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Kyrgyz Republic

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Health

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KYRGYZ REPUBLIC - GOVERNMENT FISCAL YEAR
January 1 – December 31

CURRENCY EQUIVALENTS
(Exchange Rate Effective as of April 30, 2014)

Currency Unit = Kyrgyz Som (KGS)
US$1.00 = KGS 53.9615

Weights and Measures
Metric System

ACRONYMS AND ABBREVIATIONS

ADP	Additional Drug Package	MDGs	Millennium Development Goals
ALOS	Average Length of Stay	MHI	Mandatory Health Insurance
CVDs	Cardiovascular Diseases	MHIF	Mandatory Health Insurance Fund
DFID	UK's Department for International Development	MMR	Maternal Mortality Ratio
		MoH	Ministry of Health
DOT	Directly Observed Treatment	MoSD	Ministry of Social Development
DRG	Diagnostic Related Groups	OOP	Out-of-Pocket
ECA	Europe and Central Asia	PHC	Primary Health Care
EU	European Union	PMT	Proxy Means Test
FTE	Full Time Equivalent	SECO	Swiss Economic Cooperation Organization
GDP	Gross Domestic Product		
IT	Informational Technology	SGBP	State Guaranteed Benefit Package
LIC	Low Income Countries	SWAp	Sector-Wide Approach
LMIC	Low and Middle Income Countries	TB	Tuberculosis
MBPF	Monthly Benefit for Poor Families	THE	Total Health Expenditure

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1. Executive Summary

1. **Over the past two decades the Kyrgyz Republic implemented important health financing and organization reforms.** The ambitious *Manas* and *Manas Taalimi* health reforms programs set the agenda for a comprehensive overhaul of the health system. Clear priorities, realistic policy goals, and coherent sequencing of reforms elements are seen as key reasons for the successful overhaul of the health system (Balabanova, et al., 2013). As a result, the country is considered a regional leader in health system reforms, notwithstanding the difficult economic and social conditions (Jakab and Manjieva, 2008; Kutzin, Jakab and Cashin, 2010).

2. **Compared to other former Soviet republics and other low-income countries, the Kyrgyz Republic shows good results in term of health outcomes, access to health services, and financial protection.** Life expectancy exceeds that of several of the most prosperous former Soviet republics, including Russia. Infant and under-5 mortality rates were halved between 1990 and 2010. More than 98 percent of births are attended by skilled health staff and children immunization rates exceed 90 percent. Utilization of both hospital and outpatient health services are quite equal across income groups. Overall distribution of public health spending is slightly pro-poor. The Kyrgyz health system shows low incidence of catastrophic and impoverishing out-of pocket spending for health care.

3. **The epidemiological transition and the growing prevalence of non-communicable and chronic diseases represent the most pressing clinical challenge**. The Kyrgyz Republic has been particularly ill prepared to address the epidemiological transition from predominance of infectious to non-communicable chronic disease and cardiovascular diseases (CVDs) in particular. As a result, mortality rates in the Kyrgyz Republic attributed to the three main types of CVDs—diseases of the circulatory system, ischemic heart disease, and cerebrovascular diseases—are the highest among Central Asia countries. In addition, the high incidence of tuberculosis and the growing prevalence of HIV represent additional concerns for the country. Therefore, the new *Den Sooluk* national health strategy aiming at improving health outcomes in the following areas: (i) cardiovascular diseases; (ii) maternal and child health; (iii) tuberculosis; and (iv) HIV infection.

4. **The funding gap of the State Guaranteed Benefit Package represents a serious challenge to the financial sustainability of the health sector.** The 2006 expansion of co-payment exemptions (which includes all deliveries, children between one and five years of age, and pensioners); and 2011 salary increase for health workers have stretched the limited resources available. Therefore, additional reforms are needed to ensure the financial sustainability of the health sector. The main policy recommendations to improve the financial sustainability and effectiveness of public health spending are as follows:

- **Reduce the scope and improve the targeting of co-payment exemptions provided by the State Guaranteed Benefit Package (SGBP).** The current policy of co-payment exemptions based on 28 privileged social categories and priority medical conditions does not favor the poor: 57.5 percent of beneficiaries are not in the bottom two quintiles of the income distribution and 51.3 percent of the bottom two quintiles are not exempted from co-payment. A much stronger focus on the poor, and potential consolidation of exemptions could be achieved using a mean tested approach—such as the one used by the Monthly Benefit for Poor Families—or a proxy means test methodology.

- **Optimization and modernization of hospital services.** The introduction of modern technologies, such as day surgery and laparoscopic surgery, could reduce the number of hospital beds, unnecessary hospitalizations, benefit patients, and improve health outcomes. However, costs would not necessarily be reduced, as the introduction of modern technologies would require investments in equipment and training. In addition, other measures should be introduced to better manage hospitalizations and control costs. On the supply side, introduction of volume ceilings at hospital level, as well as the revision of the DRG-based reimbursement rates to remunerate day surgery and new technologies with favorable reimbursement rates could help. On the demand side, the selective reintroduction of co-payment for children, pensioners, and pregnant women that were abolished in 2006 would also benefit the situation.

- **Improve cost-effectiveness of management and prevention of priority diseases.** Hospital-based care for CVDs is expensive and ineffective. On the other hand, improved management and prevention of CVDs can reduce costs and save lives. Mass media educational campaigns, risk factor screening at Primary Health Care (PHC), and pharmaceutical secondary prevention are cost-effective interventions. Tobacco taxation is a particularly effective measure to reduce morbidity related to CVDs, and bring additional revenue to the state budget.

- **Self-financing of dental and balneology services.** About three percent of total government health expenditure is used to subsidize dental services, balneology, and rehabilitation services. However, free services are enjoyed by a limited number of population groups. Therefore, private provision of these services and public provision of targeted subsidies would be a more efficient and equitable alternative.

- **Harmonization of the rules governing the use of the various financing sources.** The SGBP is financed by four sources: budget funds, MHI/Social Fund payroll contribution, patient co-payment, and special means. Each of these sources has different spending rules. The harmonization of spending and reporting rules would produce some immediate, but small saving from reduction of staff positions in accounting and more efficient use of liquidity. In addition, important benefits and potential sources of efficiency would derive from the improved flexibility that would be gained in the use of budget funds that at the moment are only allowed for MHI/Social Fund contribution. Even if it is difficult to quantify the monetary value of these benefits, this measure could lead to significant fiscal space for the health sector.

- **Reallocating savings from unfilled positions to other use.** Health facilities have a large number of vacant positions and the practice is to redistribute savings from unfilled positions to other staff. The practice of redistributing savings from unfilled positions to other staff has raised a number of efficiency concerns. The salary increases introduced in 2011 have squeezed the health budget, severely reducing resources for other key inputs, such as food and medicine. The revision of staff norms to reduce the number of unfilled position could reduce the problem. In addition, training should be provided to the Chamber of Accounts and facility managers to improve the use of the resources and flexibility provided by the single payer system.

- **Improve the procurement of hospital drugs and medical supplies.** In 2012, the government approved resolution that mandates the introduction of centralized procurement of hospital drugs, under the Mandatory Health Insurance Fund (MHIF).

However, procurement capacity at MHIF is extremely weak and in the short run would not be able to set up a centralized drug procurement unit. The use of "framework agreements" could produce the efficiency saving and quality improvement of centralized procurement, while maintaining the flexibility of the current system where each facility purchases its own drugs. Under the proposed scheme, the MHIF would determine the demand, in order to negotiate price and quality with suppliers, so that facilities could purchase under these conditions defined in the "framework agreements." However, the introduction of "framework agreements" would require time and enhanced capacity, both at the MHIF and Drugs Supply and Medical Technology at the MoH.

2. Overview of the Kyrgyz Health System

5. **During the past 20 years, the Kyrgyz health system has evolved significantly from the standard Soviet model**. This model was based on central planning with minimum discretion allowed to local managers and a strong emphasis on curative services. The distribution of resources, number of hospital beds, and doctors per population followed the planning norms and standards developed by the Semashko Research Institute of Social Hygiene and Public Health, in Moscow. The Semashko model was characterized by a large network of providers with weak primary health care services, a high degree of specialization, and inefficient and expensive hospital services (Davis, 2010). Input-based financing, coupled with high fragmentation of financing sources, contributed to the overcapacity of the health delivery network and encouraged inefficiencies. In addition, several line ministries, such as the Ministry of Defense and the Ministry of Interior, had their own health facilities. Substantial budget transfers from Moscow made this system affordable, but the Soviet health model quickly became unsustainable following the collapse of the Soviet Union and the ensuing deep economic crisis (Rowland and Telyukov, 1991).

6. **In this context, the *Manas* national health reform program was developed.** As the regulatory framework of the Soviet system remained unchanged in the early years of independence, the gap between de jure and de facto entitlements grew and informal out-of-pocket payments became a usual practice. While the breadth of coverage stayed the same, the depth of coverage eroded. The main objective of the *Manas* program (1996–2006), was to restructure the health system inherited from the Soviet period and ensure its financial sustainability. The *Manas* program rested on the following pillars (Giuffrida, Jakab and Dale, 2008):

- Introduction of a mandatory health insurance (MHI) contribution, financed through an earmarked payroll tax to complement budget funds;

- Replacement of line-item health financing with population- and output-based payment mechanisms, such as capitation for PHC services; and case-based payment based on Diagnostic Related Groups (DRG) for hospital services;

- Progressive centralization of the purchasing function of health services and the pooling of funds under the Mandatory Health Insurance Fund (MHIF);

- Reforming of the health delivery system, development of the family medicine model for primary care, and restructuring of hospital care;

- Clarification of entitlements and citizen obligations to co-pay through the introduction of the State Guaranteed Benefits Package (SGBP); and

- Establishment of the Additional Drug Package (ADP) providing drug benefits to citizens enrolled in the MHI.

7.   **In 1997, the Government introduced new taxes earmarked for health care to attract additional resources for the sector.** Initially, it covered only farmers and the formal sector employees, with the exception of civil servants. A year later, it expanded to include civil servants and the self-employed. Pensioners and registered unemployed were covered by the republican budget from the start (Jakab and Manjieva, 2008).[1] The MHIF was created in 1997 to administer these new taxes. It was not, however, a passive administrator of funds, but began important innovations in terms of contracting and paying providers according to new modalities. These include case-based payments to hospitals and capitation-based payments to primary care facilities. The MHIF also differed in that its population coverage was national, because pooling and purchasing were national in scope and not confined within an oblast or rayon. According to Kutzin, et al. (2002), while the MHIF appeared to be a "small player" in terms of the level of financing it controlled, it had a significant impact on health care providers during this period due to the purchasing strategy it adopted.

8.   **The introduction of significant health financing reforms began in 2001 in two oblasts with establishment of oblast purchasing pools.** Oblast finance departments transferred all tax revenue allocated for health into the oblast departments of the MHIF (Jakab and Manjieva, 2008). Thus, all revenues were pooled at oblast level and transferred to providers using the same payment mechanisms that focused on outputs rather than inputs. Moreover, oblast level pooling allowed reallocation of resources across different rayons and cities within oblast. This was an important step in ending fragmentation of health resources and duplication of services. It also promoted geographical equity in health services access. By 2004, the oblast purchasing pools were rolled out to all oblasts (Jakab and Manjieva, 2008). In 2006, oblast pools were merged at the national level, further facilitating the equalization of funding across geographical areas (Ibraimova et al., 2011).

9.   **Thus, two financial pools were created at the republican level: one for individual health services under the SGBP administered by the MHIF and one for population-based health services administered by the MOH.** The MHIF consists of a central headquarters and regional (oblast) units. In addition to its main functions of managing contracts and administering payments to health providers, the MHIF is also responsible for monitoring the quality of health services, for utilization and enrolment data, and for ensuring protection of patient rights (Ibraimova, et al., 2011). The MOH is responsible for developing national health policy, preparing and implementing legislative acts, and implementing national health programs. It is also responsible for licensing medical and pharmaceutical activities, overseeing the accreditation of health care organizations, and the monitoring and evaluation of the health status of the population. Some tertiary care institutes at the republican levels are managed directly by the MOH.

10.   **Private provision of health services has been gradually growing since the country's independence.** Starting with pharmacies, the private sector expanded to include specialized outpatient and hospital services. It is estimated that more than 600 individual doctors and about

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[1] Contribution to MHI was set at two percent for the employed and was payable fully by employers. Farmers pay five percent of their land tax as their MHI contribution. Contributions on behalf of pensioners and the unemployed are made by the state budget and are calculated on a base equal to 1.5 times the minimum wage.

230 private entities are licensed to provide medical services in the Kyrgyz Republic (Checheybaev et al., 2008). The private sector includes about 20 private hospitals for a total of 350 hospital beds, more than half of which were located in Bishkek. In addition, a private ambulance service is available in Bishkek 24 hours a day.

11.   **Contracting by MHIF with private providers is yet to happen.** In 1992, the Law "On Health Protection of the Citizens of the Kyrgyz Republic" acknowledged that health services in the country should be provided by both the private and the public providers. At present, however, legal mechanisms are not developed yet to allow contracting of private providers under the SGBP. For instance, under current budget procedures, state budget funds cannot be used to purchase medical services from private providers (MOH 2008).

12.   **The reforms introduced under the *Manas* Program were subsequent strengthened by the *Manas Taalimi* (2006–10) and the *Den Sooluk* (2012-2016) national health reform programs**. The results of the *Manas* and *Manas Taalimi* reform programs have been mixed. On the one hand, good progress has been demonstrated in financial protection, access and efficiency of health services. On the other hand, progress in improving the quality of health care and achieving solid health gain has been less impressive. Therefore, the key goals for the new *Den Sooluk* programs are improving the quality of health care and accelerating health gain in four priority areas - cardiovascular diseases; maternal and child health; tuberculosis; and HIV infection - while maintaining hard-fought gains in financial protection, access and efficiency of health services.

3. The State Guaranteed Benefits Package

13.   **The SGBP establishes a predictable and transparent system of entitlements.** It guarantees to all citizens access to free primary care, as well as emergency care services. In order to receive primary care, patients must enroll with the Family Group Practice (Manjieva et al., 2007). Patients belonging to vulnerable social categories (for example, World War II veterans or children under five) are automatically enrolled and are only required to show an ID in support of their status. Care is provided in the place of enrollment. Inpatient and specialized outpatient care services are provided with co-payments. The size of co-payment depends on the patient's insurance and exemption status. In addition, a patient must provide a referral slip from a primary care physician. Without a proper referral, the full cost of services must be paid regardless of the patient's insurance status (Government of the Kyrgyz Republic, Decree #350, July 1, 2011).[2] The mechanism is intended to encourage greater utilization of primary care in the country. SGBP does not include high-technology services. In 2002, the High Tech Fund was established by the MOH, based on contributions from the republican budget, as well as private donors and sponsors. The Fund was established to cover the costs of high-technology health services. A special waiting list is available to patients who require these services (Ibraimova et al., 2011).

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[2] For example, the co-payment for a hospitalization ranges from 200 Kyrgyz soms (approximately US$5 dollars) for insured patient to around 2,000 Kyrgyz soms (approximately US$50 dollars) for patients not insured and without referral from primary care physician.

14.   **Although enrolment with the MHIF is mandatory, about 23 percent of the population is currently uninsured.** Table 1 shows the number and share of population insured with the MHIF by oblast. It is likely that the reported number of uninsured is affected by the level of informality in the labor market, which is supported by the low level of insurance coverage in Bishkek. Additionally, the estimated figures of insurance coverage are not corrected by the effect emigration, as those who decide to emigrate abroad are likely to stop contributing to the MHIF. The uninsured have to pay higher

Table 1. Number and shares of insured population

(Persons and percent)

	2011		2012	
	Insured	Percent	Insured	Percent
Total	4,072,759	76.3	4,109,805	76.6
Bishkek	533,650	56.7	572,343	60.2
Chui	633,137	79.4	633,940	78.7
Osh	1,055,709	83.3	1,055,995	82.9
Batken	394,089	92.0	397,222	92.9
Jalal-Abad	774,507	79.1	763,585	77.9
Issyk-Kul	295,723	68.8	293,324	68.2
Naryn	217,375	80.7	218,846	81.0
Talals	168,569	75.5	174,550	75.9

Source: MHIF.

level of co-payment for elective hospital services and do not receive the benefits of the Additional Drug Package. However, the impact of being uninsured on health services accessibility is likely to be minor, as patients can purchase the insurance policy and enjoy the benefits if the need to use elective hospital services or medicines covered by the ADP arises. Insurance policies are available in the MHIF for those who are not formally employed or self-employed. In 2011, the cost of an insurance policy was KGS400, that is, approximately US$10, and it can be used immediately after the purchase.

15.   **The SGBP provides co-payment exemptions to various categories of citizens.** The current system of exemptions provides free medical care to (see Annex I):

- *Privileged social categories,* which includes 28 groups ranging from World War II veterans, children under five years of age, pensioners 70 years or older, victims of the events of 2010 and their families, and the disabled regardless of their income; and

- *Citizens with priority medical conditions.* Currently 21 diseases and medical conditions are identified to protect those with expected high use of health care services, which includes pregnant women, terminal stage cancer patients, Type I and Type II diabetes patients, and those with hemophilia. Additionally, it includes the prevention of the spread of diseases with important externalities (e.g., TB, AIDS, syphilis, anthrax, polio, and diphtheria).

16.   **Patients from low-income groups have, theoretically, the right to co-payment exemption, but mechanisms for this exemption are not well defined.**[3] There are no clear rules governing such exemptions and decisions are made at a facility level on a case-by-case basis. If an exemption is granted, the costs are covered by a facility level reserve fund that is financed by setting aside ten percent of all co-payments received (Jakab and Manjieva, 2008). Also, the process of obtaining documents certifying that a patient has income below the poverty threshold is complex. Thus, while there is a national poverty threshold, there is no comprehensive, up-to-date national registry for people who are qualified to social assistance programs based on their income level, making it difficult to have a well-targeted co-payment policy.

