



NATIONAL REVIEW TOWARDS A «GREEN» ECONOMY IN TAJIKISTAN

Elaborated in preparation for the UN International Conference
on Sustainable Development (RIO+20)

Dushanbe, 2012 г.



This Review summarizes the experience of the pro-environmental ways of balanced development in Tajikistan to further promote a “green” economy in the context of sustainable development and poverty eradication. This being the case, most of the focus is on the role of water as the most important natural resource in all its uses in different sectors, and in the development of a “green” economy in the country in general.

The Review reveals a huge resource potential and opportunities of Tajikistan for transition to a “green” economy and attraction of international organizations and development partners for elaboration of a more detailed mid- and long-term national “green” economy plan.

The ‘National Review: Towards a “Green” Economy in Tajikistan’ has been elaborated under activities undertaken by the Government of the Republic of Tajikistan in preparation for the UN Conference on Sustainable Development (Rio+20) with the support of the United Nations Department of Economic and Social Affairs (UNDESA) and Country Office of the United Nations Development Programme (UNDP) in Tajikistan.

The Government of the Republic of Tajikistan sincerely acknowledges the support of the United Nations Department of Economic and Social Affairs (UNDESA) and Country Office of the United Nations Development Programme (UNDP) in Tajikistan, and thanks all persons, governmental, international, public, academic, and civil organizations for the information and assistance provided in the preparation of this Review.



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COMPILERS

Anvar Kamoliddinov	Senior Research Associate, Tajik Branch of the Scientific Information Center of the Interstate Commission for Water Coordination of Central Asia, Team Leader
Salomat Ikromova	Chief Specialist, Unit of Agrarian Sectors Development and Ecology, Ministry of Economic Development and Trade of the Republic of Tajikistan
Amonullo Khasanov	Head, Unit of Analysis and Forecasting of Population Social Protection and Social Security, Ministry of Labor and Social Protection of the Republic of Tajikistan
Nurmahmad Kholnazarov	Head, Electric Power Engineering Department, Ministry of Energy and Industry of the Republic of Tajikistan
Anvar Khomidov	Head, Hydrometeorology Department, Committee for Environmental Protection under the Government of the Republic of Tajikistan
Bakhrom Gafarov	Deputy Director, Tajik Branch of the Scientific Information Center of the ICWC
Dilshod Kimsanov	Deputy Head, Economy and Forecasting Department, Ministry of Land Reclamation and Water Resources of the Republic of Tajikistan
Khusnidin Sharofiddinov	Leading Specialist, Unit for Monitoring of Pump Stations and Water Facilities, Ministry of Land Reclamation and Water Resources of the Republic of Tajikistan

The authors would like to extend their thanks to Khayrullo Ibodzoda, Head of the Ecology and Emergency Situations Unit of the Executive Office of the President of the Republic of Tajikistan, Sulton Rahimov, First Deputy Minister of Land Reclamation and Water Resources of the Republic of Tajikistan, and Anatoly Kholmatov, Manager of the "Promoting Integrated Water Resources Management and Fostering Transboundary Dialogue in Central Asia" Project (UNDP), for their valuable proposals, recommendations and editorial assistance provided during the preparation of this Review.



PARTNERS

The writing of this Review would not have been possible without information, valuable comments and proposals provided by the following ministries and agencies of Tajikistan:

Ministry of Land Reclamation and Water Resources of the Republic of Tajikistan;
 Ministry of Economic Development and Trade of the Republic of Tajikistan;
 Ministry of Foreign Affairs of the Republic of Tajikistan;
 Ministry of Finance of the Republic of Tajikistan;
 Ministry of Energy and Industry of the Republic of Tajikistan;
 Ministry of Labour and Social Protection of the Republic of Tajikistan;
 Ministry of Health of the Republic of Tajikistan;
 Ministry of Agriculture of the Republic of Tajikistan;
 State Committee for Investment and State Property Management of the Republic of Tajikistan;
 State Committee for Land Management and Geodesy of the Republic of Tajikistan;
 Committee for Emergency Situation and Civil Defense under the Government of the Republic of Tajikistan;
 Committee for Environmental Protection under the Government of the Republic of Tajikistan;
 Statistics Agency under the President of the Republic of Tajikistan;
 Ecological Commission of the Majlisi Namoyandagon of the Majlisi Oli of the Republic of Tajikistan (Parliament of the Republic of Tajikistan);
 Barki Tojik Open Joint Stock Holding Company

*The **authors** sincerely thank all the international organizations, public and academic institutions, and each individual person for the information and assistance provided in the writing of this Review.*



ACRONYMS

ADB	Asian Development Bank
WUA	Water Users Association
GDP	Gross Domestic Product
UNGA	United Nations General Assembly
GEF	Global Environment Facility
HEPP	Hydroelectric power plant
GIZ	German Society for International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit)
EU	European Union
UNECE	United Nations Economic Commission for Europe
EurAsEC	Eurasian Economic Community
IWRM	Integrated water resources management
EF	Efficiency factor
CSIRO	Commonwealth Scientific and Industrial Research Organization
IFAS	International Fund for Saving the Aral Sea
ICWC	Interstate Commission for Water Coordination of Central Asia
ICSD	Interstate Commission on Sustainable Development
NGO	Non-governmental organization
UN	United Nations Organization
ppm.	part per million, concentration measurement unit
REAP	Regional Environmental Action Plan
CIS	Commonwealth of Independent States
USA	United States of America
FEZ	Free Economic Zone
SPECA	United Nations Special Programme for the Economies of Central Asia
SDC	Swiss Agency for Development and Cooperation
TFOE	Tons of fuel oil equivalent
US EIA	United States Energy Information Administration
FAO	Food and Agriculture Organization of the United Nations
MDG	Millennium Development Goals
CO₂	Carbon oxide (IV) (carbon dioxide)
SCO	Shanghai Cooperation Organization
ESCAP	Economic and Social Commission for Asia and the Pacific
UNDESA	United Nations Department of Economic and Social Affairs
UNEP	United Nations Environment Programme
IOHECKO	United Nations Educational, Scientific and Cultural Organization



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1



INTRODUCTION





INTRODUCTION

At the end of the 20th century mankind laid a course for sustainable development, a form of the civilization transition to a new advanced progress model that meets the needs of the present without compromising the ability of future generations to meet their own needs. In this regard, three interlinked dimensions have been identified that characterize economic growth, social equity, and environmental protection.

