicable Disease in Kyrgyzstan: Assessment using WHO STEPS Approach]." *Kardiologiya*, vol. 56, no. 11, Dec. 2016, pp. 86-90. Russian. doi:10.18565/cardio.2016.11.86-90. PMID: 28290823.

- Manzhikova, Svetlana Ts., and Adil Iqbal, Humna Mustafa. "Evidence-based analysis of the situation with tuberculosis in Kyrgyzstan and Pakistan." *Innovations in Medical Science and Education*, no. 001, 2022, p. 017.
- Martínez-Pérez, Guillermo Z., et al. "Values and Preferences for Hepatitis C Self-Testing Among People Who Inject Drugs in Kyrgyzstan." *BMC Infectious Diseases*, vol. 21, no. 1, 26 June 2021, p. 609. doi:10.1186/s12879-021-06332-z.
- Martin-Hughes, R., Vu, L., Cheikh, N., Kelly, S. L., Fraser-Hurt, N., Shubber, Z., Manhiça, I., Mbendera, K., Girma, B., Pambudi, I., Ríos, J., Elmira, A., Harimurti, P., Hafez, R., Garcia, J. N. B., Palmer, T., Roberts, A., Gorgens, M., & Wilson, D. "Impacts of COVID-19-related service disruptions on TB incidence and deaths in Indonesia, Kyrgyzstan, Malawi, Mozambique, and Peru: Implications for national TB responses." *PLOS Global Public Health*, vol. 2, no. 3, 2022, e0000219. doi:10.1371/journal.pgph.0000219. PMID: 36962192; PMCID: PMC10021439.
- Mavlyanova, N.G., Lipatov, V.A., & Tiefenbacher, J.P. (2023). Regional Cooperative Disaster Risk Management in Central Asian Borderlands. *Journal of Borderlands Studies*, 38(3), 417-439. DOI: 10.1080/08865655.2021.1943493.
- McCormack, Meghan. "Snapshot: Preschool Education in the Kyrgyz Republic." Published 2018. *Early Childhood Education, Education Policy, Early Childhood Development*.
- Molchanova ES, Kosterina EV, Yarova OV, Panteleeva LYu. Outpatient services for people with mental disorders in the Kyrgyz Republic: what is next? *Consortium Psychiatricum* 2022;3(1):98–105. doi: 10.17816/CP133.
- Mor, N. "Public Health Policy." *Sec. Public Health Policy, Volume 10*, 2022. *Frontiers in Public Health*, 22 June 2022. doi:10.3389/fpubh.2022.870210. This article is part of the Research Topic "Realizing Universal Health Coverage in India: Lessons for Developing Countries From Outlier Country Health Systems."
- Murphy, A., Jakab, M., McKee, M., & Richardson, E. "Persistent Low Adherence to Hypertension Treatment in Kyrgyzstan: How Can We Understand the Role of Drug Affordability?" *Health Policy and Planning*, vol. 31, no. 10, Dec. 2016, pp. 1384-1390. DOI: 10.1093/heapol/czw080.
- Musić Milanović, Sanja, et al. "Socioeconomic Disparities in Physical Activity, Sedentary Behavior and Sleep Patterns Among 6- to 9-year-old Children from 24 Countries in the WHO European Region." *Obesity Reviews*, vol. 22, Suppl 6, Nov. 2021, article e13209. doi:10.1111/obr.13209.
- National Statistical Committee of the Kyrgyz Republic. "Coverage of Children by Preschool Organizations, 2020."
- NDP. "SDG Report 2022." 2023.
- Nguyen, M., & Le, K. (2023). Rainfall and Birth Outcome: Evidence from Kyrgyzstan. *Climate and Development*, 15(1), 20-29. DOI: 10.1080/17565529.2022.2049189.
- Nogoibaev, et al. "Innovative Research and Training Center for Human and Animal Health Protection in Kyrgyzstan." 2022.
- Nogoibaeva, K. A., & Tobokalova, S. T. "Etiological and Epidemiological Characteristics of Lethality from Acute Viral Hepatitis, Kyrgyzstan, 2009–2018." *Journal of Microbiology, Epidemiology and Immunobiology*, vol. 97, no. 1, 2020, pp. 40-46. doi:10.36233/0372-9311-2020-97-1-40-46.
- Ola, Bamidele Emmanuel. "The Nexus of a Husband's Educational Status in Conjunction with Alcohol Consumption on His Tendency to Commit Domestic Violence toward Female Partners in Nigeria, Kyrgyzstan, and Tajikistan." *Journal of Population and Social Studies*, vol. 26, no. 4, October 2018, pp. 281-304. doi:10.25133/JPSSv26n4.020.