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[3] Article 4, paragraph 23, Government Decree #350 on the SGBP, July 1, 2011.

17.   **There are certain caps on the benefits provided by the SGBP.** Social categories that are fully exempt from co-payments are entitled to two hospital stays per calendar year. The cap, however, does not apply to those who are exempt based on the disease categories, or to children under five. These groups are exempt from co-payments regardless of the number of hospital stays (Giuffrida, Jakab and Dale, 2013). Once the cap is exceeded, a patient has to pay a co-payment. The cost of medicine provided per hospital stay is limited to three times the average cost of treatment as defined by the MHIF. If cost of drugs exceeds this level during one hospital stay, the expert committee of the hospital decides whether to cover the excess costs or not. The third type of cap establishes the total amount of medicine per year per beneficiary that is provided under the ADP. It is established on annual basis and is described in the same decree as the SGBP (Giuffrida, Jakab and Dale, 2013).

18.   **The funding gap of the SGBP poses serious challenges to the financial sustainability of the health sector.** The methodology for estimating financing needs for the SGBP was developed and officially adopted in 2005.[4] Costing was only partially based on actuarial studies, and was mostly based on existing financing norms with an aim of equalizing funding across the regions. A detailed study evaluating the medium-term financial sustainability of the SGBP estimated a funding gap of around 20 to 27 percent of the total cost of the Program (Manjieva et al., 2007). There has been little progress in closing this gap. Expansion of entitlements have continued to be implemented without due consideration of their fiscal impact. An example is the expansion of co-payment exemptions introduced in 2006, which included all deliveries, children between one and five years of age, and pensioners 75 years or older; these groups were not covered by the initial increase in the available budget. The way the MHIF manages to keep SGBP within the budget is through informal rationing, for example: (a) decreasing the existing financing norms (e.g., for food per patient); or (b) going into arrears, particularly in the payment for utilities (Giuffrida, Jakab and Dale, 2013).

4. Health System Outcomes

19.   **Progresses toward health-related Millennium Development Goals (MDGs) have been mixed**. Infant mortality rates declined steadily to reach 27 per 1,000 live births in 2011, down from 57.9 per 1,000 live births in 1990. In the same period, under-five mortality rate also declined from 70.3 per 1,000 live births to 30.6. The model estimated maternal mortality rate was 73 per 100,000 live births in 1990 and 71 per 100,000 live births in 2010, while the national estimate for 2010 is lower at 64 per 100,000 live births.[5] At current trends it is likely that the Kyrgyz Republic will meet Millennium Developmental Goal (MDG)4 to reduce the child mortality rate, but it is unlikely to meet the MDG5 of improving maternal mortality by 2015 (Figure 1).

20.   **Maternal and child health outcomes in the Kyrgyz Republic are comparable to countries in Central Asia and Caucasus regions and better than countries with similar development level.** Attendance by skilled health staff and immunization coverage is close to 100 percent in the Kyrgyz Republic, but there are still challenges in several Low Income Countries (LIC) and Low and Middle Income Countries (LMIC) (see Annex II). The infant and under-five mortality rates in the Kyrgyz Republic are lower than other countries in the Central Asia, except Kazakhstan, and significantly lower than the average for the LIC and LMIC. The Maternal Mortality Ratio (MMR),

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[4] Government Decree # 280, July 1, 2005.
[5] The difficulties related to the estimation of maternal mortality in the Kyrgyz Republic have been analyzed in a recent report produced by the Health Policy Analysis Center (Murzalieva et al., 2013).

according to modeled estimates, is higher than the average among developing countries in Europe and in Central Asia (ECA), but still a fraction of the average for the LIC and LMIC (see Annex II). MMR, according to the national estimates, also appears to be higher than in other countries in Central Asia. However, this could also be a result of a better reporting system in The Kyrgyz Republic, also supported by a smaller gap between the national and modeled estimates of MMR in The Kyrgyz Republic as compared to other Central Asia countries (Murzalieva et al., 2013).

Figure 1. Advances in reaching MDG targets for improving child and maternal health

Target 4.A: Reduced by two-thirds, between 1990 and 2015, the under-five mortality rate
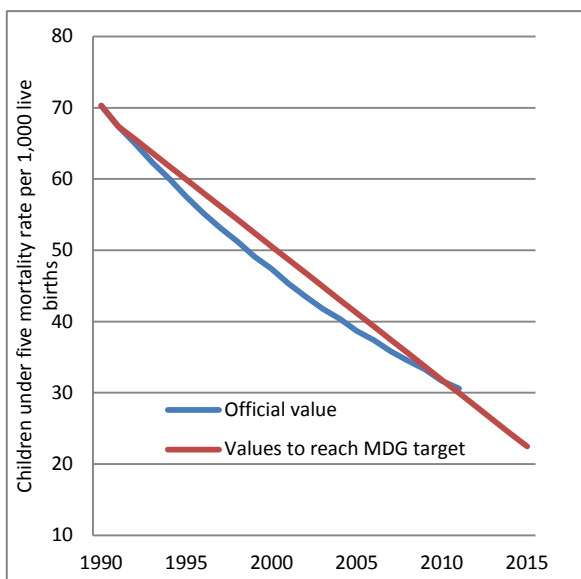
Target 5.A: Reduced by three quarters, between 1990 and 2015, the maternal mortality ratio
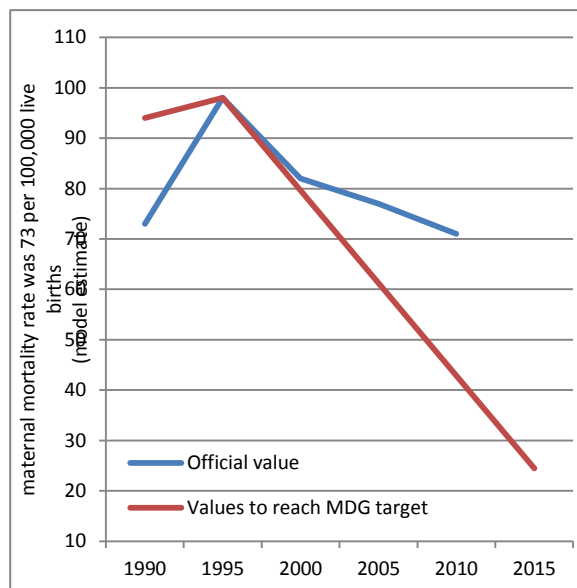
Source: World Development Indicators 2012 and author's estimates.

21.   **Tuberculosis (TB) is still a significant health problem in the Kyrgyz Republic and HIV prevalence is not stabilized.** Despite the stabilization of the morbidity and mortality rates, the epidemiological situation of tuberculosis in the Kyrgyz Republic remains unfavorable (see Annex II). Additionally, the increase in the number of TB cases that are resistant to primary and secondary drugs is evidence of serious problems at all stages of treatment. These stages include: the low capacity of detection of PHC and laboratory services, over diagnosis of TB among patients with a negative smear result, unacceptably high rates of treatment interruption, the poor organization of directly observed treatment (DOT) at PHC level, and the lack of effective social support for patients to improve adherence to treatment (Godinho et al, 2005). This, combined with the unnecessary hospitalization of patients with negative results of sputum, as well as the prolonged hospitalization of patients with a positive smear result, contributes to the nosocomial spread of tuberculosis (including multidrug-resistance TB). With respect to HIV, even if the prevalence of the disease in the Kyrgyz Republic is quite low with respect to the average level in LIC and LIMC, its prevalence has accelerated at a worrying pace in the last few years (see Annex II).

Figure 2. Cause of Mortality in the Kyrgyz Republic, 2011

(Percent)

Source: RMIC, 2012.

22. **According to available data, cardiovascular diseases (CVDs) are the first health priority in the Kyrgyz Republic.** The Soviet health system was not well prepared to address the epidemiological transition from predominance of infectious to non-communicable chronic disease and CVDs in particular (Tulchinsky and Varavikova, 1996).[6] Even if CVDs mortality rates have declined in many high-income countries, CVDs are increasing at a fast rate in low- and middle-income countries. CVDs account for about half of all deaths registered in the Kyrgyz Republic (see Figure 2).[7] In the Kyrgyz Republic mortality rates attributed to the three main types of CVDs - diseases of the circulatory system, ischemic heart disease, and cerebrovascular diseases – are the highest among Central Asia countries. Additionally, adult mortality rate among males is higher than ECA, LIC, and LIMC averages (see Annex II). These trends suggest a change in the disease burden with increased role of factors affecting adult morbidity and mortality. However, in the Kyrgyz Republic both male and female life expectancy at birth appears to compare well with the average among LIC and LIMC.

5. Health Financing

23. **The health system of the Kyrgyz Republic has three main sources of financing: public, private, and external.** Public financing includes both republican and local budgets and payroll contribution to the MHI. Private funds include household out-of-pocket payments. External financing represents funds provided by international donors. The republican budget is executed by:

- The MOH, which in its turn finances: (a) tertiary level institutions, (b) nursing homes and other care delivery institutions, (c) sanitary and prevention services and institutions, (d) administering expenditures, and (e) other health-related services (e.g., medical education).

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[6] Cardiovascular disease refers to any disease that affects the cardiovascular system, principally cardiac disease, vascular diseases of the brain and kidney, and peripheral arterial disease. The causes of cardiovascular disease are diverse, but atherosclerosis and/or hypertension are the most common. The main types of CVDs include: Ischaemic heart disease; Cardiomyopathy - diseases of cardiac muscle; Hypertensive heart disease - diseases of the heart secondary to high blood pressure; Heart failure; Cor pulmonale - a failure of the right side of the heart; Cardiac dysrhythmias - abnormalities of heart rhythm; Inflammatory heart disease; Endocarditis – inflammation of the inner layer of the heart, the endocardium. The structures most commonly involved are the heart valves. Additionally included are inflammatory cardiomegaly; Myocarditis – inflammation of the myocardium, the muscular part of the heart; Valvular heart disease; Stroke and cerebrovascular disease; and Peripheral arterial disease.

[7] Annex 5 shows the burden of diseases estimates for the Kyrgyz Republic for 2010.

- The MHIF, which is responsible for purchasing health services covered by the SGBP and the ADP. In addition to republican budget funds, the MHIF also manages the payroll contribution to the MHI.

- Other ministries and agencies finance their own health facilities (e.g., the Ministry of Defense finances Military Hospitals).

24. **Private expenditures in the Kyrgyz Republic are mainly presented by out-of-pocket (OOP) payment made by households as private health insurance is almost non-existent.** OOP payments can be formal, such as co-payments, purchase of drugs at outpatient level, and fees for services outside of the SGBP; or informal. The largest portion of OOP health payments is for the purchase of drugs, which represents about 80 percent of total private spending (Temirov, et al., 2011).

25. **Since 2006 part of the external financing to the health sector provided by international donors started to be channeled directly in the republican budget as part of Sector-Wide Approach (SWAp) arrangement.** External joint financing is made in the frame of SWAp by the following international organizations: WB, DfID, KfW, SDC, and SIDA. The remaining external funds to the health sector represent parallel financing that implement various projects in the field of health care.

26. **From 2000 to 2010 total health expenditures as a percentage of GDP increased from 4.4 to 6.2 percent**. It should be noted that health expenditures comprised the largest share to GDP in 2007 – 6.5 percent. In nominal terms, total health expenditure increased over the 2000-2010 period from KGS2.9 to 13.1 billion (an over 450 percent increase); however taking into account changes in prices, the increase in real term was still a sizable 220 percent (**Error! Reference source not found.**). In 2010, public financing (including MHI funds) comprised 2.7 percent to GDP compared to 2.1 percent in 2000. Private funds reached the level of 2.7 percent compared to 2.3 percent in 2000. It should be noted that in 2005-2006, this indicator reached 3.5 percent, but since 2007 it has declined. External financing to the health sector represents about 0.8 percent of GDP in 2010 (12.8 percent of total health expenditure), almost equally divided between joint (i.e., disbursed through SWAp arrangements) and parallel financing. Total per capita health expenditures increased between 2000 and 2010 from KGS587 to KGS2,418.60 in nominal terms, and to KGS1,107.60 adjusted for inflation.

Table 2. Total health expenditures, 2000-2010

(Kyrgyz som and percent)

	2000	2006	2007	2008	2009	2010
In nominal terms						
Total health expenditures (KGS mln.)						
Budget	1,248.2	2,421.0	2,966.9	3,873.0	4,809.1	4,944.5
MHIF	105.1	466.9	704.5	476.8	682.6	813.2
Private	1,521.4	3,921.9	4,398.4	4,823.2	5,356.6	5,671.7
External joint financing	N/A	252.6	529.7	409.1	943.2	823.5
External parallel financing	N/A	N/A	519.8	709.0	683.4	851.7
Total	2,874.7	7,062.4	9,119.2	10,291.2	12,474.8	13,104.6
Per capita rate health expenditures (KGS)						
Budget	255.0	466.5	567.9	734.1	894.1	912.6
MHIF	21.5	90.0	134.9	90.4	126.9	150.1
Private	310.8	755.7	842.0	914.2	995.9	1 046.8
External joint financing	N/A	48.7	101.4	77.5	175.4	1,52.0
External parallel financing	N/A	N/A	99.5	134.4	127.1	1,57.2
Total	587.3	1,360.8	1,745.6	1,950.5	2,319.3	2,418.6
As share out of total health expenditures (percent)						
Budget	43.4	34.3	32.5	37.6	38.6	37.7
MHIF	3.7	6.6	7.7	4.6	5.5	6.2
Private	52.9	55.5	48.2	46.9	42.9	43.3
External joint financing	N/A	3.6	5.8	4.0	7.6	6.3
External parallel financing	N/A	N/A	5.7	6.9	5.5	6.5
Total	100	100	100	100	100	100
As GDP share (percent)						
Budget	1,9	2.1	2.1	2.1	2.4	2.3
MHIF	0.2	0.4	0.5	0.3	0.3	0.4
Private	2,3	3.5	3.1	2.6	2.7	2.7
External joint financing	N/A	0.2	0.4	0.2	0.5	0.4
External parallel financing	N/A	N/A	0.4	0.4	0.3	0.4
Total	4.4	6.2	6.5	5.6	6.4	6.2
In real terms (in prices of 2000)						
Total health expenditures (KGS mln.)						
Budget	1,248,2	1,876.5	2,086.7	2,187.9	2,543.8	2,421.7
MHIF	105.1	361.9	495.5	269.3	361.0	398.3
Private	1,521.4	3,039.7	3,093.5	2,724.7	2,833.4	2,777.8
External joint financing	N/A	195.8	372.6	231.1	498.9	403.3
External parallel financing	N/A	N/A	365.6	400.6	361.5	417.1
Total	2,874.7	5,473.8	6,413.8	5,813.7	6,598.6	6,418.3
Per capita rate health expenditures (KGS)						
Budget	255.0	361.6	399.4	414.7	472.9	446.9
MHIF	21.5	69.7	94.8	51.0	67.1	73.5
Private	310.8	585.7	592.2	516.4	526.8	512.7
External joint financing	N/A	37.7	71.3	43.8	92.8	74.4
External parallel financing	N/A	N/A	70.0	75.9	67.2	77.0
Total	587.3	1,054.7	1,157.8	1,026.0	1,159.6	1,107.6

Sources: Temirov et al, 2011; MHIF data based on NHA Report 2012, unpublished.
Notes: In order to calculate health expenditures in real terms - Consumer Price Index was used (2000=100).

27.   **Private health expenditures increased, as a share of total health expenditure from 2000-2005 from 52.9 to 59.2. However, it started to decline afterward to reach 43.9 percent in 2010 (Figure 3).** This trend was determined with a number of factors. On one hand, other sources of financing increased including external health financing which reached about 13 percent of total health expenditures in 2010. Since 2004 the growth rate of public health expenditures was higher than that of private expenditures (average 7.9 percent per annum increase compared to about 0 percent growth in average of private expenditures). As a result, in 2009, the share of public health expenditures for the first time exceeded share of private expenditures (44 percent compared to 42.9 percent). Figure 3, right panel, shows dynamics of the real growth of public and private health expenditures in per capita terms. The graph shows clearly how public health spending expenditure per capita growth was lower than private health spending in the 2000-2004 period, accelerated afterward, and eventually overcome public expenditures in 2010.

Figure 3. Composition of total health expenditures, 2000-2010

(Percent)
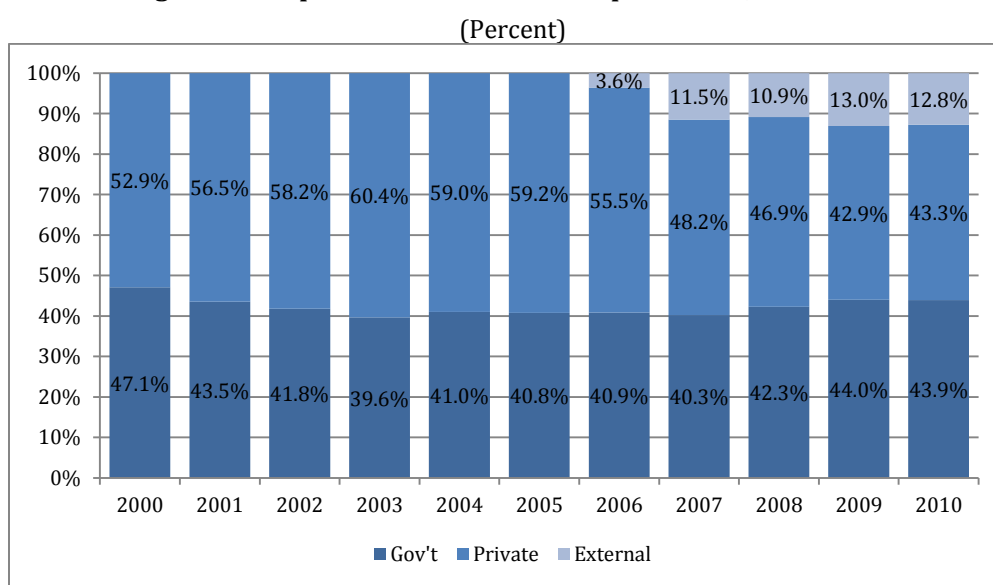
Source: Temirov et al., 2011.
Note: In 2006 external financing data include only external joint financing. In 2007-2010 external financing includes both, joint and parallel financing.