Although international community's endeavors to achieve sustainable development are increasingly intensive, differences between countries, in terms of their socio-economic and technological levels, are increasing, and a tendency of negative impact on ecological systems is still preserved. New challenges faced by mankind at the end of the 20th century and at the beginning of the 21st century, such as climate change, biodiversity loss, financial and economic crisis, unstable prices for energy carriers and food, food and energy security, urbanization, increased unemployment and other emerging problems, have created and still create extra bottlenecks for sustainable development.

Considering these trends and building on the *Rio de Janeiro Declaration on Environment and Development*,¹ *Agenda 21, Programme for the Further Implementation of Agenda 21, Johannesburg Declaration on Sustainable Development*,² *Plan of Implementation*

of the World Summit on Sustainable Development ('Johannesburg Plan of Implementation') and a number of other related UNGA Resolutions³ and international programmes, the United Nations General Assembly, at its 64th Session, decided, by Resolution A/RES/64/236, to organize, in 2012, the United Nations Conference on Sustainable Development at the high level to be hosted in Rio de Janeiro (Brazil). The objective of the Conference is to assess the progress to date and the remaining gaps in the implementation of the outcomes of the major summits on sustainable development, address new and emerging challenges and to secure renewed political commitment of UN member states for sustainable development.

Focal themes to be addressed at the Conference will include: a "green" economy in the context of sustainable development and poverty eradication and the institutional framework for sustainable development. The term "green" economy" has not yet got its final interpretation and, while used, it will be further developed and clarified. According to UNEP, a "green" economy is economy that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities.⁴ At this stage, this definition is most commonly recognized and spread.

1 Report of the United Nations Conference on Environment and Development, Rio de Janeiro, June 3–14, 1992.

2 Report of the World Summit on Sustainable Development, Johannesburg, South Africa, August 26 — September 4, 2002.

3 64/236. Implementation of Agenda 21, the Programme for the Further Implementation of Agenda 21 and the Outcomes of the World Summit on Sustainable Development.

4 UNEP (2011), *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication*, <http://www.unep.org/greeneconomy>.

A “green” economy is associated with green development, and together they can be compared with “brown” and “black” development. It is known that “economic growth measured as an increase in real GDP has generally been associated with increases in the use of energy and materials and the generation of wastes.”⁵ This being the case, the development scale, composition and technology are proximate determinants of environmental impacts. They are often divided into two categories: scale (GDP) and intensity (impact per unit of GDP). In a “green” growth scenario, intensity (growth rate) declines faster than scale (GDP) increases. Similarly, “brown” growth occurs when intensity declines more slowly than increases in scale, and “black” growth happens when both scale and intensity increase.⁶ Therefore, a conclusion can be made that with intensive use and gradual depletion of natural resources, it is only “green” economy that can ensure sustainable development, while causing no damage to the environment and preserving a share of natural resources for future generations.

The world community greatly expects the UN Conference on Sustainable Development in Rio de Janeiro (Rio+20) to facilitate the securing of new political commitments for ensuring prospective sustainable development. This would lay the foundation for accelerated and justified transition to a “green” economy contributing to employment creation and poverty eradication through proposals on investments in conservation of the natural capital that determines the Earth’s future. It is elaboration of an integrated approach to poverty alleviation, provision of access to water, sanitation, health services, education and

energy, improvement of existing and search of innovative ways of development financing, equitable international and trade systems, resolution of demographic problems, and mitigation of climate change and natural disasters that are seen as a keystone of success. These tasks require a clear and sound rethinking of actions to be undertaken in transition to a “green” economy.

Such an approach is completely consistent with national interests of the Republic of Tajikistan and will form a solid basis for achieving three strategic objectives of the Tajik Government, i.e. to ensure food security, achieve energy independence and overcome the communications isolation. The concept of a “green” economy also complies with the Government’s course for efficient and rational use of its natural resources to strengthen its sovereignty, overcome social and economic challenges as soon as possible, increase population’s living standards, ensure environmental sustainability, take a decent place in the world community and to preserve good neighborly and mutually beneficial relations with countries all over the world.

The approach and principles above are addressed in the country’s key development documents, including *National Development Strategy until 2015*, mid-term poverty reduction strategies, and development strategies of economic and social sectors. Efficient use and conservation of natural resources as a key component of transition to a “green” economy, development of the social sphere and preservation of ecosystems are a part of the reform course undertaken in Tajikistan based on legal regulation, establishment of adequate management mechanisms, financial and economic interest, support to the market environment, as well as on the *United Nations Millennium Declaration (2000)*, *Johannesburg Plan of Implementation of the World Summit on Sustainable Development (2002)* and other national and international legal and regulatory acts.

There is every reason for the forthcom-

5 Green Growth, Resources and Resilience Environmental Sustainability in Asia and the Pacific. United Nations and Asian Development Bank publication, Printed in Bangkok. ISBN 978-92-1-120635-7, February 2012 – 750.

6 P. Victor, “Ecological economics and economic growth”, *Annals of the New York Academy of Science* (2010), vol. 1185, pp. 237–245.

ing Rio+20 UN Conference to become an important milestone in overcoming persistent and emerging problems in achieving sustainable development at the global, regional and national levels. Tajikistan proceeds on the assumption that the development objectives and goals agreed upon internationally, including the MDGs, are quite achievable if efforts of the whole world community are consolidated with UN's coordinating role and if developing countries are supported.

This Review summarizes the experience of pro-environmental ways of balanced development in Tajikistan to further promote a "green" economy in the context of sustainable development and poverty eradication. At the same time, most of the focus is on the role of water as the most important natural resource in all its uses in different sectors, and in the development of a "green" economy in the country.

This Review demonstrates a huge potential of Tajikistan's resources and capacities for transition to a "green" econ-

omy, and can form a basis for attracting international organizations and development partners for elaboration of a detailed mid- and long-term national "green" economy plan.

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2



TAJKISTAN:
country profile





TAJIKISTAN: country profile

Tajikistan is a mountainous country located in the south-east of Central Asia. Its territory is 143.1 thsd km², stretching 700 km from the west to the east and 350 km from the north to the south. The country borders on Uzbekistan (910 km) and Kyrgyzstan (630 km) in the west and north, Afghanistan (1,030 km) in the south, and China (430 km) in the east.