- Orozaliev, G., Loutan, L., Azimova, A., Baroffio, A., Heller, O., Lab, B., Mambetova, A., Mambetalieva, D., Muratalieva, E., Nendaz, M., Savoldelli, G., Vu, N.V., & Beran, D. (2021). Reforms in Medical Education: Lessons Learnt from Kyrgyzstan. *Global Health Action*, 14(1), 1944480. DOI: 10.1080/16549716.2021.1944480.
- Oskonbaeva, Z. (2021). "Main Drivers of Tobacco Consumption Among Adolescents: The Case of Kyrgyzstan." *Journal of Applied Microeconometrics (JAME)*, 1(1), 28-38. doi:10.53753/jame.1.1.03.
- Østergaard, M.S., Kjærgaard, J., Kristensen, M.M., Reventlow, S., Poulsen, A., Isaeva, E., Akylbekov, A., & Sooronbaev, T. (2018). Author Correction: Recurrent Lower Respiratory Illnesses Among Young Children in Rural Kyrgyzstan: Overuse of Antibiotics and Possible Under-diagnosis of Asthma. A Qualitative FRESH AIR Study. *NPJ Prim Care Respir Med*, 28(1), 25. DOI: 10.1038/s41533-018-0082-x. Erratum for: *NPJ Prim Care Respir Med*, 28(1), 13.
- Otunchieva, A., Borbodoev, J., & Ploeger, A. "The Transformation of Food Culture on the Case of Kyrgyz Nomads—A Historical Overview." *Sustainability*, vol. 13, no. 15, 2021, p. 8371. doi:10.3390/su13158371.
- Owino, Vincent, et al. "The Impact of Climate Change on Food Systems, Diet Quality, Nutrition, and Health Outcomes: A Narrative Review." *Frontiers in Climate*, vol. 4, 2022, article 941842. doi:10.3389/fclim.2022.941842.
- Park, Eunbeen, Jo, Hyun-Woo, Lee, Woo-Kyun, Lee, Sujong, Song, Cholho, Lee, Halim, Park, Sugyeong, Kim, Whijin, & Kim, Tae-Hyung. "Development of earth observational diagnostic drought prediction model for regional error calibration: A case study on agricultural drought in Kyrgyzstan." *GIScience & Remote Sensing*, vol. 59, no. 1, 2022, pp. 36-53. doi: 10.1080/15481603.2021.2012370.
- Park, S., Lim, C-H., Kim, S.J., Isaev, E., Choi, S-E., Lee, S-D., & Lee, W-K. "Assessing Climate Change Impact on Cropland Suitability in Kyrgyzstan: Where Are Potential High-Quality Cropland and the Way to the Future." *Agronomy*, vol. 11, no. 8, 2021, p. 1490. doi:10.3390/agronomy11081490.
- Paulone, Sara, and Artjoms Ivlevs. "Emigration and alcohol consumption among migrant household members staying behind: Evidence from Kyrgyzstan." *Social Science & Medicine*, vol. 221, Jan. 2019, pp. 40-48. doi:10.1016/j.socscimed.2018.12.009. Epub 2018 Dec 8. PMID: 30554062.
- Penkala-Gawecka, Danuta. "New Psychiatry and Traditional Healing in Kyrgyzstan: Attempts to Develop Culturally Sensitive and Community-Based Treatment." January 2019. doi:10.23858/EthP40.2019.011.
- Polupanov, A.G., et al. "Tobacco Use Among Adolescents in the Kyrgyz Republic (Based on the GYTS Study — Kyrgyzstan)." *Profilakticheskaya meditsina*, vol. 23, no. 4, January 2020, p. 74. doi:10.17116/profmed20202304174.
- Ravaghi, Hamid, Guisset, Anne-Laure, Elfeky, Salma, Nasir, Nabil, Khani, Sara, Ahmadnezhad, Elham, & Abdi, Zahra. "A scoping review of community health needs and assets assessment: concepts, rationale, tools and uses." *BMC Health Services Research*, vol. 23, no. 1, Jan 17, 2023, p. 44. doi: 10.1186/s12913-022-08983-3. PMID: 36650529; PMCID: PMC9847055.
- Rechel, Bernd, and Saltanat Moldoisieva. "Improving maternal and newborn health in Kyrgyzstan." *The Lancet Global Health*, vol. 9, no. 3, March 2021, pp. e237-e238. doi:10.1016/S2214-109X(20)30511-8. Epub 2020 Dec 10. PMID: 33308421; PMCID: PMC7886656.
- Roberts, B., Abbott, P., McKee, M. "Levels and determinants of psychological distress in eight countries of the former Soviet Union." *Journal of Public Mental Health*, ISSN: 1746-5729.
- Romanello, M., et al. "The 2022 report of the Lancet Countdown on health and climate change: health at the mercy of fossil fuels." *Lancet*, vol. 400, no. 10363, 2022, pp. 1619-1654. doi: 10.1016/S0140-6736(22)01540-9.