28.   **Total Health Expenditure (THE) in the Kyrgyz Republic represented in 2010 about 6.2 percent of GDP.** The level of THE in the Kyrgyz Republic is slightly higher than other countries in Central Asia and the Caucasus; it is close to the Russian Federation, but significantly lower than the average for the Eastern Europe and Central Asia (ECA) region. The public component of health expenditure in the Kyrgyz Republic is also higher than other countries in Central Asia and the Caucasus; it is again close to the level observed in the Russian Federation, but much lower than the average for the ECA region (Figure 4, left panel). Similarly, the share of health expenditures in total public expenditures in the Kyrgyz Republic is higher than other countries in Central Asia and the Caucasus; it is closer to the level observed in the Russian Federation, but again much lower than the average for the ECA region and the same pattern is observed for the total public expenditure (Figure 4, right panel).

Figure 4. Public expenditure in the Kyrgyz Republic compared with selected countries, 2011

Total health expenditure (public and private)

Public expenditure

Private health expenditure (% of GDP)
Public health expenditure (% of GDP)

Total public expenditure (% of GDP)

Public Health Expenditure (% of public expenditure)
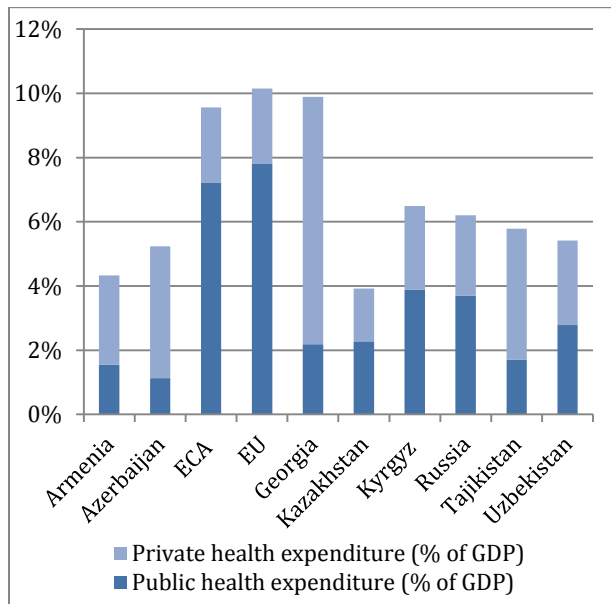
Source: World Development Indicators, 2012.
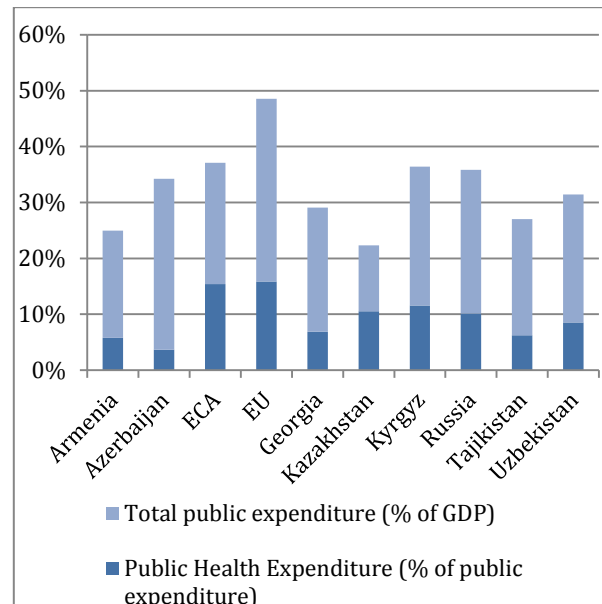
29.   **Health financing from local budgets (oblasts and rayon) has been discontinued with the exception of Bishkek city.** In accordance to the Law on "Financial and Economical Basis of the Local Self-government" adopted on September 25, 2003, the country moved from a four-level budget (republican, oblast, rayon and cities budgets) to a two-level budget (republican and oblast budgets) in order to finance health facilities. Further consolidation started in 2006 when health funds started to be pooled at national level under the MHIF, replacing the previous

Figure 5. Composition of public spending on health by administrative level, 2011

(Percent)

Source: Kyrgyz Republic BOOST v0.6 government expenditure database.

pools at oblast level. Before 2006, each oblast largely determined its own standards of financing depending on its priorities and revenue-raising capacity (MOH, 2008), leading to large differences in financing norms of same types of services in different regions. Also, pooling at the republican level allowed a gradual move to single financing norms for each type of service across all oblasts. Bishkek city is the only exception where financing of municipal health facilities remained under the local budget. As Figure 5 shows, in 2011, 87 percent of public spending on health comes from central budget and thus provides the possibility for cross-subsidization of poorer regions by the richer ones.

30.   **Differences in per capita health spending across oblasts are relatively small and partially justified (see Figure 6).** Per capita spending in Naryn oblast is 50 percent higher than per capita spending in Osh oblast. However, the use of adjustment factor to account for higher costs in high altitude regions accounts for a large part of the higher per capita health spending observed in Naryn oblast. Per capita spending in Bishkek is almost three times the spending in Chui oblast and almost twice than the national average. This gap in spending between the capital and the rest of the country is due to (a) the presence of a large number of tertiary care facilities in Bishkek; and (b) the fact that Bishkek, unlike other parts of the country, was allowed to keep funding from the local budget, which has very high revenue-raising capacity as compared to other regions. Additionally, since Bishkek is geographically located within Chui oblast it is likely that the high per capita health spending in Bishkek also benefits the remaining population in Chui.

Figure 6. Estimated per capita spending by oblast, 2011

(Kyrgyz som)
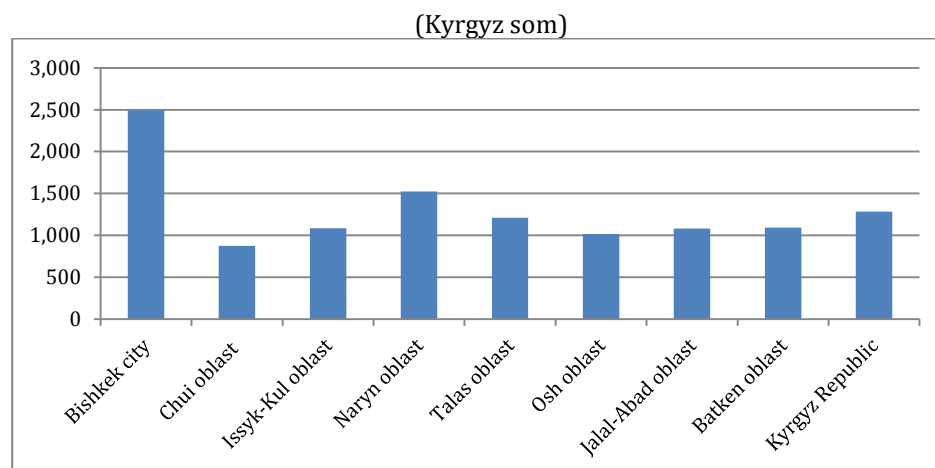
Sources: For spending data - BOOST v.6; for population data - Social and economic indicators for the Kyrgyz Republic: 2011. NSC, 2012.
Note: Only expenditures classified under Outpatient care, Hospital services, less 32120 hospital services under the State Penitentiary Service, and First-aid stations under health services are included in these estimates.

31.   **Personnel costs are the largest expenditure item in public health expenditure, absorbing more than two thirds of the total budget**. While historically high at around 50 percent of total public health spending, the personnel costs have increased significantly in 2011 due to a large increase in staff compensations in health and education sectors (see Figure 7). This measure was taken in response to the emerging wage differential between the Kyrgyz Republic and other Russian speaking countries such as Kazakhstan and the Russian Federation. This stimulates the migration of health workers and teachers and lead to widespread staff shortages, low motivation among remaining workers, and low quality of care for patients (Manjieva et al., 2008). While wage increase may have been a welcome step for attracting new and retaining existing health workforce, it has squeezed resources for other key inputs (such as food and medicine), as it was not accompanied by a commensurate increase in total public health spending. This may threaten the recent achievements in the health sector reforms as patients may be asked to cover the cost of providing food, medical supplies, and drugs.

Figure 7. Personnel-related costs in total public health spending, 2005-2012
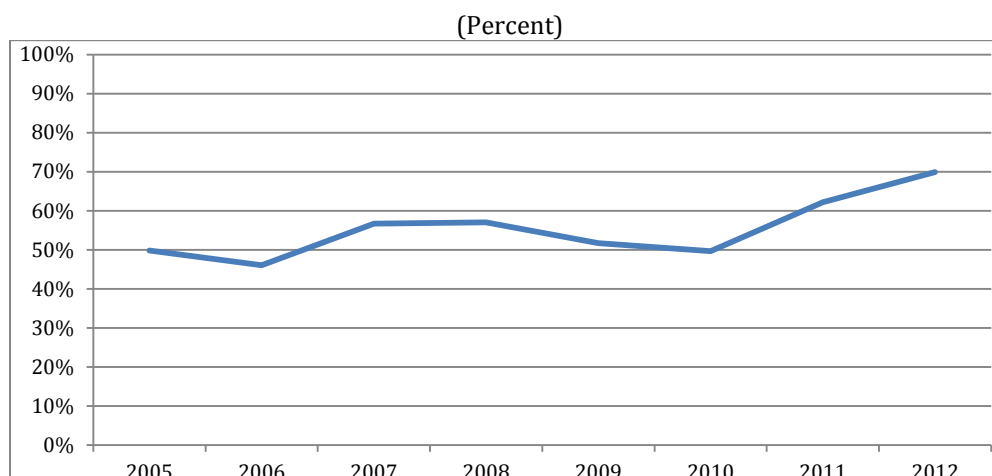
(Percent)

32. **The share of PHC expenditures in total public health spending has increased since the start of health care reforms in mid-90s.** In 1994, only 7 percent of the total public health expenditure was allocated to PHC, increasing to 10.3 percent in 1995 and reaching almost 25 percent by 2003, with accompanying decline in share of hospital expenditures from 71.7 percent to 56.8 percent (Atun, 2005). By 2011, the share of PHC expenditures in total public health spending has reached almost 30 percent, while the share of spending on hospital services has declined to 47 percent (see Figure 8). Thus, the level of spending on PHC in the Kyrgyz Republic is in line with trends observed in OECD countries. Experience from both developing and developed countries provides strong evidence that health systems with strong PHC perform better in relation to health outcomes, efficiency, effectiveness, and responsiveness as compared to systems where primary care is weak (Atun 2005).

Figure 8. Public health spending by level of care, 2009 – 2011

(Percent)
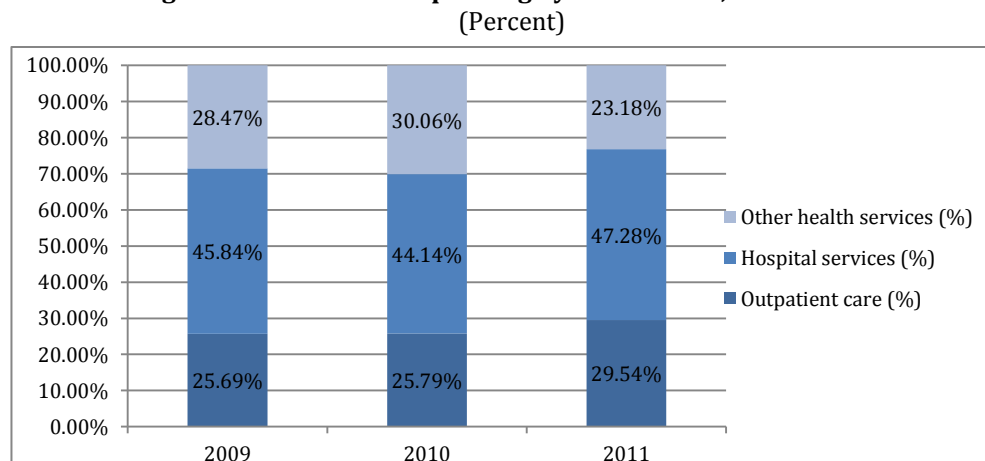
Source: Kyrgyz Republic BOOST v0.6 government expenditure database.

6. Equity in Utilization, Benefit Incidence Analysis and Financial Protection

33.   **Utilization of public health care services appears to be equal across income groups.** Table 3 shows the utilization of public health services in 2000, 2003, 2006, and 2009 across consumption quintiles. The table reports the mean values for each quintile as well as the mean values for the sample as a whole. Overall utilization of health care has increased since 2003 for both outpatient and inpatient health care services. The concentration indices provide information on the extent and direction of inequality in the utilization of health services. A positive value of the index indicates that utilization is higher among the better-off, while a negative value indicates that utilization is higher among the poor. The higher the absolute value of the index, then the more inequality in utilization there is. In all years analyzed the rich utilize more inpatient health services, and both the differences in utilization are quite low as demonstrated by the low value of the concentration index. In relation to outpatient care the utilization across income quintile is almost equal with values of the concentration index very close to zero.

Table 3. Utilization of Public Health Services by Household Income Quintile
(Percent, unless otherwise noted)

Quintiles	Inpatient level facilities				Outpatient level facilities			
	2001	2004	2006	2009	2001	2004	2006	2009
Q1 (lowest)	3.21	3.34	3.62	3.27	49.90	45.46	36.70	37.89
Q2	3.15	3.37	3.72	3.55	52.68	48.72	37.16	38.02
Q3	3.18	3.29	3.39	3.70	48.72	47.27	37.57	40.84
Q4	3.55	3.41	3.86	3.43	45.15	48.37	38.43	37.29
Q5 (highest)	3.70	3.83	3.81	3.98	51.43	44.54	38.28	38.26
Total	3.37	3.48	3.68	3.58	49.62	46.79	37.64	38.30
Concentration index	0.038	0.03	0.013	0.033	-0.006	-0.003	0.011	0.001

Source: KHHS, Health module, 2001, 2004, 2007, 2009.

34.   **Benefit incidence analysis shows that overall government health expenditure can be considered neutral, but results are sensitive to the hypothesis made.** Table 4 shows the incidence of government spending on health services. The table contains three sets of estimates of the distribution of subsidies (i.e. public health expenditures) across consumption quintiles. The first set is based on the constant unit-cost assumption (e.g., each hospital outpatient visit is assumed to cost the same, which is an amount equal to total costs incurred in delivering this type of service (e.g., subsidies plus user fees) divided by the number of units of utilization. The second set of results are based on the proportional cost assumption that the unit subsidy is constant, equal to total subsidies for the service in question divided by the number of units of utilization of that service. The third set of results is based on the constant unit subsidy assumption that assumes that higher fees for a particular type of care indicate a more costly type of care received (i.e., it is assumed that unit costs and fees are proportional to one another). The first set of results based on the constant unit-cost assumption show that overall government spending is slightly pro-poor, but the concentration index is close to zero, in particular for outpatient facilities. When unit costs are assumed to be proportional to the amount spent out-of-pocket, the overall distribution of all subsidies is pro-rich, as well and regressive is also the distribution of public spending on the ADP,

inpatient facilities and outpatient facilities in 2009.[8] When unit subsidies (rather than unit costs) are assumed to be constant then subsidies to outpatient facilities are neutral, subsidies to inpatient facilities pro-rich, and subsidies to ADP pro-poor. The overall distribution is pro-poor in 2009 and pro-rich in 2006, but the concentration indices are very close to zero in both years.

Table 4. Benefit-Incidence of Government Health Spending, 2006 and 2009

(Kyrgyz som per person, unless otherwise noted)

	Outpatient facilities		Inpatient facilities		ADP		Total subsidies	
	2006	2009	2006	2009	2006	2009	2006	2009
Constant Unit Cost Assumption								
Q1 (lowest)	2.92	5.34	8.05	10.72	0.10	0.03	0.65	1.16
Q2	2.94	5.08	7.59	13.20	0.36	0.02	0.55	1.02
Q3	3.14	4.30	7.05	10.47	0.32	0.02	0.74	0.76
Q4	2.76	4.90	7.02	10.88	0.21	0.02	0.60	0.99
Q5 (highest)	2.93	4.83	4.84	9.58	0.10	0.02	0.60	0.88
Total	2.95	4.95	6.77	10.94	0.21	0.02	0.63	0.96
Share in total subsidy	35.04	37.99	62.66	59.99	2.30	2.02	100	100
CI	0.00	-0.02	-0.10	-0.04	-0.06	-0.08	-0.02	-0.06
Proportional Cost Assumption								
Q1 (lowest)	2.36	4.95	5.10	8.19	0.24	0.02	0.46	0.97
Q2	4.97	2.53	5.00	6.86	0.15	0.02	0.55	0.53
Q3	1.84	6.41	6.00	10.62	0.15	0.02	0.55	0.88
Q4	3.43	5.84	6.15	13.65	0.18	0.02	0.59	1.21
Q5 (highest)	2.79	5.17	10.35	14.99	0.33	0.03	1.00	1.21
Total	2.95	4.95	6.77	10.94	0.21	0.02	0.63	0.96
Share in total subsidy	35.04	37.99	62.66	59.99	2.30	2.02	100	100
CI	-0.03	0.07	0.17	0.16	0.12	0.06	0.14	0.10
Constant Unit Subsidy Assumption								
Q1 (lowest)	2.88	4.89	6.65	9.97	0.10	0.02	0.57	1.07
Q2	2.91	4.91	6.84	10.84	0.37	0.02	0.51	0.89
Q3	2.95	5.27	6.22	11.31	0.32	0.02	0.67	0.85
Q4	3.01	4.82	7.11	10.48	0.21	0.02	0.62	0.96
Q5 (highest)	3.00	4.94	7.01	12.15	0.10	0.02	0.76	1.03
Total	2.95	4.95	6.77	10.94	0.21	0.02	0.63	0.96
Share in total subsidy	35.04	37.99	62.66	59.99	2.30	2.02	100	100
CI	0.011	0.001	0.013	0.033	-0.065	-0.04	0.056	-0.004

Source: KHHS, Health module, 2006, 2009.