On September 9, 2011, Tajikistan celebrated 20 years of its state independence. While solving complicated socio-economic, environmental and political tasks, Tajikistan is, in general, developing in parallel with sustainable development trends to ensure prosperity, safe and sustainable future of its people and to contribute to the world community's development. The Republic of Tajikistan is a developing country ranking 127th in terms of human development index (2011 Human Development Report). By 2010, the poverty rate in the country was 46.7%.

By its relief, Tajikistan is a typical mountainous country with absolute altitudes from 300 to 7,495 m. 93% of its territory is occupied by mountains representing the highest mountain ranges in Central Asia, such as the Tian-Shan and Pamir Ranges. Almost half of the Tajikistan's territory is located at an altitude over 3,000 m. Most part of the Tajikistan's population and economic activities are concentrated on 7% of its territory, in valleys.

As of January 1, 2012, the Tajikistan's population is estimated at 7.8 million people; the urban and rural population

accounts for 26.4% and 73.6% respectively. The average population growth rate is approximately 2.5% per annum. In 2011, the official number of the economically active population (employed and unemployed) was 2,176.0 thsd; out of them 54.5 thsd people (2.5%) are officially unemployed. The proportion of labor migrants abroad reduced from 21.9% to 13%, and that of the economically active population increased from 50.2% to 66.0%.

Since almost all climatic zones are observed on its territory with a temperature range from +50°C to -60°C, Tajikistan might be treated as a peculiar model of the planet. The country's climate is arid with abundant warmth and significant fluctuations of its annual parameters. The absolute lowest air temperature of -63°C is recorded in the Eastern Pamirs, while the absolute highest air temperature of +47°C is observed in the south of the country. The sunshine duration ranges between 2,100 and 3,170 hours per year. The average annual precipitation is 760 mm. In the alpine deserts of the Eastern Pamirs, precipitation reaches only 70-160 mm, while in Central Tajikistan precipitation may exceed 1,800 mm.

Tajikistan ranks first in Central Asia in terms of water resources. Mountainous and piedmont areas of the country form a basic zone where runoff into the Aral Sea Basin is formed. Within Tajikistan, 80% of runoff into the Amudarya River and 1% of runoff into the Syrdarya River are formed. In general, this makes up 64

km³ per annum, or 55.4% of water resources of the Aral Sea Basin. The total volume of glaciers in the country is over 845 km³; underground and lake waters amount to 18.7 km³ and about 46.3 km³ per annum respectively.

In Tajikistan, like in the whole world, climate change is distinctly observed. For the recent 65 years, the average annual air temperature has increased by 0.7-1.2°C in the broad valleys, by 0.1-0.7°C in the mountainous and alpine areas, and by 1.2-1.9°C in cities/towns. Because of the climate change impacts, the country's glaciers have also changed and are estimated to have lost, for the last 50-60 years, 20% in their volume and 30% in their area.

With very scarce oil and gas resources and difficulties for the industrial development of coal deposits, Tajikistan has enormous, inexhaustible reserves of hydro-power resources (527 billion kWh per year) ranking 8th in this regard, while ranking 1st and 2nd in the world in terms of specific reserves (per unit of the territory and per capita respectively). This potential three times exceeds the current electric power consumption in Central Asia; and if these resources are used efficiently the region could be supplied with cheap and environmentally friendly electric power. This might become a real contribution to the development of a "green" economy throughout whole Central Asia.

Because of the difficulties associated with transition to a market economy, the stabilization and economic growth seem to have started in Tajikistan only in 1998. Later, macroeconomic sustain-

ability was achieved characterized by decreased inflation rates, predictability of the national currency exchange rate and strengthened country's budget system. In 2010, Gross Domestic Product (GDP) reached TJS 30.069 billion, or USD 6.2 billion. GDP per capita reached USD 742.8, having increased 4.7 times compared to that in 2000. In 2010, industry, agriculture, capital investments and retail sales accounted for 33.4%, 38%, 18.9% and 25.8% of GDP respectively.

Irrigated lands account for 90% of the agricultural output in the country. In the industrial output, the highest specific weight falls on nonferrous industry (51%), light industry (22%), food industry (15%), flour and cereals industry (8%), etc.

Tajikistan exports primarily raw materials. These mainly include aluminum, lint cotton, electric power, precious and semi-precious rare earth metals, stones, items made out of stones, fresh vegetables and fruits, vegetable and fruit preserves, rawhide, silk, carpets, handicrafts, etc. Tajikistan imports energy carriers, timber, ferrous metals, products of light and machine-building industries, cars, agricultural machinery, equipment for the power engineering sector, raw materials for aluminum production, pharmaceuticals, medical equipment, transportation means, food products, etc.

In general, Tajikistan has political will, stable social and political situation, high resource potential, legal and regulatory framework, and institutional and financial and economic systems that contribute to sustainable development towards a "green" economy.



3



TWENTY YEARS AFTER:
achievements, missed
opportunities and emerging
challenges





TWENTY YEARS AFTER: achievements, missed opportunities and emerging challenges

3.1 SUSTAINABLE DEVELOPMENT TRENDS AT THE INTERNATIONAL LEVEL

The concept of sustainable development emerged at the end of the 80s of the 20th century when the UN World Commission released its report *Our Common Future*. The idea of sustainable development binds all the countries to take collective responsibility for the economic and social development linked to environmental protection at the local, national, regional and global levels.

Commitment to sustainable development and key principles of its achievement are reflected in the outcome documents of many international summits, including the *Rio de Janeiro Declaration on Environment and Development*, *Agenda 21*, *Programme for the Further Implementation of Agenda 21*, *Johannesburg Declaration on Sustainable Development*, and *Johannesburg Plan of Implementation*.

Owing to the world community's particular attention, a positive tendency of sustainable development seems to have taken place over the past period. *Inter alia*, over the period 2000-2005, incomes of over 120 million people have exceeded the index of "one dollar per day"; the under-five mortality rate has decreased from 12.4 million in 1990 to 8.1 million in 2009, and access to education, water

and health services has improved.