- Rosenkranz, Moritz, et al. "Assessment of Health Services for People Who Use Drugs in Central Asia: Findings of a Quantitative Survey in Kazakhstan and Kyrgyzstan." *Harm Reduction Journal*, vol. 13, 27 January 2016, p. 3. doi:10.1186/s12954-016-0093-2.
- Sabyrbekov, Rahat, and Ukueva, Nurgul. "Transitions from Dirty to Clean Energy in Low-Income Countries: Insights from Kyrgyzstan." *Central Asian Survey*, vol. 38, no. 2, 2019, pp. 255-274. doi:10.1080/02634937.2019.1605976.
- Schiavo, R., Basu Roy, U., Faroul, L., Solodunova, G. "Grounding evaluation design in the socio-ecological model of health: a logic framework for the assessment of a national routine immunization communication initiative in Kyrgyzstan." *Global Health Promotion*, vol. 27, no. 4, 2020, pp. 59-68. doi:10.1177/1757975920914550.
- Severinenko, M.A., Solodukhin, V.P., Djenbaev, B.M., Lennik, S.G., Zholboldiev, B.T., & Snow, D.D. "Occurrence of Radionuclides and Hazardous Elements in the Transboundary River Basin Kyrgyzstan–Kazakhstan." *Water*, vol. 15, no. 9, 2023, p. 1759. DOI: 10.3390/w15091759.
- Sharshenova, A., Kasymova, R., Ahakhmatova, A., & Arzygulova, K. "Assessment of the Morbidity of the Population of Bishkek City in Respect to Climate Change." *Oecologia Montana*, vol. 22, no. 1, 2013.
- Shin, H., Lee, Y.-N., Lee, S. J., & Jang, Y. K. "Evaluation of a Community-based Child (Infants and Toddlers) Health Promotion Pilot Project in a Migrant Village in Kyrgyzstan." *Child Health Nursing Research*, vol. 25, no. 4, October 2019, pp. 406-416. doi:10.4094/chnr.2019.25.4.406.
- Siddiqi, S., Aftab, W., Siddiqui, F. J., et al. "Global strategies and local implementation of health and health-related SDGs: lessons from consultation in countries across five regions." *BMJ Global Health*, vol. 5, 2020, e002859.
- Sitnikova, M., et al. "The Cross-Cultural Differences in Perceived Stress of the COVID-19 Pandemic in Schoolchildren from Russia and Kyrgyzstan With Normal and High Levels of Anxiety and Depression." *International Journal of Cognitive Research in Science, Engineering and Education (IJCRSEE)*, vol. 10, no. 2, 2022, pp. 27–37. doi: 10.23947/2334-8496-2022-10-2-27-37.
- Skarżyński, Piotr H., et al. "Results of Hearing Screening of School-Age Children in Bishkek, Kyrgyzstan." *Primary Health Care Research & Development*, vol. 21, 10 June 2020, article e18. doi:10.1017/S1463423620000183.
- Skordis-Worrall, J., et al. "Addressing the Double-Burden of Diabetes and Tuberculosis: Lessons from Kyrgyzstan." *Global Health*, vol. 13, 2017, p. 16. doi:10.1186/s12992-017-0239-3.
- Somani, Salima, and Shaista Rajani Meghani. "Substance Abuse among Youth: A Harsh Reality." *Open Access Emergency Medicine*, vol. 6, no. 4, Taylor & Francis, January 2016, DOI: 10.4172/2165-7548.1000330.
- Spearman, S., Bartrem, C., Sharshenova, A. A., Salymbekova, K. S., Isirailov, M. B., Gaynazarov, S. A., Gilmanov, R., von Lindern, I. H., von Braun, M., & Möller, G. "Comparison of X-ray Fluorescence (XRF) and Atomic Absorption Spectrometry (AAS) Results for an Environmental Assessment at a Mercury Site in Kyrgyzstan." *Applied Sciences*, vol. 12, 2022, p. 1943. doi:10.3390/app12041943.
- Stickley, A., Oh, H., Koyanagi, A., Leinsalu, M., Narita, Z., Roberts, B., & McKee, M. "Perceived Discrimination and Psychological Distress in Nine Countries of the Former Soviet Union." *International Journal of Social Psychiatry*, vol. 65, no. 2, Mar. 2019, pp. 158-168. DOI: 10.1177/0020764019827982.
- Stöver, Heino Johann, & Michels, Ingo Ilja. "Development of social work in prevention and treatment of HIV/AIDS and HCV in Central Asia of Drugs." *Drugs and Alcohol Today*, March 2022, ahead-of-print. doi:10.1108/DHS-09-2021-0046.