35.   **The incidence of catastrophic OOP health payments in the Kyrgyz Republic is relatively small compared to other countries.** One key objective of health systems is to ensure

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[8] The ADP received an allocation of KGS119 million and executed KGS101 million in 2010, which represented around 1.8 percent of total public health funds. In 2012, a new and expanded medicines reference book was put into force and allocation to the ADP increased significantly to reach KGS186 million, but execution was just below KGS 149 million.

financial protection against OOP health spending. The extent of financial protection in health spending is measured by calculating the share of OOP payments versus total or non-food household expenditures. If the share of OOP health payments exceeds a certain threshold it is deemed a "catastrophic health expenditures." An alternative methodology to measure financial protection is to calculate the effect on poverty measures (i.e., headcount poverty, poverty gap, and normalized poverty gap) once the amount of OOP health payments is subtracted from the disposable household income. Figure 9 indicates the incidence of OOP payments exceeding the thresholds of 10 and 15 percent of non-food expenditures in the Kyrgyz Republic, and in various countries that form the ECA region. The proportion of households in the Kyrgyz Republic whose OOP health payment exceeded 10 and 15 percent of non-food consumption were 11.7 and 8.6 percent, respectively.

Figure 9. Incidence of Catastrophic Payments, more than 10 and 15 percent of non-food consumption

(Percent)
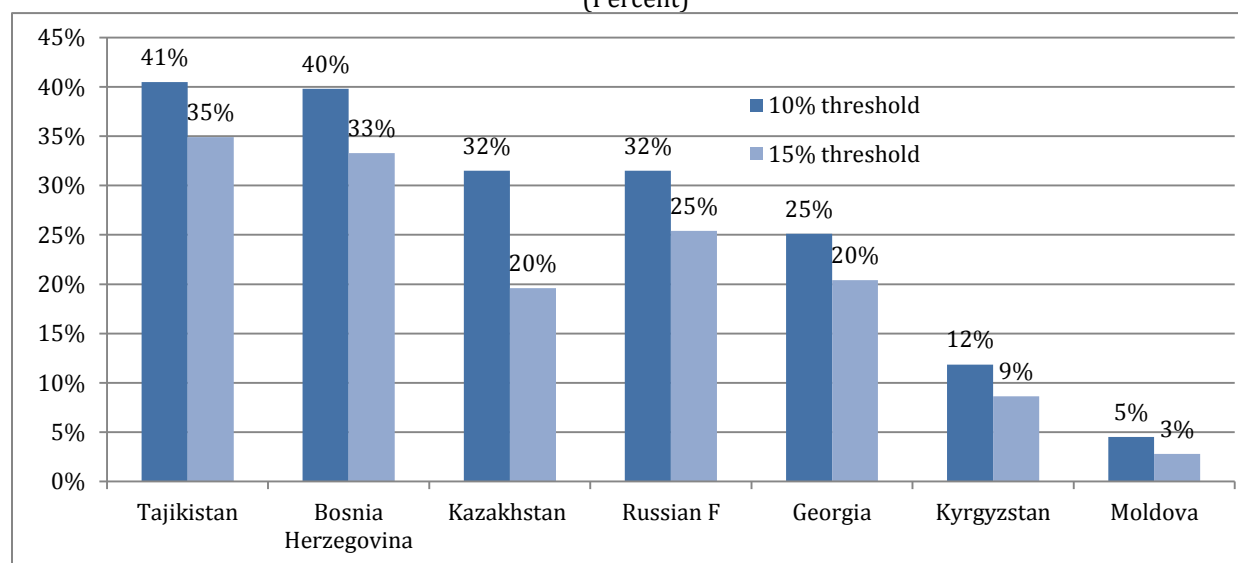
Source: Jakab (2013 forthcoming); Akkzieva and Temirov (2013).[9]

36.   **The poverty impact of OOP health payments is relatively mild in the Kyrgyz Republic.** Table 5 summarizes the absolute and relative changes of OOP health spending on different poverty measures. If OOP health payments are subtracted from non-household consumption, the percentage of poor household (i.e., poverty headcount) increases by 1.3 percent in 2009, which represents approximately a three percent increase in poverty rate. Even if this is much lower than the values measured in other countries, such as Tajikistan (8.5 percent and 10.7 percent in 2009 and 2011 respectively), the impact on poverty headcount has increased significantly over the 2004-2011 period. On the other hand the intensity of poverty measured by the poverty gap that measures the average shortfall of the total population from the poverty line is smaller and has increased less rapidly over the 2004-2009 period. The results are not much different when the results on poverty gap are normalized on the poverty line.

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[9] Evidence from Akkzieva and Temirov's Kyrgyz Health Equity and Financial Protection report (2013). This section has benefited from the report's analysis.

Table 5. Poverty impact of OOP health expenditures

(Percent, unless otherwise noted)

	Gross of health payments	Net of health payments	Change	Percent change
Poverty headcount (percent)				
2004	63.70	64.10	0.40	0.63
2007	40.80	41.70	0.90	2.21
2009	43.00	44.30	1.30	3.02
Poverty gap				
2004	1,992.10	2,013.40	21.30	1.07
2007	1,046.70	1,087.20	40.50	3.87
2009	1,907.20	1,956.50	49.30	2.58
Normalized poverty gap (percent)				
2004	21.90	22.10	0.20	0.91
2007	9.10	9.40	0.30	3.30
2009	9.80	10.10	0.30	3.06

Source: KHHS, Health module, 2001, 2004, 2007, 2009.

7. Efficiency Measures to Reduce the Funding Gap of the SGBP

IMPROVING THE TARGETING OF CO-PAYMENT EXEMPTIONS

37. **The current policy of co-payment exemptions based on privileged social categories and priority medical conditions covers a large number of patients and is very costly.** In the year 2012, more than 637,507 patients benefited from co-payment exemption, at a cost of about KGS3,653 million (about US$76 million), representing around 69 percent the total number of patients served in the year. However, even if the current policy identifies 28 privileged social categories and 21 priority medical conditions, beneficiaries and costs are concentrated in few population groups: children under the age of five, pregnant women, and pensioners, which represent 86 percent of all cases exempt and 80 percent of the cost (see Table 6).

38. **Current policy of co-payment exemptions is compared with the methodology used to identify beneficiaries of the Monthly Benefit for Poor Families (MBPF) and a potential Proxy Means Test (PMT) methodology.** The MBPF is an unconditional cash transfer program that awards monetary benefits to poor families with children. The MBPF is the only social assistance program in the Kyrgyz Republic that is means tested (i.e., eligibility is dependent on applicant's income). PMT is the process of estimating applicant's welfare using characteristics of the applicant that are easy to verify and difficult to change and empirically correlated with their income or consumption. The households with a predicted consumption below a threshold, or cut-off level, are deemed eligible, whereas those whose predicted consumption lies above the cut-off are deemed ineligible. WHO-EURO simulated a potential PMT methodology to identify the beneficiaries of co-payment exemptions (Jamal and Jakab, 2013). The variables used to construct the potential PMT and the estimated regression coefficients are available in Annex III.

Table 6. Number and costs of co-payment exemptions provided in 2012
(Kyrgyz som, unless otherwise noted)

	Cases	Total value amount KGS	Cost per case KGS
Veterans of WW2	1,214	9,590,008	7,900
Disabled	61,688	478,141,076	7,751
Children	266,745	1,145,250,211	4,293
Pensioners	97,394	711,242,644	7,303
Other social categories	7,075	52,886,771	7,475
Acute myocardial infarction	1,372	16,638,452	12,127
Tuberculosis	642	13,631,931	21,234
Diabetes	11,194	98,730,720	8,820
Pregnant women	183,298	1,061,701,498	5,792
Other medical conditions	6,885	65,448,047	9,506
Total exempted	637,507	3,653,261,358	5,731

Source: Authors' calculation based on MHIF data.

39.   **Based on WHO study, the current policy of co-payment exemptions does not focus on the poor.** Ideally, a program that focuses to the poor would have high coverage in the bottom two quintiles of the income distribution, and none in the other quintiles. In contrast, Figure 10 shows that the targeting performance of the current policy is not much better than random allocation of exemptions to 47.6 percent of the covered population. The MBPF program is much more pro-poor and concentrated in the bottom two quintiles of the population. However, the MBPF is a small program that covers just ten percent of the population, compared with 47.6 percent for the current policy. In the simulation of a potential PMT the eligibility threshold has been set so that the overall coverage is equal to that for the current policy, to facilitate the comparison between the two alternative methodologies. The potential PMT is also pro-poor and it achieves much higher coverage rates for the bottom two quintiles and much lower rates of coverage for the top two quintiles, than does the current policy.

Figure 10. Coverage of co-payment exemptions policies by income quintile
(Percent)
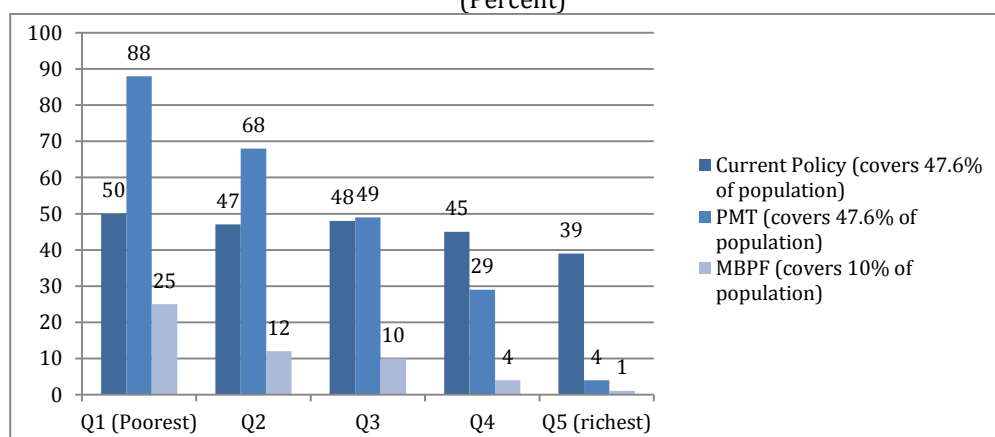
Source: WHO analysis of 2010 KIHS data.

40. **The inclusion and exclusion error rates of the current policy to identify co-payment exemptions are both high.** Under current policy, 57.5 percent of beneficiaries are not in the bottom two quintiles of the income distribution and 51.3 percent of the bottom two quintiles are not exempted from co-payment.

Table 7. Inclusion and exclusion error rates for the SGBP, the MBPF, and the proposed PMT

(Percent)

Program	Inclusion error rate (percent)	Exclusion error rate (percent)
Current policy	57.5	51.3
MBPF	28.3	81.5
Potential PMT	34.5	21.7

Source: WHO analysis of 2010 KIHS data.

On the other hand the inclusion error rate of the MBPF is much lower at 28.3 percent; however, the exclusion error rate is much higher (at 81.5 percent) because of the small size of the program. The results for the proposed PMT on the whole are better. The inclusion error rate of 34.5 percent is much lower than current policy, but still higher than the MBPF. However, the exclusion error rate of a potential PMT is estimated at 21.7 percent that is much lower than that for both the current policy and the MBPF (see Table 7.)

41. **The simulation exercise demonstrates that alternative policies could be used in the Kyrgyz Republic to achieve more pro-poor population coverage.** Children under the age of five, pregnant women, and pensioners are the three largest exempt groups. These groups about 80 percent of all public subsidies provided for co-payment exemptions. Figure 11 shows that under current policy only 43 percent of public subsidies benefit the bottom two quintiles. On the other hand, the MBPF and the potential PMT would direct 67 and 71 percent of all resources to the bottom two quintiles, respectively.

Figure 11. Alternative allocation of resources used to exempt children, pensioners and pregnant women among income quintiles

(KGS million)
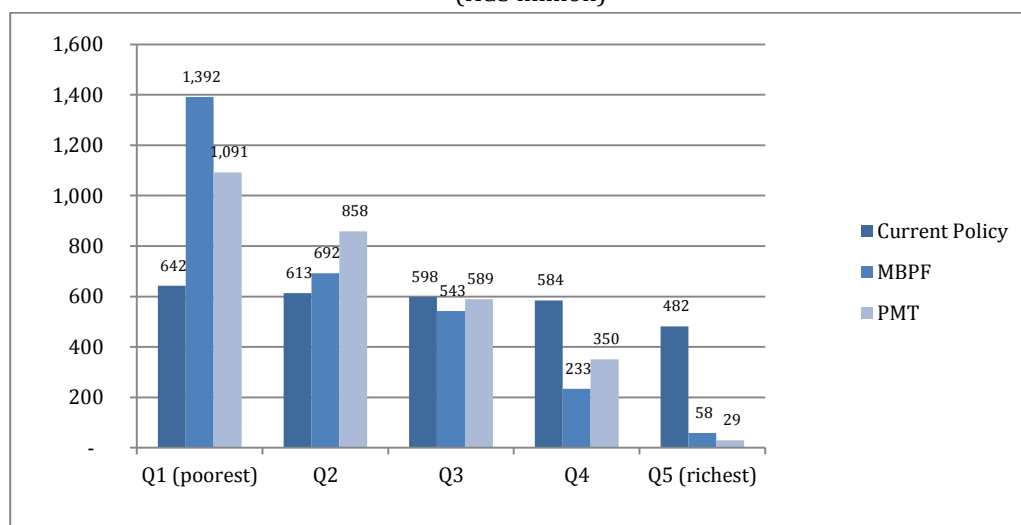
Source: Authors' calculation based on WHO analysis of 2010 KIHS data.

42. **The three alternatives to target co-payment exemptions require different levels of capacity.** The simulation exercise demonstrated that the mean-tested methodology (e.g., the MBPF) and PMT could be used in the Kyrgyz Republic to achieve a more efficient (i.e., pro-poor) population coverage of co-payment exemptions. However, each option has advantages and disadvantages that are summarized in Table 8 below. The main advantages of mean-tested and

PMT methodologies over the current policy are their relative efficiency and the possibility of adjusting the eligibility threshold to match overall coverage to the resource available. Mean-tested methodology has the additional advantage of being already implemented by the Ministry of Social Development (MoSD). However, intensive capacity building would be needed to transfer this methodology to the health sector together with investments to set up the new systems for application, enrolment, and verification would be required. It is worth noticing that even the current policy of co-payment exemptions and the MBPF, which have been in place for years, are paper-based programs. However, investments in Informational Technology (IT) to set up modern systems would be needed. The final suggestion in order to avoid reducing coverage requires eliminating categories, which could be difficult politically. As noted earlier the top three categories, children under the age of five, pregnant women comprise the majority of exempt cases and public subsidies. Therefore, it is probably more efficient to focus on improving the targeting of these three population groups.

Table 8. Advantages and disadvantages of the three targeting options

Option	Advantages	Disadvantages
Current policy	Simplest to implement	Inefficient: excludes too many poor and includes too many non-poor Reducing coverage requires eliminating categories, which could be difficult politically
Mean-tested	Means tested are already used to target social assistance programs (i.e. MBPF) Pro-poor Can adjust threshold to increase coverage	New program – would require setting up systems for application, enrollment, verification, appeals and other processes
Potential PMT	Pro-poor Efficient: covers much of the poor and not too many non-poor Can adjust threshold to change inclusion error rate, exclusion error rate and overall coverage	New program – would require setting up systems for application, enrollment, verification, appeals and other processes

Source: WHO analysis.

MODERNIZING HOSPITAL SERVICES

43.   **Important rationalization of hospital services took place in the Kyrgyz Republic.** The Semashko health system model adopted in Soviet time is a specialty oriented health system with each type of hospital (children, obstetrics, tuberculosis, etc.) having their own facilities and their own staff and organizational structure (national, oblast, city, rayon), with separate laboratories, pharmacies, and beds. As showed in Figure 12, the number of hospital beds per 100,000 people in the Kyrgyz Republic during Soviet time was about 50 percent higher than the EU countries. The overall number of hospital beds in the Kyrgyz Republic was rapidly rationalized after independence to a level well below the EU average.