National commitments to sustainable development have also deepened over the past years. Many governments have already mainstreamed environmental and social concerns in their economic policies, and have deepened, particularly through ratification of the international environmental agreements, their commitment to the implementation of *Agenda 21* and related national agreements, development plans and strategies. By October 2009, the *Vienna Convention* and its *Montreal Protocol* have been ratified by 196 countries of the world; this ensured national commitments to the preservation of the ozone layer.

Despite all the endeavors undertaken by governments and non-governmental institutions, sustainable development, however, remains a goal of the remote future because of many obstacles and system gaps in the implementation of the commitments internationally agreed upon. There is still much to be done: about 1.5 billion people do not have access to reliable power supply; 2,400,000,000 people do not have reliable access to up-to-date heating systems and cooking technologies; about 900 million people do not have access

to safe drinking water, and almost 3 billion people do not have access to modern sewage systems; approximately 1.4 billion people are still extremely poor, and 1/6 of the world population do not receive sufficient amount of nutrients. There are implementation gaps in achieving the MDGs for sanitation with a half of the developing countries' population having no access to the adequate sanitation. The global economic crisis and food price growth resulted in higher number of the poor. The demand for lands, water, forests, ecosystems and other natural resources has increased, and they undergo further depletion and degradation. By 2025, depletion and pollution of water resources and marine environment might affect 1/3 of the world population. Although there is progress in the implementation of international conventions, desertification and land degradation, exposure to pesticides, hazardous wastes and other harmful substances still threaten developing countries.

The increasing demand for hydrocarbon fuel and changes in land use practices resulted in increased greenhouse gas emissions to the atmosphere. Global emissions increase almost by 1 billion tons per year. As a result, CO₂ concentration in the atmosphere increases by 0.5% per year, having amounted, in 2008, to 385 million particles per 1 cubic meter. Over the past 100 years, increased greenhouse gas concentration resulted in the increase of the average temperature on the Earth by 0.6-0.9°C.

The growth of the population of 9 billion by 2050 also exacerbates the environmental pressure. In general, the problems listed are interrelated and interdependent, and require an adequate local, national, regional and global response.

In this context, the world community treats the concept of a "green" economy as one of the drivers of sustainable

development. In a "green" economy, ecologically sound and efficient technologies and sustainable agriculture are key driving forces of the economic growth, environmental security and employment creation, and an important condition for social well-being. In the production of end-use commodities and generation of wastes, a traditional economy combines labor, technologies and resources. Contrariwise, a "green" economy has to return wastes back to the production cycle, while causing minimum damage to the nature.

According to the UNEP's new report *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication*, concepts of economic growth and environmental sustainability do not at all cancel each other. On the contrary, a "green" economy creates employment and spurs economic growth, while avoiding considerable risks such as climate change impacts, water scarcity increase and the loss of ecosystems services. It also ensures higher growth of GDP and GDP per capita. The report states that within 5-10 years, a "green" investment scenario will achieve higher, than in the business as usual scenario, annual growth rates, and such a growth will not adversely affect the environment.

In the development of a "green" economy, major focus will be on enhancing energy and resource efficiency. So, because of the substantially higher energy efficiency, it is expected that the world demand for energy will be, by 2050, 40% less than what is expected under the business as usual scenario; by that time, "green" investments will reduce energy-related CO₂ emissions by 1/3 to compare with their current level. Higher resource efficiency in agriculture, industry and municipal sector would, by 2050, reduce the water demand by 20% to compare with forecasts based on the existing trends.

As it is noted in the above UNEP's Report,

“green” investments are a key factor in achievement of green growth. According to the scenarios elaborated, transition to a green economy in 2012-2050 can be ensured by annual contribution of 2% of global GDP (approximately USD 1.3 billion of current global GDP) to key sectors, such as agriculture, housing and public utilities sector, power engineering, fishery, forestry, industry, tourism, transport, waste and water resources management. Such investments, however, should be supported by the reforming of national and international policies.

Here, such tools as a taxation system, staff's professional competency, training and education that could contribute to the attraction of “green” investments and innovations will play a great role. The strengthening of the international guidance and cooperation mechanisms for transition to a green economy

is also rather important.

The Rio+20 Conference is expected to provide an opportunity to lay a course for the establishment of a more sustainable, safe and equitable world. As it was noted by Mr. Sha Zukang, the Secretary-General of the United Nations Conference on Sustainable Development, in his statement at the second session of the Preparatory Committee, “Rio-2012 will be one of the most important events in the coming decades. We all want an ambitious, action-oriented and bold outcome document that would outline clear pathways for transition to a green economy, while allowing eradicating poverty and establishing better institutions.”⁷

⁷ Towards a Green Economy. <http://www.un.org/ru/development/desa/news/sustainable/development-green-economy.shtml>

3.2 SUSTAINABLE DEVELOPMENT PROCESS IN TAJIKISTAN

Having become independent, Tajikistan launched, in the early 90s of the past century, its political and economic reforms. Transition to market relations is based on national traditions and best practices of foreign countries. To encourage entrepreneurship and reduce poverty rate in the country, the reforms established legal bases for the new political and economic system of state governance in line with the democratic principles and market requirements. This resulted in the reforming of the civil service system, establishment of the mixed market economy, implementation of the land reform, initiation and deepening of state property privatization, and reforming and strengthening of the education material and technical base, while contributing to the formation of real owners, stability and social well-being.

The Government of the Republic of Tajikistan has adopted the *National De-*

velopment Strategy until 2015 as a programme basis. On the basis of this Strategy, mid-term poverty reduction strategies are adopted every three years for implementation. Sectoral strategies and development programmes are regularly adopted and implemented to develop various sectors of the economy. In 2005, the Government jointly with UN prepared the MDG Needs Assessment in Tajikistan; according to this assessment, the total cost of achieving the MDGs amounts to USD 12.98 billion. In 2007, the Government of Tajikistan approved the *Concept for Transition to Sustainable Development of the Republic of Tajikistan* identifying a vision, principles, goals, objectives and key mechanisms for sustainable development through integration of economic, environmental and social concerns to improve living standards of the country's population.