Toichuev, R. M., Zhilova, L. V., Makambaeva, G. B., Payzildaev, T. R., Pronk, W., Bouwknecht, M., & Weber, R. "Assessment and Review of Organochlorine Pesticide Pollution in Kyrgyzstan." *Environmental Science and Pollution Research International*, vol. 25, no. 32, 2018, pp. 31836-31847. doi:10.1007/s11356-017-0001-7.

Toichuev, R.M., Zhilova, L.V., Paizildaev, T.R., Khametova, M.S., Rakhmatillaev, A., Sakibaev, K.S., Madykova, Z.A., Toichueva, A.U., Schlumpf, M., Weber, R., & Lichtensteiger, W. "Organochlorine Pesticides in Placenta in Kyrgyzstan and the Effect on Pregnancy, Childbirth, and Newborn Health." *Environmental Science and Pollution Research International*, vol. 25, no. 32, 2018, pp. 31885-31894. DOI: 10.1007/s11356-017-0962-6.

Topchubaeva, E., Kalmatov, R., Maamatova, B., Ismailov, I. "Clinical and instrumental characteristics of the respiratory organ system of the Kyrgyz Republic population living under conditions of atmospheric air pollutants exposure." Osh State University, Osh, Kyrgyzstan.

Topchubaeva. "The Influence of Technogenic Air Pollution on the Major Pathogenetic Mechanisms of Respiratory System Diseases." 2023.