Figure 12. Hospital beds per 100,000 population, 1990-2011
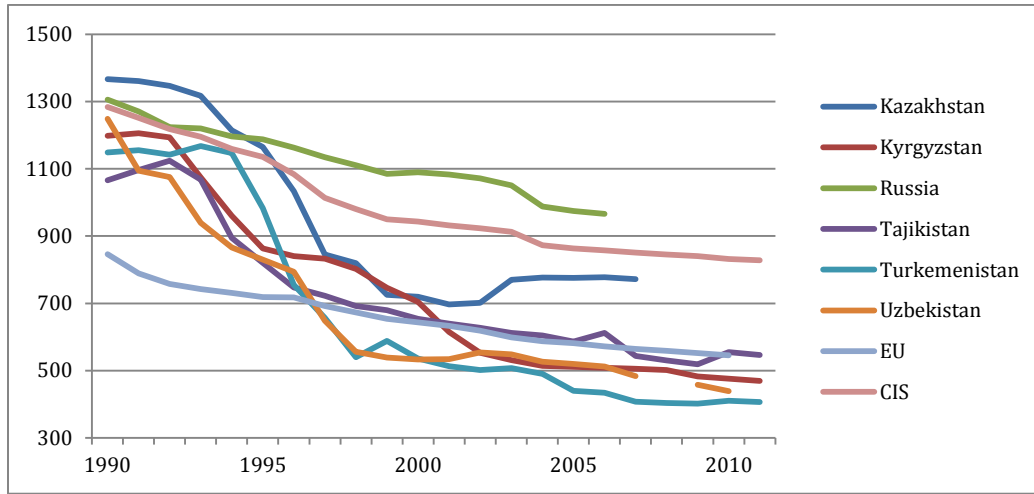
Source: WHO/Europe, European HFA Database, January 2013.

44.   **The optimization of the hospital networks in Bishkek and Osh has not been implemented**. Several studies estimated that substantial saving could be achieved by the optimization and rationalization of hospital services in Bishkek and Osh (see Street, Haycock, 1999; MOH-AGEG, 2009, Lewis et al, 2012). However, notwithstanding the various plans developed there has been little implementation, especially in Bishkek. Specific problems include: (i) the difficulties in determining the catchment population, as several hospitals located in Bishkek and Osh also perform referral functions for the entire country; (ii) the existence in Bishkek of health facilities outside the single payer system of the MHIF that are financed by local administration; and (iii) the provision of *paid services* at secondary and tertiary facilities in Bishkek and Osh allows these hospitals to survive financially, notwithstanding the rationale for optimization.

45.   **The positive effects of hospital beds reduction on costs were limited.** The effect of hospital beds' reduction on costs is context specific, as it depends on the payment and incentive system in place. In an environment where hospitals are remunerated on the base of the activity performed (e.g., case-based payment based on DRG) without an overall cap on hospital expenditures, the reduction of hospital beds has been associated globally with a reduction in average length of stay (ALOS), increased turnover, and overall increase in the number of case treated (McKee, 2004). This has been indeed the pattern observed in the Kyrgyz Republic: where in parallel with the reduction of hospital beds, the country experienced a significant reduction in the ALOS, but also an increase in the number of treated cases (see Figure 13, left panel). It is worth noting that the increase in the hospitalization rate is probably related to the amendment in the SGBP introduced in 2004, which provided co-payment exemptions (i.e., free hospital services) to pregnant women, children under 5, and pensioners over 70 years old (see Figure 13, right panel).

Figure 13. ALOS and in-patient care discharges per 100s, all hospital beds

(Days)

(Hospitalization cases)
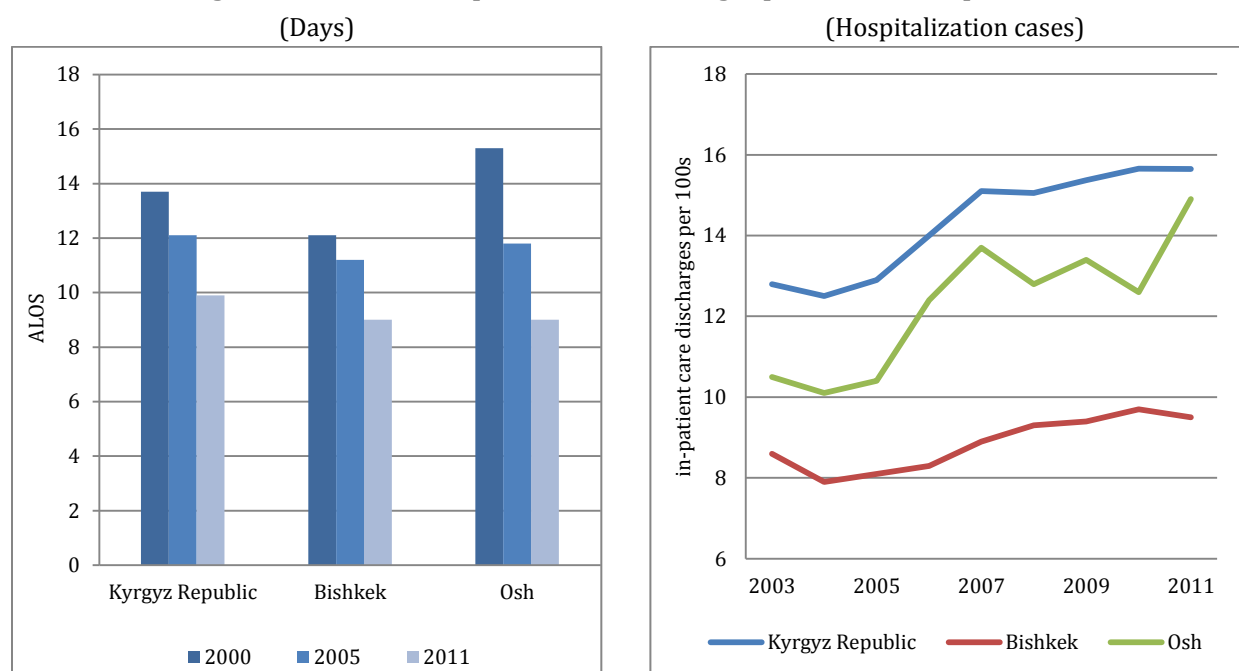
Source: RMIC.

46. **The introduction of modern technologies can reduce further the number of hospital beds used in the Kyrgyz Republic.** A recent study (Lewis et al., 2012) showed there are a number of medical procedures for which patients are currently hospitalized, but which do not require hospital stay if modern technologies—such as day surgery and laparoscopic surgery—are used.[10] For example, the current ALOS for cataract surgeries in the Kyrgyz Republic is eight days, whereas according to current clinical guidelines it is a procedure that does not require hospital stay. Reducing ALOS for cataract surgeries from eight days to one day would reduce the number of bed days from the current 23,208 to 2,901, or a drop of 87.5 percent (Lewis et al, 2012).

47. **The introduction of modern technologies would benefit the patients and improve health outcomes, but not necessarily reduce costs in the short term.** The investment in new technology would revolutionize the treatment of a number of common diseases. It would enable citizens to return to their homes the same day after treatment, it would cut back on the time to recover and to return to work, and it would significantly reduce the personnel costs (both direct costs and the opportunity costs of reduced income). However, it is worth noting that the introduction of modern technologies requires investments in equipment and training. Additionally, the costs directly attributable to the last day of a hospital stay are an economically insignificant

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[10] Consultations with the MOH defined a list of about 30 interventions and procedures that are suitable for day surgery: uncomplicated hernia repairs, purulent formation skin and subcutaneous fat dissection; excision of Dupuytren's contracture; surgical treatment of uncomplicated varicose veins of lower limbs; dissection of paraproctisis; treatment of varicocele; elimination of cryptorchism in children over three years; elimination of hydrocele; elimination of priapism; circumcision; osteosynthesis of uncomplicated fracture; dissection of anal fissure; polysectomy and condylomectomy of rectum; cataract; adenotomy; nasal polypotomy; and tonsillectomy and tonsillotomy.

component of total costs.[11] Finally, the payment system needs to encourage the introduction of the proposed day surgery, which does not penalize the use of new technologies, through the use of reimbursement rates that have lower margin than traditional procedure (Castoro et al., 2007).

48.   **It is possible to reduce the number of unnecessary hospitalizations.** The issue of appropriateness of hospitalizations has been coming under closer scrutiny since the significant upward trend in the hospitalization rate that started in 2004. A study on appropriate hospitalizations among pregnant women and children under five years of age found that only two-thirds of hospitalizations of pregnant women with hypertensive disorders were appropriate, while less than half of hospitalizations of children with bronchopneumonia were appropriate (Murzalieva et al., 2010). The MHIF estimates that between 20 and 30 percent of all hospitalizations are unnecessary.

49.   **Theoretically, substantial savings could be made by decreasing the hospitalization rate.** For simplicity we take the base reimbursement rate (i.e., the average cost of a hospitalization) to estimate the total cost of hospitalizations to the state budget. As demonstrated in Table 9, taking 2011 as the baseline, we estimated that hospitalization rates reduced by five, ten, and fifteen percent in Bishkek, Osh, and for the entire country, respectively. Even a modest reduction of five percent, which would bring the hospitalization rate close to its 2007 level, would reduce total public health expenditures by about three percent. A 15 percent reduction in the hospitalization rate represents approximately the same level of hospitalization as the one observed in 2004 (13 per 100 people), which is the year when hospitalization seems to have started its upper trend. This would potentially reduce the public health expenditures by more than nine percent. Reducing hospitalizations in the two main cities of Bishkek and Osh would produce more modest savings.

Table 9. Potential reduction in health expenditures from the reduction in hospitalizations

		Percent Reduction from baseline		
Number of hospitalizations	Baseline	5	10	15
Bishkek	82,301	78,186	74,071	69,956
Osh	38,021	36,120	34,219	32,318
Entire country	862,838	819,696	776,554	733,412
Expenditures on hospitalizations (KGS)				
Bishkek	534,956,500	508,208,675	481,460,850	454,713,025
Osh	247,136,500	234,779,675	222,422,850	210,066,025
Entire country	5,608,447,000	5,328,024,650	5,047,602,300	4,767,179,950
Expected reduction in expenditures (KGS)				
Bishkek		26,747,825	53,495,650	80,243,475
Osh		12,356,825	24,713,650	37,070,475
Entire country		280,422,350	560,844,700	841,267,050
Reduction as a percent of total public health expenditures				
Bishkek		0.30	0.59	0.89
Osh		0.14	0.27	0.41
Entire country		3.11	6.22	9.33

Source: authors' calculation based on MHIF data.
Note: The average cost of hospital case to the state budget is KGS 6,050.

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[11] It has estimated that a reduction of the hospital length of stay by a one full day reduces the total cost of care on average by three percent or less,(see Taheri et al. 2000).

50.   **A number of conditions are necessary to reduce unnecessary hospitalizations and reduce hospital expenditures**. The increase in the hospitalization rate is likely to be the result of both supply and demand factors. From the supply side, the pressure to increase hospitalizations is the expected result of the introduction of DRG-based payment system, as hospitals respond to the new payment system increasing activities to maximize their revenues (Jegers et al., 2002). Therefore, the experiences of European countries that have introduced DRG-based payment systems together with volume ceilings and other macro-level mechanisms to control hospital costs are relevant to the Kyrgyz Republic (Cots et al., 2011). It is not surprising that a surge in hospitalizations followed the 2004 expansion in co-payment exemption provided to children under the age of 5, pensioners older than 70 and pregnant women, since the removal of any co-payment is likely to create an increased demand for hospital services. The proposals presented in the previous section, to reduce the scope and improve the targeting of co-payment exemptions under the SGBP, could have the additional benefit to control unnecessary hospitalizations. Finally, we should also take into account the initial investment costs—such as changes in clinical guidelines, re-training, and improvement in the management at PHC level—as alternative modes of care should be provided (Beech and Larkinson, 1990).

IMPROVING COST-EFFECTIVENESS OF PRIORITY DISEASES

51.   **Improved management and prevention of cardio-vascular diseases (CVDs) can reduce costs and save lives.** CVDs are a key health priority in the Kyrgyz Republic (see paragraph 0), but also very expensive. Table 10 shows the number of hospitalizations, the cost per treated case, and total cost for the public budget by type of CVD for 2011. Hospital-based care of CVDs cost approximately KGS300 million in 2011. While a portion of these hospitalizations is unavoidable, a significant part of these are preventable. Conditions such as hypertensions could be prevented with information and education campaigns, and managed effectively at primary care level without requiring hospitalization, except in complicated cases. International experience has shown that population and PHC-based interventions that enhance primary and secondary prevention of CVDs can improve health outcomes at a lower cost (Jamison, et al, 2006).

Table 10. Cost of hospital-based care of CVDs, 2011

(Kyrgyz som, unless otherwise noted)

Type of CVD	Number of treated cases	Average reimbursement rate for treated case (KGS)	Total cost (KGS)
Cerebrovascular diseases	15,274	3,074	46,952,276
Hypertension	16,035	3,552	56,956,320
Acute myocardial infarction	3,117	5,991	18,673,947
Angina	19,464	3,808	74,118,912
Other CVDs	20,031	4,165	83,429,115
Phlebitis, thrombophlebitis and varicula	828	3,529	2,922,012
Peripheral vascular disease	2,294	3,971	9,109,474
Total			292,162,056

Source: MHIF database, 2012.

52. **Mass media educational campaigns, risk factor screening at PHC and pharmaceutical secondary prevention are cost-effective interventions.** According to the study by Akkazieva, et al. (2009) that analyzed the cost-effectiveness of various interventions to control CVDs in the Kyrgyz Republic, found that educational campaigns through mass media about benefits of reducing smoking, cholesterol level, and daily salt intake were considered to be highly cost effective, as the cost per Disability Adjusted Life Year (DALY) averted was KGS4,705 per person per year. According to the same study, the provision of hypertension-lowering drug treatment to an individual whose systolic blood pressure is over 160 is also highly cost-effective, as it costs KGS7,615 per DALY averted. Finally, the screening of risk factor at PHC is also a highly cost-effective intervention, as it costs KGS10,972 per DALY averted. The increase of tobacco taxes is presented in Box 1 below. Thus, it is clear that investments in prevention and control of CVDs could save premature deaths.

53. **Access and utilization of cost-effective drugs for the secondary prevention of CVDs is inadequate.** Even if cost-effective drugs for the secondary prevention of CVDs (such as diuretics, ACE inhibitors, and beta blockers) are available through the ADP it has been estimated that only two percent of those with high blood pressure are able to control it (Jakab et al., 2007), which represents its lowest share among European and Central Asia countries (World Bank, 2013). The low capacity in controlling CVDs risk factors depends from a number of factors: (i) only 27 percent of those with high blood pressure are actually aware of the problem (Jakab et al., 2007); and (ii) only 17 percent of those with high blood pressure are under drugs treatment (Jakab et al., 2007). The limited budget available for the ADP (see Table 4) provides subsidies that cover only about 50 percent of the drug's prices and financial barriers still limit access to cost-effective drugs. Additionally, the population not covered by the MHIF does not receive the benefits of the ADP. Therefore, effective CVDs prevention and management in the Kyrgyz Republic requires a comprehensive approach that includes information educational campaigns, improved screening at PHC level, and improved access to cost-effective drugs treatment.

Box 1. Increase Tobacco taxes to improve individual and fiscal health

The Kyrgyz Republic has a high prevalence of tobacco use: 45 percent among men and a much lower 1.6 percent among women. Although most tobacco use is smoking cigarettes, seven percent of men use smokeless tobacco (Nasvay). For children between 13-15 years, smoking is down slightly between 2004 and 2008, but other forms of tobacco use are up, particularly for girls. Mortality from smoking is estimated to be high, as mortality from CVDs increased significantly following smoking prevalence. Total taxes per cigarette pack are low, ranging from 18 to 28.6 percent. As **Error! Reference source not found.** shows, The Kyrgyz Republic has one of the lowest tobacco excise tax rates in Europe and Central Asia. It is lower than both Kazakhstan and Uzbekistan. Moreover, according to WHO (2013), the total taxes per pack have actually decreased in The Kyrgyz Republic since 2008 from 15.5 to 7.6 percent, which is contrary to the international trends and evidence. World Bank (Yurekli, 2000) and WHO recommendations, based on countries which have successfully brought down smoking prevalence, are in the range of 70-80 percent.

Based on the above, an increase in the level of tobacco taxes seems one of the most feasible options for efficiency gains, since it would reduce tobacco consumption and increase government revenues. While earmarked taxes are not envisaged, the increased tobacco taxation would improve general tax revenue, and indirectly help public health spending. Tobacco excise taxes make an invaluable contribution to the state excise revenue in The Kyrgyz Republic. According to the report of the national treasury, in 2012 the share of excise on cigarettes represented 39 percent of total excises. Taking into account that initial tax burden on tobacco industry is extremely low, if harmonization within Custom's Union or 80 percent of mean excise in Russia is realized, excise revenue on cigarettes could increase up to 5.26 billion (in 2011 prices) by 2015, which is nearly 2.5 times more than all excise revenue in 2011 (about 2.19 billion soms, as reported by national treasury). In addition, the reduction in tobacco consumption would also have a positive effect on health. The prevalence of daily cigarette smoking will decrease to 21.3 percent, which will allow about 50 thousand lives to be saved (Demisova, Kuznetsova, Karteseva and Balter, 2013).