Implementation of the institutional re-

forms, establishment of an adequate legal framework through adoption of a number of new laws and legal and regulatory documents, and adoption of short-, mid- and long-term development strategies and programmes have provided an adequate basis for the country's social and economic development and conservation of the environmental balance. In 2011, country's GDP reached TJS 30,069.3 million; GDP per capita reached TJS 3,866 (USD 838.7) with the growth rate amounting to 7.4% to compare with that of the previous year. Services, trade, agriculture, industry, and construction are the dominant sectors in contribution to GDP. These figures are low to compare with those in developed countries; however, with the stable annual growth rate equal to 8-10%, the country could double its GDP every 10 years.

Focused social policy, with mechanisms of targeted social protection of the population, has also contributed to the strengthened stability and improved life quality in the country. Real salary increased 3 times in 2006 and 5 times in

2010 compared to that in 2001.⁸ The minimum pension increased from TJS 80 (USD 17.35) in 2010 to TJS 150 (USD 31.6) in 2012. The average pension to average salary ratio increased from 26% to 30%, which is lower than the minimum ratio of 40% established by the international standards.

On average, 130,000-150,000 new jobs are created in the republic every year under the implementation of the State Employment Assistance Programme. The Tajikistan's migration policy also contributes to job opportunities abroad, and provides some guarantees to labor migrants. According to the official data, 700,000 Tajik citizens are currently working abroad, remitting about USD 1.5 billion per year to their families who remained in the country. Over the period 2001-2010, the internal migration policy allowed resettling about 13,000 families and providing them with jobs. Currently, there are 55.5 thsd officially unemployed people in the country, accounting for 2.6% of the economically active population.

There are 3,357 educational institutions,

⁸ National Human Development Report. Tajikistan: Institutions and Development. UNDP, 2012.

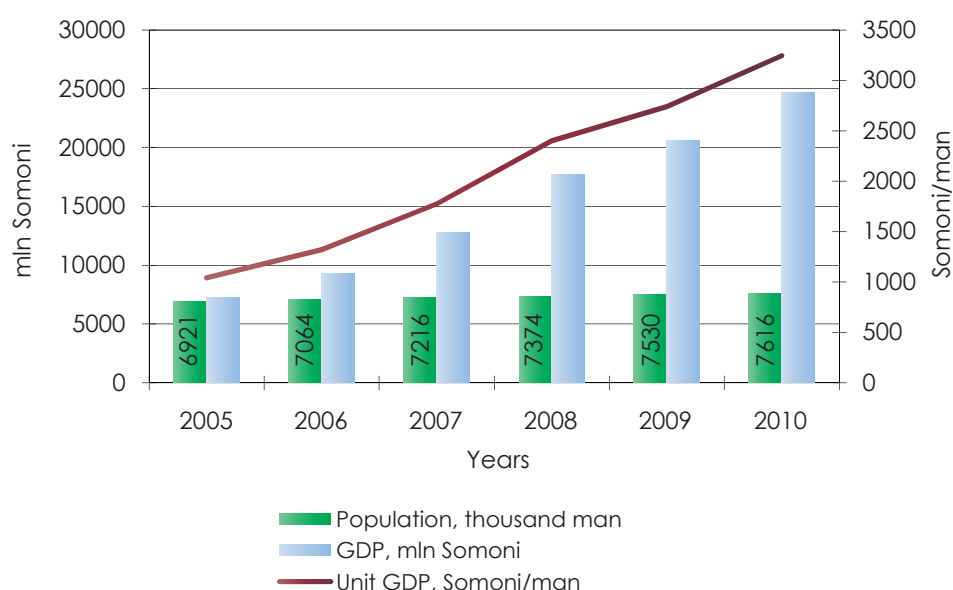


Figure 3.1 Growth of GDP and population in Tajikistan

with 1.5 million students, functioning in the republic. Over 100,000 students study at 30 higher institutions and 72 secondary technical schools; over 1,000 health facilities provide services to the urban and rural population. Public expenditures on education, as percent of GDP, increased from 2.3% in 2000 to 4.8% in 2010. Such an increase falls primarily on the past 5 years; this is associated with reforms implemented in the republic's education system.

The steps undertaken and macroeconomic stability achieved allowed reducing the poverty rate from 81% in 1999 to 46.7% by 2010 and establishing a basis for the further economic growth and improvement in quality of basic social services. The proportion of the population living on less than USD 1.25 per day reduced to 21.5%.

The country's social and economic development takes account of environmental protection and rational use of natural resources, such as land, water, etc. To this end, the Government has developed a number of legislative and legal and regulatory documents, programmes and concepts. Tajikistan ratified, and became a party to, 10 conventions, protocols and agreements related to environmental and sustainable development problems. To prioritize measures and focal areas of activities on rational use of natural resources and to further improve the environment, the Government has adopted the *National Environmental Action Plan of the Republic of Tajikistan (2006)* and *State Ecological Programme of the Republic of Tajikistan for 2009-2019 (2009)*.

Climate change resulting, according to expert estimates, in decrease in the glacier area by 30% and decrease in the ice volume by 20% takes a special place among other environmental protection activities. In 1998, Tajikistan acceded to the *UN Framework Convention on Cli-*

mate Change, having ratified its *Kyoto Protocol* in 2008. The Government developed and approved the *National Action Plan for Climate Change Mitigation* and prepared the *First and Second National Communications of the Republic of Tajikistan under the United Nations Framework Convention on Climate Change*. In 2010, the *State Programme on Glaciers Study and Protection for 2010-2030* was adopted.

Tajikistan ranks 154th among over 200 countries of the world in terms of specific carbon dioxide (CO₂) emissions. In Tajikistan, per capita greenhouse gas emissions are less than 1 ton per capita per year, and a share of the country's emissions in the region is just 5%. This is primarily attributed to the use of hydro resources that provide environmentally friendly electric power; their proportion in the country's energy balance is 98%.

The general public is also involved in the process of the country's sustainable development. There is a Public Council established in the country; annual meetings of the President with the intelligentsia, youth, women and other groups are conducted where the authority holds dialogues with the public on pressing problems facing the society and ways of their resolution. With the support of international organizations, environmental NGOs perform a programme of great significance for the country, i.e. development and implementation of Local Environmental Action Plans.

In general, Tajikistan has a unique ecological potential, huge hydropower resources and fresh water, diverse minerals, favorable conditions for growing environmentally friendly food products, and real opportunities for ecotourism development. Together with the available human capacity and adequate institutional and legal framework, this contributes, to a large extent, to Tajikistan's transition to sustainable development.