Turdaliev, A., Askarov, K., Abakumov, E., Makhkamov, E., Rahmatullayev, G., Mamajonov, G., Akhmadjonov, A., & Axunov, A. "Biogeochemical State of Salinized Irrigated Soils of Central Fergana (Uzbekistan, Central Asia)." *Applied Sciences*, vol. 13, no. 10, 2023, p. 6188. doi: 10.3390/app13106188.

Turdalieva, Ainura, and Raziya Abdiyeva. "Access to Infrastructure and Social Services in the Regions of Kyrgyzstan." Presented at the International Conference on Eurasian Economies, 2021.

Tursumbayeva, M., Muratuly, A., Baimatova, N., & Karaca, F. "Cities of Central Asia: New Hotspots of Air Pollution in the World." *SSRN Electronic Journal*, January 2022. doi:10.2139/ssrn.4208086.

UN Women. "Investing in Early Childhood Education and Care in Kyrgyz Republic: An Assessment of Care Deficits, Costs and Impact on Employment, Gender Equality and Fiscal Returns." 2019.

UNDP. "A Decade of Support for Water Governance Reform: Final Report of the GoAL WaSH Programme." 2021.

UNDP. "SDG Report 2019." 2020.

UNDP. "The Kyrgyz Republic: United Nations Sustainable Development Cooperation Framework 2023-2027." 2022.

UNDP. "The Small Grants Programme (SGP) Results Report 2022." 2022.

UNDP. *SDG Report 2022*. 2022.

UNECE and UN Women. "Childcare, Women's Employment and the COVID-19 Impact and Response: The Case of the Kyrgyz Republic." 2021.

UNFPA. "Getting to Zero: Good Practices." 2019.

UNICEF. "A World Ready to Learn: Prioritizing Quality Early Childhood Education." 2019.

UNICEF. "Country Office Annual Report." 2020.

UNICEF. "Education Joint Sector Review in the Kyrgyz Republic." 2022.

UNICEF. "Multidimensional Poverty Measurement and Assessment." 2020.

UNICEF. "Situation Analysis on Adolescent and Youth Suicides in Kyrgyzstan." 2020.

UNICEF. "Situation of Children in Kyrgyzstan." 2021.

USAID. "Nurturing Care to Improve Early Childhood Development: Kyrgyz Republic Country Profile." 2021.