Figure 14. Comparison of cigarette taxes as a percentage of price per pack

(Index)
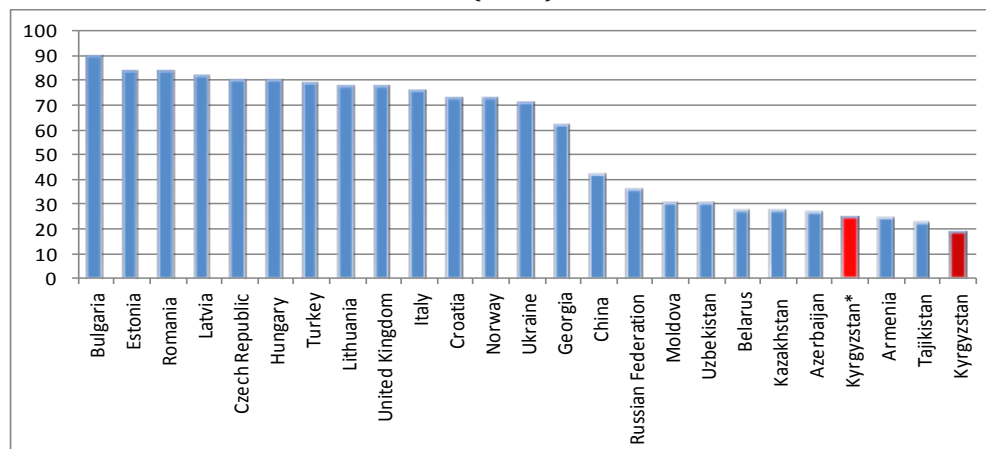
Source: The Tobacco Atlas: http://www.tobaccoatlas.org/solutions/tobacco_taxes/excise_tax/

SELF-FINANCING OF DENTAL AND BALNEOLOGY SERVICES

54. **Self-financing pilots of outpatient dental services, balneology and rehabilitation services are currently considered.** At the moment, the state budget finance salary, utilities, and other expenditures of outpatient dental clinics, but services provided are free only for pregnant women, pensioners, and children under five. The MOH and the MHIF are planning a self-financing pilot for dental clinics in Bishkek. Under self-financing pilot arrangements, the state budget would cease to co-finance salary, utilities, and other expenditures, but would continue to cover basic dental services included in the SGBP in the form of per capita funding. Similar arrangements are considered for facilities providing spa, balneology, and rehabilitation services.

55. **Private provision of services and public provision of targeted subsidies would be a more efficient and equitable alternative**. Expenditures under the outpatient dental services (KGS171 million), spa resorts and convalescent homes (KGS14 million), plus Kyrgyz Balneology and Rehabilitation Research Institute (KGS58 million) make up approximately KGS243 million, which is approximately three percent of government health expenditures (republican and local budget less special means) (see Table 11). Therefore, a significant part of these resources could be used to finance targeted subsidies to the most vulnerable population and to cover core services of the SGBP.

Table 11. Total health budget, excluding special means, by expenditure type, 2008 – 2011

(Kyrgyz som)

	2008	2009	2010	2011
Total budget funds	4,338,909,300	5,996,595,807	6,584,579,316	8,977,834,928
7070 Health		139,000,000	241,000,000	214,000,000
70700 Health		139,000,000	241,000,000	214,000,000
7072 Outpatient care	1,069,692,500	1,568,196,914	1,725,915,070	2,692,081,130
70721 General health services	996,799,500	1,466,663,200	1,592,080,571	2,477,898,868
70722 Specialized health services			26,382,500	43,390,538
70723 Dental services	72,893,000	101,533,714	107,451,999	170,791,724
7073 Hospital services	2,140,142,300	2,723,530,354	2,879,185,630	4,223,167,837
70731 General hospital services	1,332,889,500	1,739,830,461	1,861,612,806	2,732,215,160
70732 Specialized hospital services	525,821,900	640,983,693	693,798,242	995,567,685
70733 Medical centers, gynecological hospitals and maternity homes	77,833,600	89,080,000	80,742,700	121,417,820
70734 Spa resorts and convalescent homes	11,209,800	15,929,500	17,938,100	13,543,500
70735 Hospitals and rehabilitation centers for children	192,387,500	237,706,700	225,093,782	360,423,672
7074 Health services	631,484,400	452,481,555	488,321,676	656,239,391
70741 First-aid stations	315,692,300	69,363,700	74,133,900	97,690,599
70742 Blood transfusion stations	26,297,500	35,180,500	41,275,300	48,698,580
70743 Sanitary and epidemiological stations and centers for quarantine and hazardous infections	197,889,600	241,730,800	253,647,699	366,225,982
70744 Disinfection stations		4,214,000	4,946,700	6,753,600
70746 Child-care centers, rooms for mothers and children	22,142,100	25,716,900	23,457,800	32,809,681
70747 AIDS centers	17,633,000	23,267,555	22,829,023	33,734,500
70748 Health promotion centers and health education activities	4,799,900	9,324,700	4,655,700	6,912,549
70749 Other health services	47,030,000	43,683,400	63,375,554	63,413,900
7075 Research and development -- Health care	77,277,600	92,928,330	88,876,900	129,433,515
70751 R&D -- Healthcare	77,277,600	92,928,330	88,876,900	129,433,515
7076 Health not classified elsewhere	420,312,500	1,020,458,654	1,161,280,040	1,062,913,055
70761 Healthcare not classified elsewhere	351,253,100	926,279,154	1,061,456,340	982,053,455
70769 Other health services	69,059,400	94,179,500	99,823,700	80,859,600

Sources: BOOST, WB Database, Functional classification.

HARMONIZING RULES OF FINANCING SOURCES

56. **The SGBP is financed by four sources of funds: budget sources, MHI / Social Fund payroll contribution, patient co-payment, and special means.** Each of these sources has different spending rules and until recently, when co-payments were integrated into the Central Treasury system, had to be reported separately. Still, there are now three (instead of four) different accounts and reports that increase the workload of accounting staff at facilities. Additionally, the use allowed for each different financing source differs; in particular the flexibility allowed for MHI / Social Fund payroll contributions is not permitted for budget sources.

57. **An immediate benefit from harmonization of spending rules and reporting would be potential savings from reduction of staff positions in accounting.** There is a large variation in facilities in the number of financing and accounting staff positions. For example, the ratio of medical

staff positions to financing accounting staff positions in Panfilovskiy rayon is 17 as compared to 8.7 in Keminskiy rayon (MHIF administrative data, 2012). While such detailed data is not available for the entire country, examining the ratio of administrative and other personnel to medical staff makes it clear that certain facilities could benefit from reductions of non-medical staff. Table 12 and Table 13 provide the ratio between medical and administrative staff, which includes accounting and financing staff, drivers, and cleaners (as well as other support personnel) for each oblast and the two major cities for 2012. The savings are estimated based on the oblast or city with the highest medical to non-medical staff ratio and the average salary for the country 2012 for the administrative staff of each level of care. It is recognized that the salaries of administrative staffs vary widely, depending on position and region; however, these estimates provide a basis for further discussion of this approach. The estimated savings from reduction of administrative staff at PHC and hospitals facilities are KGS20.8 million per year, which is approximately 0.2 percent of 2012 public health budget.

Table 12. Potential savings from reduction in administrative staff for PHC facilities, 2012
(Persons, unless otherwise noted)

Region/City	Baseline			Bringing ratio to the level of the best performer 9:1	Difference in staff	Savings (KGS)
	Medical staff	Administrative staff	Ratio			
Batken	1,710	305	5.6	188	117	825,391
Naryn	1,113	201	5.5	122	78	552,614
Talas	1,312	336	3.9	144	191	1,355,466
Jalal-Abad	3,515	703	5.0	387	316	2,239,236
Osh oblast	4,225	465	9.1	465	0	0
Chui	3,003	538	5.6	331	208	1,471,021
Issyk-Kul	1,116	246	4.5	123	123	872,084
Bishkek city	5,507	938	5.9	606	332	2,350,944
Osh city	1,534	195	7.9	169	26	182,036
Republican facilities	622	90	6.9	68	22	154,742
Total						10,003,534

Source: MOH administrative database, 2013.

Table 13. Potential savings from reduction in administrative staff for hospitals, 2012
(Persons, unless otherwise noted)

Region / City	Baseline			Bringing ratio to 6.5:1	Difference in staff	Savings (KGS)
	Medical staff	Administrative staff	Ratio			
Batken	2,328	428	5.4	357	71	508,351
Naryn	1,210	231	5.2	186	46	328,393
Talas	1,142	246	4.6	175	71	512,287
Jalal-Abad	5,062	1,154	4.4	777	377	2,720,726
Osh oblast	6,483	1,319	4.9	995	324	2,336,382
Chui	3,107	613	5.1	477	136	978,607
Issyk-Kul	1,729	356	4.9	265	90	650,167
Bishkek city	3,555	613	5.8	546	68	488,171
Osh city	1,307	201	6.5	201	0	0
Republican facilities	8,914	1,677	5.3	1,368	309	2,225,957
Total						10,749,042

Source: MOH administrative database, 2013.

58.   **The most important effect of harmonizing spending and accounting rules for different sources of financing is increased flexibility in the use of funds.** While the potential savings derived from the reduction of administrative staff appears to be relatively small, a more important benefit and potential source of efficiency would derive from the improved flexibility that would be gained in the use of budget funds. At the moment, this flexibility is only allowed for the MHI/Social Fund contribution. For example, if budget funds could be reallocated across items, facility managers would be able and willing to create savings from the rationalization of staff or the implementation of energy efficiency measures. They would be able to utilize such savings for other uses, such as for improved drug availability or food for their patients. Even if it is difficult to quantify this idea, it is likely that this measure would create significant fiscal space to the health sector.

REALLOCATING SAVINGS FROM UNFILLED POSITIONS

59.   **The number of health sector workers declined significantly in the Kyrgyz Republic since independence.** The number of physicians in the Kyrgyz Republic contracted by about 30 percent, from 330 per 100,000 people in 1990, to 236 per 100,000 in 2010. In the same period, the number physicians among the CIS countries remained substantially stable and the EU experienced a significant increase of doctors (see Figure 15**Error! Reference source not found.**, left panel). An even more drastic contraction was experienced for nurses, whose number went down in a similar pattern. The Kyrgyz Republic saw a decrease of 40 percent from 1990 to 2010, with the number of nurses dropping from about 900 to 548 per 100,000 people (see Figure 15, right panel). However, the trends have stabilized and in the recent years the country experienced a slight increase in the number of physicians and nurses. The decline in number of health staff has been attributed to the low salaries that have made these professions unattractive to students and graduates, which has led to an ageing of the health workforce and increased migration toward richer countries, such as the Russian Federation and Kazakhstan (Ibraimova, et al., 2011).[12]

Figure 15. Number of Physicians and nurses per 100,000 population

(Physicians per 100,000)   (Nurses per 100,000)
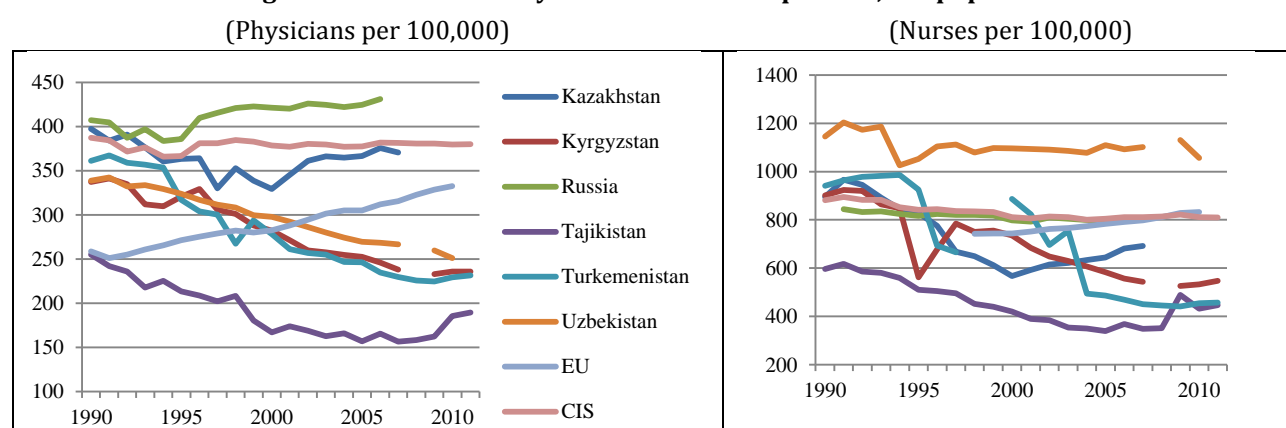
Sources: European health for all database (HFA-DB). WHO-EURO Updated: January 2013.

60.   **The wage increase in the health sector in 2011 has added pressure to an already tight health budget.** The salaries of health employees were increased in 2011. This was done on average by 92.5 percent, after years of stagnation to match with the average wage in economy. Even if wage increases were necessary to attract and retain qualified persons in the health sector, the

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[12] See Policy Note on Management of Public Sector Wage Bill in Kyrgyz Republic.

recent salary increases have squeezed the health budget, severely reducing resources for other key inputs, such as food and medicine (see Figure 7).

61.   **Health facilities have a large number of vacant positions and the practice is to redistribute savings from unfilled positions to other staff members**. The specific number of funded positions in each health facility is determined on the base of the population served and the expected workload. However, the number of individuals effectively employed can deviate significantly from the number of funded positions. The number of funded positions, individuals hired, and proportion of vacant positions are presented in Table 14. This table includes the average monthly salary for each type of staff and the potential monthly savings, which is calculated by multiplying the average monthly salary with the number of vacant positions. In the Kyrgyz Republic, similar to other former Soviet countries, health facility managers have the possibility of redistributing the workload and compensation attached to the unfilled positions to other health workers up to 1.7 Full Time Equivalent (FTE) for each individual.

Table 14. Slots available and vacant by facility and staff type, 2012

(Staff positions)

	Family Medicine Centers	Family Group Practice	General Practice Centers	Dental clinics	General Hospitals	Specialized hospitals	Children hospitals	Emergency care	Total
Doctor									
Established post	3,784	71	888	564	4,168	658	443	46	10,621
Individuals	2,545	54	581	535	3,122	464	367	24	7,692
Vacant posts (percent)	33	24	35	5	25	29	17	47	28
Average salary (KGS)	9,387	9,785	10,703	8,102	10,365	10,365	10,365	9,868	
Potential saving (KGS mln)	11.63	0.16	3.29	0.24	10.84	2.01	0.79	0.21	29
Nurses									
Established post	8,350	148	2,556	445	9,809	1,609	905	76	23,897
Individuals	7,770	145	2,461	416	8,847	1,120	768	55	21,582
Vacant posts (percent)	7	2	4	6	10	30	15	27	10
Average salary (KGS)	8,293	8,858	9,540	6,542	9,509	9,509	9,509	8,823	
Potential saving (KGS mln)	4.81	0.02	0.91	0.19	9.15	4.65	1.30	0.18	21
Junior medical staff									
Established post	1,806	38	1,116	200	6,537	1,290	625	27	11,639
Individuals	1,731	33	1,051	136	5,189	888	497	16	9,541
Vacant posts (percent)	4	12	6	32	21	31	21	41	18
Average salary (KGS)	4,539	4,548	5,509	4,481	5,793	5,793	5,793	5,208	
Potential saving (KGS mln)	0.34	0.02	0.36	0.29	7.81	2.33	0.74	0.06	12
Other staff									
Established post	2,607	67	1,050	259	3,719	1,215	328	86	9,330
Individuals	2,128	69	844	222	2,768	860	215	52	7,158
Vacant posts (percent)	18	-3	20	14	26	29	35	39	23
Average salary (KGS)	6,096	6,772	6,380	5,593	6,429	6,429	6,429	6,304	
Potential saving (KGS mln)	2.92	(0.01)	1.31	0.21	6.11	2.28	0.73	0.21	14
Total Potential saving (KGS mln)	19.70	0.20	5.87	0.92	33.91	11.27	3.56	0.66	76.08

Source: MHIF.

62.   **The practice of redistributing saving from unfilled positions to other staff has raised a number of concerns.** The total amount of savings from unfilled positions that are currently redistributed to other staff represents a total of KSG76.08 million per month or KGS913 million per year, which represents about ten percent of total public health expenditure. There are some concerns that have been raised:

- While the payment systems based on per capita financing principle for family medicine centers and per case payment for hospitals would allow health managers to reallocate savings from unfilled positions for other uses (e.g., purchase of drugs and medical materials), it appears that the large majority of savings is redistributed to other staff. It has been considered that the enforcement action by the Chamber of Accounts to cancel positions when health facilities use salary budget money for other uses has reinforced the traditional redistribution of wage savings to other staff.

- The relationship between additional salary and workload is only notional. Therefore, a person receiving a 1.5 FTE may still be working the same number of hours as a 1 FTE. Additionally, the process of allocating unfilled position salaries to individuals is often not a transparent process, but subject to the discretion of health facility managers.

63.   **The resources available to fund unfilled positions could be better used, but additional analyses are necessary to develop the alternative.** It is clear that the current use of the resources represents a missed opportunity, as health facility managers do not exploit the flexibility of the single payer system to achieve a proportionately efficient mix of inputs, but largely redistribute savings from unfilled positions to other staff without clear additional results. Some specific mechanisms have been discussed to improve the situation. One mechanism is to revise staff norms to fit more closely to the staff available. In addition, training should be provided, in particular to the Chamber of Accounts, but also facility managers, to improve the understanding of the flexibility provided by the single payer system.

IMPROVING DRUG AND MEDICAL SUPPLIES PROCUREMENT

64.   **Public procurement of hospital drugs and medical supplies is currently highly decentralized.** Drugs for inpatient use are purchased by the health facilities directly from regional wholesalers. In 2011, MHIF conducted a detailed study of the prices of drugs and medical supplies across the country.[13] It selected 65 health care organizations where it reviewed prices for the 33 items from the "List of Essential Drugs and Medical Supplies." The results of the study suggest that facilities in some of the most remote rural areas had some of the highest prices, while facilities located in the oblast centers or the capital often benefit from lower prices. For example, for magnesium sulfate the prices ranged from KGS15.3 in the National hospital in Bishkek to KGS93.5 in the Talas territorial hospital.[14] A price for another vital drug, oxytocin, was 3.6 times higher in Suusar general practice center, a remote facility in the South of the Kyrgyz Republic, as compared to Issyk-Kul territorial hospital. Procurement price for sterile gloves was KGS6.2 in a Bishkek facility as compared to KGS25 in Jalal-Abad. Figure 16 shows current prices for ampicillin and penicillin for a sample of facilities, with red lines representing the average price for each of these drugs for the country as a whole. Furthermore, the drug regulator for the Kyrgyz Republic, the Department of Drugs Supply and Medical Equipment under the MOH, has limited capacity and limited enforcement

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[13] MHIF database, 2012 Accessed at http://foms.go.kg/index.php?option=com_content&view=article&id=350
[14] Ibid.

power, making the Kyrgyz Republic a high risk country for the prevalence of sub-standard and counterfeit medicines.