3.3 WATER RESOURCES AS AN INTEGRAL PART OF SUSTAINABLE DEVELOPMENT IN TAJIKISTAN

World development practices show that with the demographic growth in the midst of global climate change and continued functioning of the "brown economy", water problems are increasingly deepening. Water is the most valuable, irreplaceable resource for life and health and for the development of many sectors of the economy, such as agriculture, industry and electric power generation. Sustainable water resources management, therefore, is crucial for poverty eradication. Water is also a factor forming regional relations that determine, to a large extent, peace and security.

The Government of the Republic of Tajikistan pays a special attention to water issues and their resolution at the national, regional and global levels. Deep understanding of the growing water problems and a need to elaborate international community's coordinated activities on their resolution served as a basis for a number of water initiatives proposed by His Excellency the President Emomali Rakhmon and supported by the international community. On the basis of these initiatives, the UN General Assembly declared, by its Resolutions 55/196, 58/217

and 65/154, the year of 2003 as the International Year of Fresh Water, the years of 2005-2015 as the International Decade for Action 'Water for Life', and the year of 2013 as the International Year of Water Cooperation.

It's remarkable that having huge water resources and taking, in this relation, one of the leading positions in both Central Asia and the world, Tajikistan comes out as an initiator of water problems resolution.

With their total volume estimated at 845 km³, the glaciers form a basis of water resources in the country. There are 14,509 glaciers in the country with their total glaciation area of 11,146 km². There are 947 rivers flowing through the republic's territory with their total length exceeding 28,500 km. Within Tajikistan, 80% of runoff into the Amudarya River and 1% of runoff into the Syrdarya River are formed. In general, this makes up 64 km³ per annum, equal to 55.4% of the total runoff into the Aral Sea Basin. Over 46.3 km³ of water is concentrated in the lakes of Tajikistan, out of which 20 km³ is fresh water. There are 10 water reservoirs in Tajikistan with a total capacity of 15,353 km³.

Table 1. Water resources formation in the Aral Sea Basin

Countries	Amudarya		Syrdarya		Total	
	km ³	%	km ³	%	km ³	%
Kazakhstan	-	-	4,50	12,12	4,50	3,89
Kyrgyzstan	1,90	2,42	27,40	73,77	29,30	25,35
Tajikistan	62,90	80,17	1,10	2,96	64,00	55,36
Turkmenistan (with Iran)	2,78	3,54	-	-	2,78	2,40
Uzbekistan	4,70	5,99	4,14	11,15	8,84	7,65
Afghanistan	6,18	7,88	0,00	0,00	6,18	5,35
TOTAL	78,46	100,00	37,14	100,00	115,60	100,00

Source: Main provisions of water strategy of the Aral Sea Basin, 1996

They regulate 23.9% of the stream flow formed on its territory, and 17.5% of the stream flow taking account of the inflow from the neighboring states. Tajikistan's groundwater resources are estimated at 18.7 km³ per year, and useful groundwater resources amount to 2.8 km³ per year.

In Tajikistan, key water consumers are irrigated agriculture, utility and drinking water supply, industry and fishery accounting for 85%-90%, up to 8.5%, up to 4.5% and up to 2% of the total volume of water consumption respectively. These most important components of the water complex form the basis for the national development in Tajikistan. In the country, drinking water supply and sanitation are priority water uses; however, all uses are behind hydropower engineering and irrigated agriculture in terms of importance for economic development.

The Tajikistan's hydropower potential is estimated at 527 billion kWh per year, which 3 times exceeds the current consumption of the Central Asian states. Tajikistan ranks 8th in terms of total hydropower resources, behind China, Russia, US, Brazil, Zaire, India and Canada in the ranking. In terms of specific indices of hydropower potential per one square kilometer (3,682.7 thsd

kWh per km² per year) and per capita (73.8 thsd kWh per capita per year), the country ranks 1st and 2nd respectively.

In Tajikistan, modern use of hydropower resources allows generating about 17 billion kWh of electric power per year, which is about 3% of the available potential. Hydropower engineering accounts for over 98% of the country's energy balance. Industry, agriculture, transport and communications, and population's domestic and household consumption are the primary consumers of electric power. In principle, these are the key sectors ensuring economic development, and the country GDP's composition is an evidence of this.

Tajikistan does not have sufficient gas and oil resources, and existing coal resources are located primarily in mountainous hard-to-reach areas; thus, development of the available hydropower potential is a key for achieving energy independence as one of the Government's strategic objectives. On the other hand, development of hydropower resources is economically and environmentally sound. In Tajikistan, production cost of 1 kWh of hydroelectric power is estimated at 0.4 cents, while electric

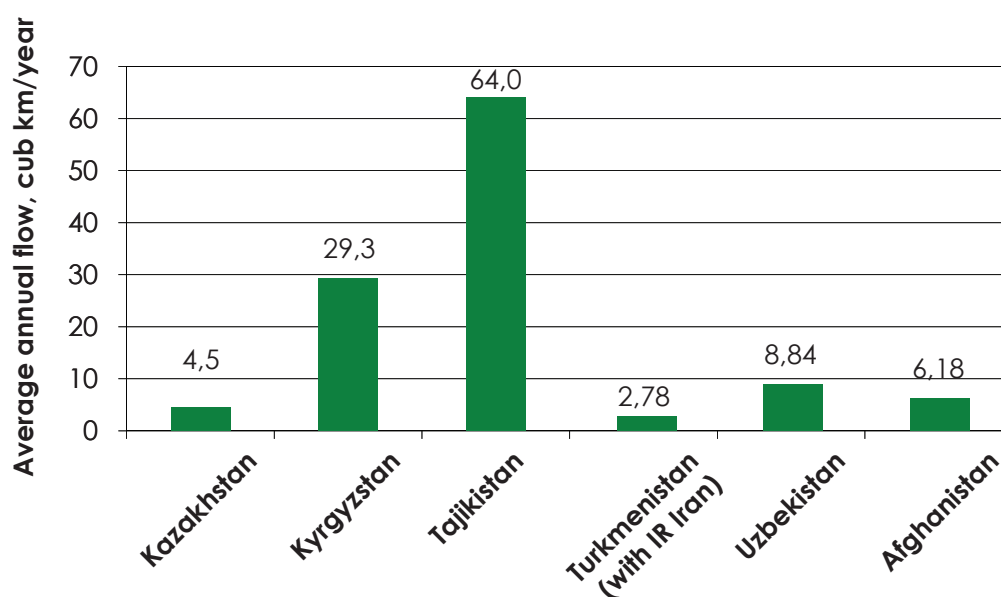


Figure 3.2 Formation of water resources in Aral sea basin

power generation at TPPs, using imported gas and residual oil, costs 6-7 cents. In environmental terms, use of hydroelectric power is justified by its friendliness, i.e. lack of CO₂ emissions as a primary cause of atmosphere pollution and climate change as such. This is also quite consistent with the concept of a “green” economy calling for carbon-free economic development.