- Van Gemert, F., de Jong, C., Kirenga, B., Musinguzi, P., Buteme, S., Sooronbaev, T., Tabyshova, A., Emilov, B., Mademilov, M., Le An, P., Quynh, N. N., Dang, T. N., Hong, L. H. T. C., Chartier, R., Brakema, E. A., & van Boven, J. F. M.; FRESH AIR. "Effects and acceptability of implementing improved cookstoves and heaters to reduce household air pollution: a FRESH AIR study." *NPJ Primary Care Respiratory Medicine*, vol. 29, no. 1, Aug. 2019, p. 32. doi:10.1038/s41533-019-0144-8. PMID: 31417087; PMCID: PMC6695425.
- Vinokurov, E. (ed.), Akhunbaev, A., Chuyev, S., Adakhayev, A., Sarsembekov, T. (2024). *Drinking Water Supply and Sanitation in Central Asia*. Report 24/5. Almaty: Eurasian Development Bank.
- Vogler, Sabine, et al. "Affordable and Equitable Access to Subsidised Outpatient Medicines? Analysis of Co-payments under the Additional Drug Package in Kyrgyzstan." *International Journal for Equity in Health*, vol. 18, 2019, p. 89. doi:10.1186/s12939-019-0990-6.
- Wahid, Syed Shabab, DrPH, Raza, Wameq Azfar, PhD, Mahmud, Iffat, MSc, & Kohrt, Brandon A, PhD. "Climate-related shocks and other stressors associated with depression and anxiety in Bangladesh: a nationally representative panel study." Volume 7, Issue 2, pp. E137-E146, February 2023. doi: [https://doi.org/10.1016/S2542-5196\(22\)00315-1](https://doi.org/10.1016/S2542-5196(22)00315-1).
- Wang, B., Feldman, I., Chkonia, E., Pinchuk, I., Panteleeva, L., & Skokauskas, N. (2022). "Mental health services in Scandinavia and Eurasia: comparison of financing and provision." *International Review of Psychiatry*, 34(2), 118–127. doi:10.1080/09540261.2022.2065190.
- Whiting, S., Mendes, R., Abu-Omar, K., Gelius, P., Crispo, A., McColl, K., Simmonds, P., Fedkina, N., Andreasyan, D., Gahraman, H., Migal, T., Sturua, L., Obreja, G., Abdurakhmanova, Z., Saparkulovna, I.N., Erguder, T., Ekinci, B., Keskinilic, B., Shukurov, S., Yuldashev, R., Berdzuli, N., Rakovac, I., & Breda, J. "Physical Inactivity in Nine European and Central Asian Countries: An Analysis of National Population-Based Survey Results." *European Journal of Public Health*, vol. 31, no. 4, Oct. 2021, pp. 846-853. DOI: 10.1093/eurpub/ckab028.
- World Health Organization (WHO). "Compendium of the Roadmap for Health and Well-Being in Central Asia (2022-2025)." 2022.
- World Health Organization (WHO). "Health System Review: Kyrgyzstan." 2022.
- World Health Organization (WHO). "Pharmaceutical Pricing and Reimbursement Reform in Kyrgyzstan." 2016.
- World Health Organization (WHO). "Report on Recommendations for the Reform of Public Health Services in Kyrgyzstan." 2021.
- World Health Organization (WHO). "The European Health Report." 2021.
- World Health Organization (WHO). "Towards a Healthier Kyrgyz Republic." 2020.
- Wortmann, M., Duethmann, D., Menz, C., et al. "Projected Climate Change and Its Impacts on Glaciers and Water Resources in the Headwaters of the Tarim River, NW China/Kyrgyzstan." *Climatic Change*, vol. 171, 2022, p. 30. DOI: 10.1007/s10584-022-03343-w.
- Wymann von Dach, S., Bracher, C., Peralvo, M., Perez, K. "Leaving no one in mountains behind: Localizing the SDGs for resilience of mountain people and ecosystems." *World Mountain Forum*, Bern, October 2018. doi:10.7892/boris.120130.
- Znaor, A., Corbex, M., Cao, B., Laversanne, M., Ryzhov, A., Smelov, V., & Bray, F. "Progress in Reducing Premature Mortality from Cancer and Cardiovascular Disease in the Former Soviet Union, 2000-19." *European Journal of Public Health*, vol. 32, no. 4, Aug. 2022, pp. 624-629. DOI: 10.1093/eurpub/ckac030.
- Zuridinova, A.A. "Problems of Rational Medicines Use: The Situation in Kyrgyzstan." *Reviews on Clinical Pharmacology and Drug Therapy*, vol. 16, no. 2, 2018, pp. 57-61. DOI: 10.17816/RCF16257-61.

Annex 1: search terms for systematic literature review

HHSDG Progress

1. health-related SDGs, progress, Kyrgyzstan
2. health SDG, implementation, Kyrgyzstan
3. health SDGs, challenges, Kyrgyzstan
4. health SDGs, Kyrgyzstan
5. health, SDG, Kyrgyzstan
6. health-related SDGs, Kyrgyzstan
7. health, SDG, ["progress" or "improvements" or "implementation" or "integration" or "assessment" or "assessing" or "monitoring" or "evaluation" or "challenges" or "barriers" or "strengthening" or "achieving" or "achievements" or "intervention" or "review"], Kyrgyzstan
8. health systems, improvements, Kyrgyzstan
9. healthcare systems, Kyrgyzstan, SDG
10. inequalities, health, SDGs, Kyrgyzstan
11. evaluation, health programs, health policies, Kyrgyzstan, SDGs
12. barriers, achieving health-related SDGs, Kyrgyzstan
13. health systems strengthening, Kyrgyzstan, SDG
14. public health, SDG, progress, Kyrgyzstan
15. monitoring health progress, SDGs, Kyrgyzstan
16. literature review, health, SDG, Kyrgyzstan
17. assessing health-related SDGs, Kyrgyzstan
18. healthcare systems, achieving SDG, health, Kyrgyzstan
19. interventions, health-related SDGs, Kyrgyzstan