65.   **The Government approved in 2012 a Resolution that mandates the introduction of centralized procurement of hospital drugs under the MHIF.** Centralized procurement could reduce prices and ensure better quality of drugs. However, procurement capacity at MHIF has not been verified yet. Additionally, it is likely that centralized procurement could create a new set of problems related to the difficulties of managing the drugs stocks, distribution, and overall drug supply chain.

Figure 16. Variation in unit prices for drugs, Kyrgyz Republic, 2012

(Kyrgyz som)
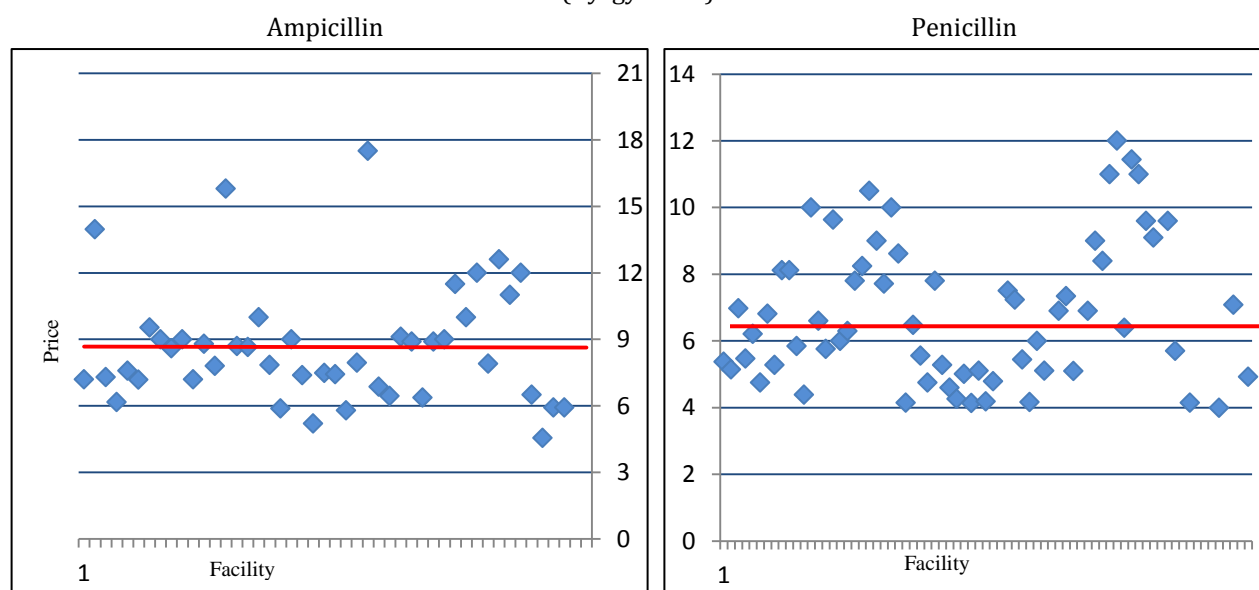
Source: MHIF database, 2012.

66.   **The use of "framework agreements" could produce efficiency gain, better prices and availability of quality drugs, but also maintain the flexibility of the current system.** Development partners and Kyrgyz authorities at the MOH and MHIF have been discussing the possibility of introducing in the Kyrgyz Republic "framework agreements" for the procurement of hospital drugs. Under the proposed scheme the MOH/MHIF would pool demand and negotiate "framework agreements" with suppliers for a limited number of high volume drugs. The procurement arrangement for framework agreements has to be discussed and agreed with MoH/MHIF. MHIF would assist to set up pooled procurement structures – likely at Oblast level – to negotiate "framework agreements" for other items. Facilities would purchase under these "framework agreements" at defined prices, conditions and quality (see Seiter, 2013).

67.   **The introduction of "framework agreements" would require time and enhanced regulatory capacity.** It has been estimated that full implementation of "framework agreements" could require three to five years and at least two or three procurement cycles would be required to achieve full potential in term of cost saving and quality improvements. Additional important aspects to be considered include: (i) support the capacity of quality assurance supervision capacity and streamline product registration at Department of Drugs Supply and Medical Technology at the MoH; (ii) information campaign to improve rational prescription and use of drugs (e.g., antibiotic

overuse); (iii) develop marketing code of practice and monitoring, and enforcement mechanisms; and (iv) develop methodology to monitor prices in the private markets. To facilitate the access to new pharmaceutical products in low income countries, regulatory authorities have often relied on approval by stringent regulators in developed countries (e.g., United States Food and Drug Administration (FDA), European Medicines Agency (EMA), SwissMedic). The Kyrgyz Republic could adopt a similar practice and improve access to novel pharmaceutical products.

8. Conclusion: The Way Forward

68.   **The analysis presented in this policy note suggests that a number of reforms are needed to improve health outcomes and ensure the financial sustainability of the health sector.** The country has profoundly reformed its health system since independence. The SGBP and the ADP have been effective instruments to show good results in terms of health outcomes, access to health services, and financial protection. However, the growing prevalence of non-communicable and chronic diseases, and the funding gap of the SGBP, represent the most pressing challenges to health system. The country needs to take important decisions to ensure the financial sustainability and improve the effectiveness of public health spending. On one hand, the country has the opportunity to improve health outcomes improving the management and prevention of priority diseases such as CVDs and introducing new technologies such as day surgery and laparoscopic surgery. However, on the other hand, the existing financial gap in the SGBP and the prospect of fiscal consolidation make an urgent call for reforms aimed at saving and a more efficient use of public funds. Some short-term savings could derive from the self-financing of services not included in the SGBP, such as dental and balneology services. The harmonization of the rules governing the use of the various financing sources and the possibility of reallocating savings from unfilled positions to other use could improve the flexibility and the allocative efficiency of the health sector. Finally, important fiscal space could be created reforming the system of co-payment exemptions provided by SGBP - a stronger focus to the poor and consolidation of exemptions – and improving the procurement system of hospital drugs and medical supplies.

Annex 1. Categories of Citizens with the Right to Free Medical Care
Social Categories

1. Participants of the Great Patriotic War.

2. Invalids of the Great Patriotic War and Batken events.

3. Citizens affected by military anti-terrorist operations and disabled as a result of such operations.

4. Citizens with the USSR awards for selfless labor and unquestionable military service in the rear area during the Great Patriotic War.

5. Former prisoners of concentration camps.

6. Victims of the siege of Leningrad.

7. Veterans of labor at the age above 70 years.

8. Persons awarded with *Baatyr Ene* order and *Mother-Heroin* order.

9. Citizens illegally and forcedly mobilized into labor army and rehabilitated in after years.

10. Heroes of the Soviet Union and persons awarded with the Order of Glory of three levels.

11. Heroes of Socialist Labor.

12. Citizens with the highest award *The Hero of the Kyrgyz Republic*, and those awarded with the order *Manas* of the first level.

13. Participants of military operations carried out in the territory of other countries.

14. Citizens affected by the accident at Chernobyl Nuclear Power Plant, which includes persons with diseases caused by radioactive accidents and persons who took part in the emergency response at Chernobyl NPP in 1986-1987; additionally, invalids as per the established causation between the disability and Chernobyl accident, persons who took part in the emergency response at Chernobyl NPP in 1988-1989, families bereaved as a result of diseases caused by Chernobyl accident, persons evacuated (voluntary departed) from the exclusion zone in 1986 and later to the Kyrgyz Republic or resettled thereto. Furthermore, persons voluntary departed to the Kyrgyz Republic from residence area with the right to resettlement after Chernobyl NPP accident; military personnel and senior officers; soldiers of the Internal Affairs Agencies seeing duty in the resettlement area, in the residential area with the right to resettlement; children and adolescents under 18 years of age evacuated and resettled to the Kyrgyz Republic from the exclusion zones, areas of resettlement, and residential areas with the right to resettlement, which includes those who were at the stage of fetus on the day of evacuation, and children of the first and further generations of citizens specified above.

15. Persons with disabilities having been injured and damaged while on military duty.

16. Members of bereaved families, as well as citizens of the Kyrgyz Republic affected by the events of 6 April in Talas oblast, 7 April in Bishkek city, 13-14 May in Jalal-Abad city, and in June events of 2010 in the city of Osh and Jalal-Abad oblasts, if justified by relevant supporting documents.

17. Persons with disabilities of I and II groups, as a result of an occupational injury, occupational disease, or general disease.

18. Persons with disabilities in eyesight and hearing.

19. Persons with disabilities from childhood.

20. Disabled children under 18 years of age.

21. Children under 5 years of age.

22. Orphans living in state-owned orphanages, family orphanages (foster families), boarding schools for orphans, and abandoned children.

23. Citizens living in homes for elderly and hostels.

24. Citizens subject to drafting and referred by military and medical committees to the outpatient level for medical examination or to the inpatient level for treatment.

25. Army conscripts during their performance of active duty in case qualified medical care cannot be provided as appropriate in military health organizations.

26. People living with HIV/AIDS.

27. Children under 16 years of age from large and poor families with 4 and more minor children (in case of students at educational institutions, up until their graduation with the maximum age limit of 18 years) with a certificate from social security agencies.

28. Pensioners at the age of 70 and older.

Medical Conditions

1. Women registered as pregnant.

2. Women with pregnancy failure in case of inpatient treatment (based on the main diagnosis).

3. Women arriving for abortion on social and medical grounds.

4. Women arriving for delivery.

5. Women with post-delivery complications within 10 weeks after the delivery.

6. Patients after an acute myocardial infarction (first 2 months).

7. TB patients.

8. Patients with asthma.

9. Oncologic patients at the end stage.

10. Patients with in-born syphilis, patients with syphilis at the age under 18 years.

11. Patients with mental illnesses (paranoid schizophrenia, chronic delirium disorders, affective disorders of different genesis).

12. Patients with epilepsy.

13. Patients with diabetes mellitus.

14. Patients with diabetes insipidus.

15. Patients with vaccinal complications.

16. Contact persons and patients with diseases caused by special-danger, and quarantine infections (plague, cholera, abdominal typhoid, paratyphoid, anthrax).

17. Patients with hydrophobia and persons in contact with hydrophobic patients and possibly affected by the disease.

18. Patients with meningococcal meningitis.

19. Patients with diphtheria.

20. Patents with hemophilia.

21. Persons under preparatory inquiry and persons serving their sentence, including under the court verdict, in case of an exigent condition threatening the patient's life when medical aid cannot be provided as appropriate in penitentiary health facilities.

Annex 2. Comparison of Health Outcomes

Country	1990	1995	2000	2005	2011
Births attended by skilled health staff (percent of total)					
Armenia	99.7	93.1	96.8	97.8	99.5
Azerbaijan	97.3	99.7	84.1	88	
Georgia	96.6		95.7	98.3	99.9
Kazakhstan	99	99.6	98.3	99.4	99.8
Kyrgyz Republic	98.9	98	98.6	97.9	98.5
Tajikistan	91.95	80.9	71.1	83.4	83
Turkmenistan		95.8	97.2	99.7	99.5
Uzbekistan		97.5	95.6		99.9
Russian Federation	99.2	99.1	99.2	99.4	99.7
Europe & Central Asia (developing only)	98.6		92.4		97.6
Low & middle income			59.0		65.2
Lower middle income			47.9		56.8
Low income countries			33.0	40.1	47.3
Immunization, DPT (percent of children ages 12-23 months)					
Armenia	85	98	93	90	95
Azerbaijan	58	74	75	72	74
Georgia	58	79	80	84	94
Kazakhstan	81	93	97	98	99
Kyrgyz Republic	84	93	99	98	96
Tajikistan	72	80	83	84	96
Turkmenistan	84	93	97	99	97
Uzbekistan	90	87	99	99	99
Russian Federation	72	78	96	98	97
Europe & Central Asia (developing only)		82	93	95	92
Low & middle income	75	71	72	77	81
Lower middle income	69	69	66	71	73
Low income countries	58.86	58.15	59.44	71.32	79.18
Incidence of tuberculosis (per 100,000 people)					
Armenia	17	39	61	77	55
Azerbaijan	305	636	682	334	113
Georgia	280	263	256	175	125
Kazakhstan	79	318	351	235	129
Kyrgyz Republic	92	168	249	208	128
Tajikistan	70	148	220	200	193
Turkmenistan	101	150	213	172	74
Uzbekistan	125	199	286	233	101
Russian Federation	47	96	127	135	97
Europe & Central Asia (developing only)	63	114	141	123	80
Low & middle income	173	174	175	167	146
Lower middle income	198	201	203	195	169
Low income	285	303	308	286	252
Prevalence of HIV, total (percent of population ages 15-49)					
Armenia	0.10	0.10	0.20	0.20	0.20
Azerbaijan	0.10	0.10	0.10	0.10	0.10
Georgia	0.10	0.10	0.10	0.10	0.20
Kazakhstan	0.10	0.10	0.10	0.10	0.20
Kyrgyz Republic	0.10	0.10	0.10	0.10	0.40

Country	1990	1995	2000	2005	2011
Tajikistan	0.10	0.10	0.20	0.20	0.30
Turkmenistan					
Uzbekistan					
Russian Federation					
Europe & Central Asia (developing only)	0.08	0.08	0.26	0.55	0.58
Low & middle income	0.35	0.67	0.90	0.88	0.87
Lower middle income	0.23	0.48	0.72	0.66	0.68
Low income	2.00	3.20	3.28	2.74	2.38
Life expectancy at birth, female (years)					
Armenia	70.75	72.15	74.37	76.32	77.19
Azerbaijan	69.10	68.85	69.88	71.81	73.64
Georgia	74.18	74.41	75.26	76.23	76.90
Kazakhstan	73.10	70.40	71.10	71.80	73.79
Kyrgyz Republic	72.60	70.40	72.40	71.90	73.70
Tajikistan	66.08	66.30	67.73	69.27	70.84
Turkmenistan	66.43	67.03	67.86	68.56	69.22
Uzbekistan	69.95	69.59	70.21	70.47	71.47
Russian Federation	74.26	72.52	72.00	72.40	75.10
Europe & Central Asia (developing only)	72.50	71.67	72.44	73.30	75.32
Low & middle income	64.91	65.84	66.94	68.18	69.91
Lower middle income	60.82	62.26	63.91	65.61	67.66
Low income	53.87	54.53	55.68	57.71	60.45
Life expectancy at birth, male (years)					
Armenia	64.91	65.26	67.77	69.65	70.80
Azerbaijan	60.60	60.51	63.79	66.17	67.81
Georgia	66.50	66.76	68.05	69.12	69.92
Kazakhstan	63.80	59.70	60.20	60.30	64.23
Kyrgyz Republic	64.20	61.40	64.90	64.20	65.70
Tajikistan	59.79	58.64	59.97	62.12	64.39
Turkmenistan	59.07	59.22	60.12	60.51	60.97
Uzbekistan	63.57	63.20	63.85	64.13	65.22
Russian Federation	63.80	58.27	59.00	58.87	63.20
Europe & Central Asia (developing only)	63.92	61.33	62.97	63.65	66.62
Low & middle income	61.41	62.20	63.30	64.44	66.07
Lower middle income	58.47	59.57	60.98	62.35	64.15
Low income	51.70	52.40	53.75	55.78	58.08
Life expectancy at birth, total (years)					
Armenia	67.76	68.62	70.99	72.90	73.92
Azerbaijan	64.75	64.58	66.76	68.92	70.65
Georgia	70.25	70.49	71.56	72.59	73.33
Kazakhstan	68.34	64.92	65.52	65.91	68.89
Kyrgyz Republic	68.30	65.79	68.56	67.96	69.60
Tajikistan	62.86	62.37	63.76	65.61	67.54
Turkmenistan	62.66	63.03	63.90	64.44	65.00
Uzbekistan	66.68	66.32	66.95	67.22	68.27
Russian Federation	68.90	65.22	65.34	65.47	69.00
Europe & Central Asia (developing only)	68.08	66.33	67.55	68.30	70.81
Low & middle income	63.09	63.94	65.05	66.24	67.93

Country	1990	1995	2000	2005	2011
Lower middle income	59.60	60.87	62.39	63.93	65.85
Low income	52.74	53.42	54.68	56.71	59.23

Maternal mortality ratio (modeled estimate, per 100,000 live births)

Armenia	46	47	38	34	30
Azerbaijan	56	81	65	52	43
Georgia	63	75	58	61	67
Kazakhstan	92	90	70	50	51
Kyrgyz Republic	73	98	82	77	71
Tajikistan	94	160	120	79	65
Turkmenistan	82	94	91	76	67
Uzbekistan	59	36	33	32	28
Russian Federation	74	72	57	37	34
Europe & Central Asia (developing only)	70	61	49	36	32
Low & middle income	440	400	350	290	230
Lower middle income	560	470	410	330	260
Low income	810	740	630	530	410

Maternal mortality ratio (national estimate, per 100,000 live births)