Having a huge hydropower potential, Tajikistan, for the past 15 years, has annually been experiencing a significant shortage of hydroelectric power in the fall-winter period when river runoff substantially decreases and volume of water reservoirs prevents accumulation of water in amount sufficient to cover its scarcity in the winter period. First of all, this affects health and living standards of the population, particularly its vulnerable groups such as old people, women and children. During this period, schools are closed, and governmental institutions and hospitals work in a limited regime. Electric power shortage severely affects the country's economy, too. Nearly all small industries stop functioning in the winter period. All this results in increased unemployment, social tension, and significantly decreased economic growth rates.

Amidst the huge potential available, such a situation requires acceleration of the Government's course for development of hydropower resources to ensure social and economic development and improve well-being of the population.

Irrigated agriculture is also a strategically significant sector of the country's economy. There are 1,573 thsd ha of potentially irrigable lands in Tajikistan; out of them, 744,000 ha are developed and irrigated. Over 45% of the irrigated lands lie in the pump irrigation zones where over 2,000,000 people live. In Tajikistan, per-capita availability of the irrigated lands is the lowest in the Aral Sea Basin, amounting to 0.0976 ha (2011).

Irrigated agriculture accounts for 90% of the agricultural production in the country, thus significantly contributing to the economic growth and food security. Irrigated agriculture is also important for the population's employment. Over 70% of the Tajikistan's population lives in rural areas, and most of the employable population there is engaged in agriculture. Agriculture accounts for about 30% of the country's export potential. In the export structure, cotton (USD 201 million), fresh and dried fruits (USD 167 million) grown on the irrigated lands are dominant.⁹

Tajikistan's recreational resources are also a potential of the country's future development; they exceed agricultural potential opportunities in terms of earning capacity and employment opportunities. Tajikistan has 162 natural landscape monuments, over 200 sources of mineral waters, 18 mud and saline lakes. Now, the actual availability of sanatorium-resort complexes is estimated at 5 places per 10,000 people, or admission capacity of about 4,000 people at one time; the total available capacity is equivalent to the admission capacity of 50,000 people at one time. These resources are good for national and foreign capital to be invested in, and in future they may become one of the key components of the country's economic development.

Tajikistan also has an excellent resource base for bottling mineral and table water. Because of the domestic production, the internal market is considerably saturated with this water. Attraction of internal and external investments and establishment of joint-venture and joint-stock companies and other enterprises might increase export volumes of these waters to a maximum extent, contributing to the economic growth and employment creation.

Water resources are also crucial for conservation of ecological systems, especially wetlands and protected areas,

⁹ Goskomstat of the Republic of Tajikistan. Goods export in 1993-2010, data as of 2011.

among which the *Tigrovaya Balka* and the Tajik National Park of biosphere significance are the most important.

Along with social and economic benefits, water resources may also have a negative impact. Tajikistan is a mountainous country, and severe geographical conditions make it vulnerable to natural disasters, such as mudflows and floods that happen up to 25 times per a decade. During floods, the flow velocity in mountainous rivers may reach 60-80 km per hour. In especially high-water years, damage caused to Tajikistan by floods and mudflows reaches tens of millions of US dollars. The cost of 2010 mudflows and floods amounted to over USD 600 million. This seriously undercuts the country's efforts to achieve development goals and objectives agreed upon internationally, including the MDGs.

Tajikistan's water and hydropower resources have a huge importance for achieving sustainable development in the regional context, too. Currently, organic fuel, such as gas, oil, and coal whose reserves deplete each year, accounts for over 70% of the electric power generated in the region. According to SPECA, gas and oil resources will completely deplete in 60 years, and further development under the current scenario

will lead to rather severe consequences. Over the recent years, some other countries in the region, along with Tajikistan, have also been experiencing electric power shortage. On the other hand, in low-water and drought years the region faces a serious problem of water shortage in connection with water reservoirs' insufficient capacities. This was especially obvious in the years of 2000-2001 and 2008. There are also problems related to spring floods in high-water years.

A solution to all these problems could be the development of the Tajikistan's hydropower potential through the construction of hydroelectric power plants and water reservoirs that would allow solving the above problems at a time, including the generation of cheap and environmentally friendly electric power, ensuring of the reliable water supply to the irrigated lands, protection against mudflows and floods, mitigation of droughts, significant saving of oil, gas and coal resources and reduction of carbon dioxide emissions to the atmosphere. It's remarkable that this organically fits into the course of international activities on transition to the use of renewable energy sources treated as a key priority on the way towards our planet's ecology improvement and development of a "green" economy.



4

TOWARDS A «GREEN» ECONOMY IN TAJIKISTAN





TOWARDS A "GREEN" ECONOMY IN TAJIKISTAN

4.1 OPPORTUNITIES AND CONDITIONS FOR TRANSITION TO A "GREEN" ECONOMY

Current status. Having become, in 1991, independent, Tajikistan launched comprehensive economic and political reforms that are constantly deepening towards establishment of a democratic secular state and developed market economy. In Tajikistan, transition to new relations has its peculiarities and challenges. The country has not yet achieved the economic growth levels of the beginning of the 90s of the past century. Sustainable development in the country depends upon a whole set of complicated tasks related to the recovery and upgrading of production capacities, development and strengthening of international economic relations, introduction of advanced market mechanisms, improvement of social and economic conditions of the population, ensuring of the food and energy security, improvement of education and specialists training, ensuring of the state security and protection of human rights, environmental protection, civil society activation in the country's social and economic development, and a number of other tasks.