Mental health

1. mental health, SDGs, Kyrgyzstan
2. mental health, SDG, ["progress" or "challenges" or "improvement" or "integration" or "monitoring" or "evaluation" or "assessment" or "achieving" or "barrier" or "indicators" or "targets" or "implementation" or "promoting"], Kyrgyzstan
3. mental health systems, Kyrgyzstan
4. mental health-related SDGs, Kyrgyzstan
5. psychological wellbeing, Kyrgyzstan
6. psychosocial well-being, health SDGs, Kyrgyzstan
7. psychological resilience, SDGs, Kyrgyzstan
8. mental health services, Kyrgyzstan
9. mental health, SDG progress, Kyrgyzstan
10. mental health, health SDGs, Kyrgyzstan
11. mental healthcare system, Kyrgyzstan, SDG
12. inequalities, mental health, SDGs, Kyrgyzstan
13. interventions, mental health, SDGs, Kyrgyzstan
14. mental health, systems strengthening, Kyrgyzstan, SDG implementation
15. public mental health, strategies, SDG progress, Kyrgyzstan
16. mental health indicators, SDGs, Kyrgyzstan
17. monitoring mental health, progress, SDGs, Kyrgyzstan
18. mental health targets, SDGs, Kyrgyzstan
19. literature review, mental health, SDGs, Kyrgyzstan
20. addressing mental health, SDGs, Kyrgyzstan
21. mental health, implications, achieving SDGs, Kyrgyzstan
22. SDG progress, mental health, outcomes, Kyrgyzstan
23. mental health promotion, SDG implementation, Kyrgyzstan
24. mental health, policies, strategies, promoting SDG, Kyrgyzstan

Climate Change

1. climate change, SDG, Kyrgyzstan
2. climate change, health, Kyrgyzstan
3. climate change, HHSDGs, Kyrgyzstan
4. climate change, health outcomes, Kyrgyzstan
5. climate change adaptation, health, Kyrgyzstan
6. health vulnerability, climate, Kyrgyzstan
7. climate change impact, Kyrgyzstan
8. climate change, progress, Kyrgyzstan
9. challenges, SDGs, climate change, Kyrgyzstan
10. climate change resilience, health, Kyrgyzstan
11. healthcare systems, adaptation to climate change, Kyrgyzstan
12. monitoring climate change, adaptation measures, health progress, Kyrgyzstan
13. climate change vulnerability, progress, health-related SDGs, Kyrgyzstan
14. climate change mitigation, health outcomes, Kyrgyzstan, SDG
15. climate change resilience, health SDGs, Kyrgyzstan
16. health system, adaptation, climate change, Kyrgyzstan
17. climate change risks, health, SDGs, Kyrgyzstan
18. climate change, infectious diseases, Kyrgyzstan
19. climate change, NCD, Kyrgyzstan
20. climate change, noncommunicable diseases, Kyrgyzstan
21. climate change, maternal health, Kyrgyzstan
22. climate change, child health, Kyrgyzstan
23. climate change, pregnancy, Kyrgyzstan
24. climate change, nutrition, Kyrgyzstan
25. climate change, food security, Kyrgyzstan
26. climate change, water scarcity, Kyrgyzstan
27. climate change, water shortage, Kyrgyzstan
28. climate change, poverty, Kyrgyzstan
29. climate change, gender, Kyrgyzstan