Armenia				16	9
Azerbaijan					24.3
Georgia				23.4	19.4
Kazakhstan					17.4
Kyrgyz Republic					63.5
Tajikistan				97	45
Turkmenistan					11.6
Uzbekistan					21.4
Russian Federation	47.41	53.31	39.71	25.39	16.5
Europe & Central Asia (developing only)					
Low & middle income					
Lower middle income					
Low income					

Mortality rate, adult, female (per 1,000 female adults)

Armenia		110.33	97.94	84.64	77.86
Azerbaijan	95.77	114.78	118.38	103.31	68.36
Georgia	90.11	81.57	76.48	70.76	66.09
Kazakhstan	136.00	177.71	170.97	159.18	144.60
Kyrgyz Republic	142.90	149.42	149.41	143.02	130.25
Tajikistan		148.23	147.26	139.38	125.36
Turkmenistan		171.95	171.47	165.95	157.83
Uzbekistan	109.21	143.53	143.41	141.71	138.48
Russian Federation	116.20	168.92	158.48	173.33	137.19
Europe & Central Asia (developing only)	114.64		137.16	138.19	114.26
Low & middle income			174.41	164.65	149.75
Lower middle income			203.96	189.22	169.67
Low income		303.76	301.81	285.17	255.05

Mortality rate, adult, male (per 1,000 male adults)

Armenia		219.65	200.18	175.89	159.86
Azerbaijan	216.23	241.88	221.13	197.49	177.87
Georgia	195.35	210.10	197.21	184.24	175.47
Kazakhstan	306.00	420.92	410.55	389.34	360.75

Country	1990	1995	2000	2005	2011
Kyrgyz Republic	290.57	298.55	298.53	300.54	304.58
Tajikistan		268.10	266.20	247.08	220.63
Turkmenistan		313.00	313.03	310.88	301.59
Uzbekistan	207.48	249.31	249.16	246.84	242.40
Russian Federation	316.08	465.81	442.95	466.79	367.07
Europe & Central Asia (developing only)	288.48		333.93	333.67	268.85
Low & middle income			244.98	234.34	210.53
Lower middle income			270.86	258.96	240.12
Low income		346.57	340.07	320.47	291.91

Mortality rate, infant (per 1,000 live births)

Country	1990	1995	2000	2005	2011
Armenia	40.40	33.00	26.30	20.60	15.60
Azerbaijan	75.40	68.20	56.70	47.90	38.50
Georgia	40.20	34.70	28.60	23.40	18.30
Kazakhstan	48.00	43.10	36.50	30.80	25.00
Kyrgyz Republic	57.90	48.40	40.60	33.60	27.00
Tajikistan	89.10	87.10	75.50	64.20	52.80
Turkmenistan	75.20	66.40	58.70	51.90	44.60
Uzbekistan	61.60	55.80	51.00	46.60	41.50
Russian Federation	23.00	21.20	17.80	13.70	9.80
Europe & Central Asia (developing only)	39.50	37.60	28.50	22.90	17.50
Low & middle income	65.80	63.10	55.20	48.30	40.40
Lower middle income	75.70	69.10	62.00	53.60	46.00
Low income	102.80	95.20	84.80	74.20	62.80

Mortality rate, under-5 (per 1,000 live births)

Country	1990	1995	2000	2005	2011
Armenia	47.20	37.90	29.80	23.20	17.50
Azerbaijan	94.50	84.40	68.60	56.80	44.70
Georgia	46.90	40.00	32.60	26.40	20.50
Kazakhstan	57.00	50.60	42.30	35.20	28.30
Kyrgyz Republic	70.30	57.50	47.40	38.70	30.60
Tajikistan	114.30	111.40	94.70	78.90	63.30
Turkmenistan	94.30	82.00	71.40	62.20	52.50
Uzbekistan	75.30	67.40	61.00	55.10	48.60
Russian Federation	27.30	25.20	21.30	16.50	11.90
Europe & Central Asia (developing only)	47.70	45.00	34.60	27.60	20.90
Low & middle income	95.00	90.20	79.20	68.50	56.30
Lower middle income	109.70	99.20	87.80	74.80	62.40
Low income	163.80	151.80	133.10	114.80	94.90

Source: World Development Indicators, April 2013.

Annex 3. Comparative Mortality from CVDs

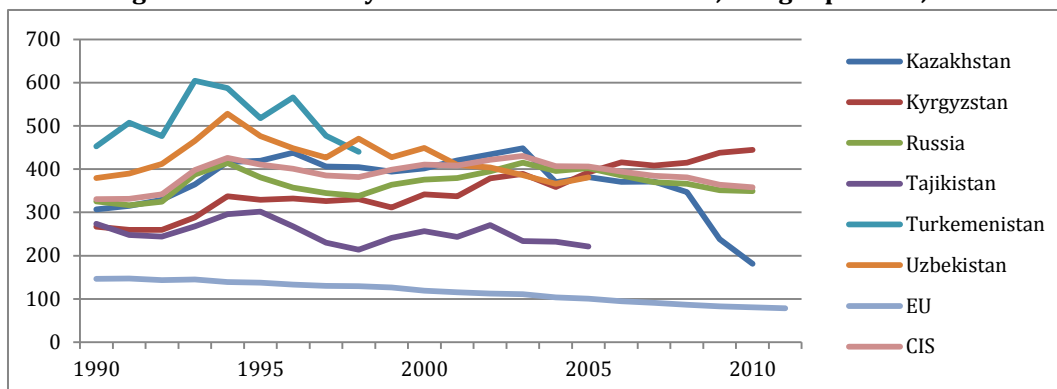### Figure A3-1. Mortality for ischemic heart diseases, all ages per 100,000

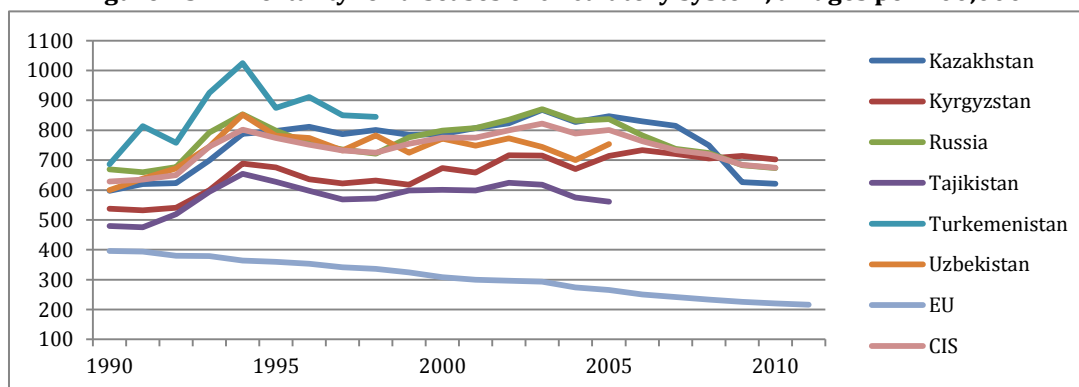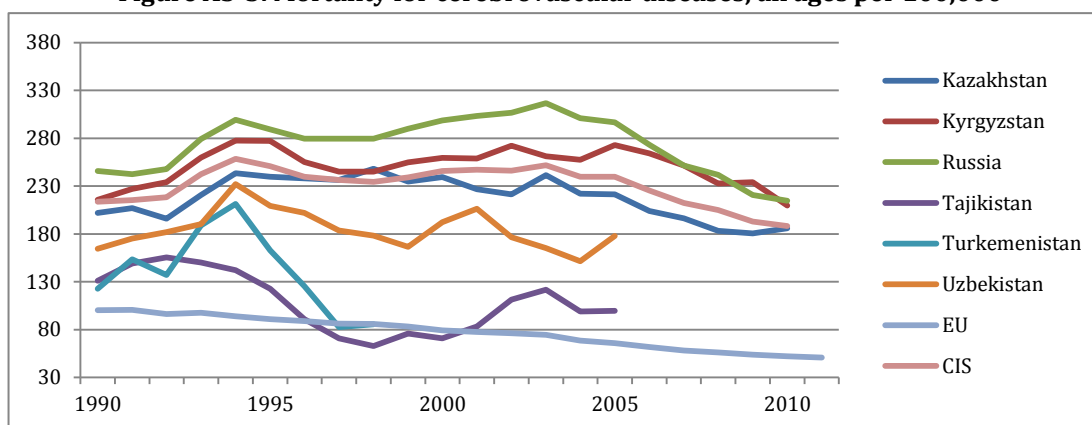### Figure A3-2. Mortality for diseases of circulatory system, all ages per 100,000

Figure A3-3. Mortality for cerebrovascular diseases, all ages per 100,000

Source: WHO/Europe, European HFA Database, January 2013.

Annex 4. A Preliminary PMT Scoring Formula

Table A4-1. Variables and coefficients used for the urban and rural equations in the preliminary PMT scoring formula

Rural Equation			Urban Equation		
Description	Coefficient	T-statistic	Description	Coefficient	T-statistic
Fridge (1 chamber, or 2-3 chambers)	0.088	2.704	Household size	-0.082	-8.317
Household has a car, truck, minivan or scooter	0.214	4.307	hhh_education=Incomplete Higher	-0.038	-0.415
Livingrooms per person	0.285	8.501	hhh_education=Secondary Prof.	-0.117	-4.233
Number of people in the house that are under 11 years of age	-0.122	-3.513	hhh_education=Genaral Secondary (complete)	-0.169	-5.928
Square of number of people in the house that are under 11 years of age	0.002	0.193	hhh_education=Genaral Secondary (incomplete)	-0.186	-3.405
oblast=Jalalabat	0.095	2.148	hhh_education=Elementary	-0.171	-2.421
oblast=Naryn	0.086	1.521	hhh_education=No elementary	-0.155	-2.364
oblast=Batken	0.12	2.217	hhh_education=Illiterate	-0.258	-4.814
oblast=Osh	0.091	1.563	hhh_education=Primary Prof. Technical (with Genaral Secondary)	-0.043	-1.103
oblast=City of Osh	0.23	4.659	hhh_education=Primary Prof. Technical (without Genaral Secondary)	-0.085	-1.197
oblast=Chui	0.305	5.96	Household has oven or fireplace for cooking	-0.06	-2.281
typeofdwelling=Apartment or room in a residential hotel	0.089	0.535	Fridge (1 chamber, or 2-3 chambers)	0.109	4.131
typeofdwelling=Separate house	-0.163	-1.322	Household has a car, truck, minivan or scooter	0.188	6.78
typeofdwelling=Part of a house	-0.184	-1.448	Livingrooms per person	0.137	6.415
typeofdwelling=Dormitory	-0.211	-1.62	Household has gas heating	-0.047	-1.224
typeofdwelling=Lodge or a tied cottage (temporary tenure dwelling)	-0.22	-1.672	soc_st=Unemployed	-0.078	-1.608
typeofdwelling=Other non-residential premises used for residence	-0.464	-3.48	soc_st=Student (day student)	0.6	2.241
typeofdwelling=Barracks	-0.082	-0.609	soc_st=Retirement or long-service pensioner, privileged pensioner	-0.114	-4.712
roofmaterial=Roofing slates	0.149	0.781	soc_st=Disability pensioner (I and II disability categories)	-0.151	-2.781
roofmaterial=Sheet metal plates, tin plates	0.124	0.631	soc_st=Disability pensioner (III disability category)	-0.031	-0.489
roofmaterial=Cane, rush, reed	0.108	0.528	soc_st=Housekeeping and taking care of children	-0.141	-2.953
roofmaterial=Roof tiling	0.37	1.426	soc_st=Other	-0.078	-0.66
roofmaterial=Crude airbricks, adobe	0.024	0.114	Number of people in the house that are under 16 years of age	-0.114	-4.934
roofmaterial=Roofing tar board	0.37	1.83	Square of number of people in the house that are under 16 years of age	0.026	4.227
Constant	9.669	56.106	wallmaterial=Concrete slabs	0.036	0.733
N obs	1796		wallmaterial=Crude airbricks, adobe	0.062	2.169
R-squared	0.431		wallmaterial=Wood, logs	-0.016	-0.31
			wallmaterial=Earth, clay	-0.058	-1.957

Rural Equation			Urban Equation		
Description	**Coefficient**	**T-statistic**	**Description**	**Coefficient**	**T-statistic**
			wallmaterial=Slag-concrete block	0.121	1.95
			wallmaterial=Other	-0.218	-3.456
			roofmaterial=Roofing slates	0.057	1.167
			roofmaterial=Sheet metal plates, tin plates	0.06	0.926
			roofmaterial=Cane, rush, reed	0.149	2.095
			roofmaterial=Roof tiling	-0.145	-1.618
			roofmaterial=Crude airbricks, adobe	0.197	1.034
			roofmaterial=Roofing tar board	-0.287	-3.164
			roofmaterial=Other	0.214	1.002
			mainwatersource=Well	-0.003	-0.045
			mainwatersource=Artesian well	-0.134	-2.256
			mainwatersource=Private water pump	-0.035	-1.066
			mainwatersource=Public (communal) water pump	-0.075	-2.078
			mainwatersource=Storage reservoir, river, lake, pond, aryk	0.019	0.131
			mainwatersource=Imported water (water-cart)	-0.263	-4.332
			mainwatersource=Spring	0.192	2.124
			oblast=Jalalabat	0.074	2.367
			oblast=Naryn	0.11	2.535
			oblast=Batken	0.183	4.468
			oblast=Osh	0.157	4.405
			oblast=City of Osh	0.107	1.833
			oblast=Chui	0.121	2.54
			oblast=City of Bishkek	0.356	9.802
			Constant	10.367	144.188
			N obs	2594	
			R-squared	0.520	
Total number of variables	7		Total number of variables	13	

Source: WHO analysis of 2010 KIHS data.

Annex 5. Burden of diseases in the Kyrgyz Republic estimated by Disability Adjusted Life Years (DALYs)
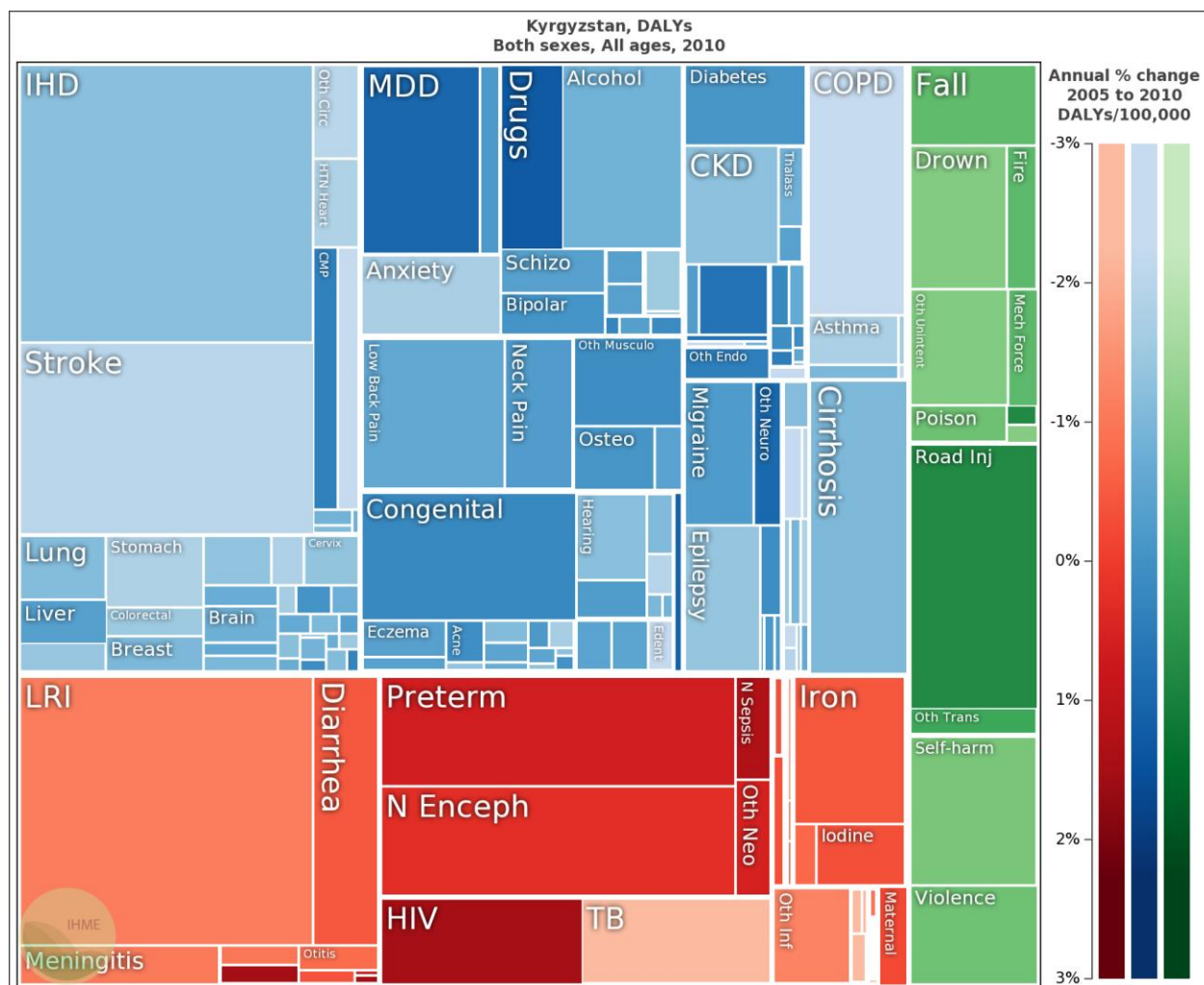
Source: Institute of Health Metric and Evaluation, University of Washington, 2013.

Note: communicable, maternal neonatal and nutritional disorders in red; non-communicable diseases in blue; injuries in green.

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