Gender inequalities

1. domestic violence, health, SDG, Kyrgyzstan
2. forced marriage, health, SDG, Kyrgyzstan
3. early marriage, health, SDG, Kyrgyzstan
4. gender equality, health, SDG, Kyrgyzstan
5. gender, health, SDG, Kyrgyzstan
6. public health, gender, Kyrgyzstan
7. gender, health, Kyrgyzstan
8. gender inequalities, health, Kyrgyzstan
9. gender, HHSDG, Kyrgyzstan
10. health, progress, gender, Kyrgyzstan
11. challenges, gender, health, Kyrgyzstan
12. monitoring, gender, health, Kyrgyzstan
13. assessing, gender inequalities, SDG progress, Kyrgyzstan
14. gender targets, health SDG, Kyrgyzstan
15. gender, health-related SDG, Kyrgyzstan

HHSDG Targets

1. maternal health, SDG, Kyrgyzstan
2. maternal mortality, SDG, Kyrgyzstan
3. child health, SDG, Kyrgyzstan
4. child mortality, SDG, Kyrgyzstan

5. neonatal mortality, SDG, Kyrgyzstan
6. infectious diseases, SDG, Kyrgyzstan
7. NCD or noncommunicable diseases, SDG, Kyrgyzstan
8. noncommunicable diseases, SDG, Kyrgyzstan
9. substance abuse, SDG, Kyrgyzstan
10. drug abuse, SDG, Kyrgyzstan
11. alcohol, SDG, Kyrgyzstan
12. road traffic, SDG, Kyrgyzstan
13. reproductive health, SDG, Kyrgyzstan
14. sexual health services, SDG, Kyrgyzstan
15. family planning, SDG, Kyrgyzstan
16. universal health coverage, SDG, Kyrgyzstan
17. healthcare services, SDG, Kyrgyzstan
18. environmental health, SDG, Kyrgyzstan
19. hazardous chemicals, SDG, Kyrgyzstan
20. air, water, soil, pollution, SDG, Kyrgyzstan
21. tobacco, SDG, Kyrgyzstan
22. medicines, SDG, Kyrgyzstan
23. vaccines, SDG, Kyrgyzstan
24. health financing, SDG, Kyrgyzstan
25. health workforce, SDG, Kyrgyzstan
26. emergency, preparedness, SDG, Kyrgyzstan
27. health risk, SDG, Kyrgyzstan
28. poverty, health, SDG, Kyrgyzstan
29. social protection, health, SDG, Kyrgyzstan
30. nutrition, health, SDG, Kyrgyzstan
31. undernourishment, health, SDG, Kyrgyzstan
32. malnutrition, health, SDG, Kyrgyzstan
33. food diet, health, SDG, Kyrgyzstan
34. anaemia, SDG, Kyrgyzstan
35. pregnancy, health, SDG, Kyrgyzstan
36. clean water, health, SDG, Kyrgyzstan
37. sanitation, health, SDG, Kyrgyzstan
38. sanitation facilities, health, SDG, Kyrgyzstan
39. sanitation services, health, SDG, Kyrgyzstan
40. drinking water, health, SDG, Kyrgyzstan
41. hygiene standards, health, SDG, Kyrgyzstan
42. electricity, health, SDG, Kyrgyzstan
43. clean fuel, health, SDG, Kyrgyzstan
44. energy, health, SDG, Kyrgyzstan
45. inequalities, health, SDG, Kyrgyzstan
46. discrimination, health, SDG, Kyrgyzstan
47. disabilities, inequalities, health, SDG, Kyrgyzstan
48. harassment, health, SDG, Kyrgyzstan
49. disaster, death, health, SDG, Kyrgyzstan
50. natural disaster, death, Kyrgyzstan
51. environmental protection, health, SDG, Kyrgyzstan
52. pollution, health, SDG, Kyrgyzstan
53. air pollution, health, Kyrgyzstan
54. water pollution, health, Kyrgyzstan
55. environment, health, SDG, Kyrgyzstan
56. punishment, health, Kyrgyzstan
57. ECD, early childhood development preschool education, Kyrgyzstan