Initially, a need of post-conflict economy rehabilitation, high poverty and unemployment rates made the achievement of sustainable development, production modernization and environmental conservation in Tajikistan complicated. Country's remoteness from sea ports and

developed world economic centers, lack of its own hydrocarbon resources, natural and geographic fragmentation of the country into regions, low capacity of the internal market, facts of political instability in the region around the country, high transaction costs, high costs of natural disaster prevention and mitigation measures, and other contemporary challenges made the resolution of these problems twice more difficult.

The Government of Tajikistan is implementing programmes for enhancing state governance efficiency, developing entrepreneurship, creating an attractive investment climate for national and foreign investors, increasing competition levels, overcoming infrastructural constraints to growth, increasing human capital levels, solving problems related to external migration management, reforming the governance system in the most important sectors of the economy and on the ground, improving efficiency of the international cooperation, ensuring unequivocal law enforcement, protecting human rights, and developing civil society.

Opportunities. In order to help "change individual and collective behavior" in life styles, consumption and production models, "transition to a "green" economy requires fundamental changes in

our thinking and actions."¹⁰ According to UN, transition to a "green" economy is estimated at approximately USD 2 trillion per year, including the greening of infrastructure. This being the case, it is expected that consumer food, energy and accommodation prices will continue increasing all over the world. Given the current economic situation, it is difficult to uniquely assess Tajikistan's opportunities to green its economy. Tajikistan is a developing country, and in the foreseeable future it will need external investments. There are fears that because of the investments in the development of their own green economies, developed donor countries will reduce their assistance to developing countries. Given such possible risks related to external investments, development of the national economy, therefore, should be primarily linked to higher efficiency of the use of available material, technical, financial, human and natural resources.

As it is highlighted in the UNDP's remarks in preparation for Rio+20, "green" is not everything: our future is "trifecta" policies and programmes: a key to accelerate progress towards sustainable development is broadened by a "trifecta" of policies and programmes linking economic, social and environmental elements of sustainable development.¹¹

Given high population growth rates and a need for adequate social and economic development of the country, "brown economy" requires huge natural resources (land, water, air, mineral resources, flora and fauna, recreational resources, etc.). In this context, "more balanced development mechanisms" are required.¹² Tajikistan has an opportunity to use its backward economy not just to

recover a brown economy, but to immediately and directly introduce a "green" economy. This will allow Tajikistan to save, during the next decades, both time and money. This, however, can be achieved only through cooperation with, and large-scale technical and technological support of, developed countries. It is hoped that developed countries will share their advanced green technologies free of charge; otherwise, the world will still be divided into the "developed" and "developing", "full" and "hungry".

Tajikistan's potential opportunities for transition to a "green" economy are its readiness to undertake relevant economic management reforms and establish enabling conditions for the wide involvement of the civil society in the introduction of "green" elements in all areas of life. Environmental protection in the context of a "green" economy will be directly mainstreamed in the consumption and production spheres.

Tajikistan's real opportunities for transition to a "green" economy are its natural resources:

- more than half of the Central Asian fresh water resources;
- huge hydropower resources;
- land resources, including vast areas of undeveloped valley and mountain lands suited for the agricultural production;
- favorable natural and climate conditions for the agricultural development and generation of environmentally friendly agricultural products;
- favorable natural conditions for the development of tourism and recreation in general; and
- availability of various mineral resources.

Tajikistan's infrastructural opportunities are:

- widespread national transportation and communications system;
- developed phone and mobile communications system;
- availability of high-powered pow-

10 UN and Green Economy, <http://www.warandpeace.ru/ru/news/view/68882/>

11 UNDP's communications "narrative" for Rio+20, 2012.

12 Concept for Transition to Sustainable Development of the Republic of Tajikistan approved by Decree of the Government of the Republic of Tajikistan No. 500 dated October 1, 2007.

- er engineering facilities; and
- large-scale drinking water supply, sewage, irrigation, drainage and pasture watering system.

There are also the following opportunities and national systems of human resources development:¹³

- great number of the employable population;
- system of secondary, secondary special and higher education; and
- national health system.

Conditions. Tajikistan's sustainable development is viewed as an element of sustainable development of the world community, and its national goals and objectives are seen as the implementation of goals and objectives stated in declarations and international agreements.¹⁴ At the same time, the primary objective of transition to sustainable development and "green" economy should be consistent with the MDGs and Tajikistan's aspirations for ensuring its stable social and economic development. In general, the country's current policy is consistent with the principles of sustainable development.

Tajikistan has acceded to a number of international conventions,¹⁵ implements programmes and activities under them, and is a member of many international and regional organizations¹⁶ whose ac-

tivities are related to ensuring sustainable development. The country has signed a number of international and regional multilateral and bilateral agreements on the joint use and protection of natural resources.¹⁷

Tajikistan makes efforts to develop its economy and achieve the MDGs under the implementation of the *National Development Strategy of the Republic of Tajikistan until 2015* and mid-term *Poverty Reduction Strategies*, including those for 2007-2009 and 2010-2012. The Republic of Tajikistan actively participates in the implementation of the *Regional Environmental Action Plan (REAP)* jointly developed under the auspices of the Interstate Commission on Sustainable Development (ICSD) with the support of ADB, UNEP and UNDP and in the preparation of the *Framework Convention on Environment for Sustainable Development of Central Asia*, and also supports the preparation of the *Central Asia Sustainable Development Strategy*.

When Tajikistan acceded, in 2001, to the Aarhus Convention, the first Aarhus centre was established in Dushanbe with the OSCE support under the *Environment and Security Initiative*. Currently, there are 4 Aarhus centers in Dushanbe, Khujand, Kurgan-Tyube and Khorog¹⁸ that actively share environmental information and knowledge with the population. Under these activities, an review of the current environmental legislation has been performed and relevant legislative acts have been promoted.

Using its real opportunities, Tajikistan performs activities to ensure sustainability of

13 The current education and health systems have a lot of gaps; the existence and reforming of these systems, however, offers hope for step-by-step increase in their efficiency.

14 Concept for Transition to Sustainable Development of the Republic of Tajikistan approved by Decree of the Government of the Republic of Tajikistan No. 500 dated October 1, 2007.

15 Tajikistan has acceded to 10 global environmental conventions and protocols, including the UN Convention on Climate Change, Convention on Biodiversity Conservation, and Convention to Combat Desertification.

16 Tajikistan is a member of a number of regional and subregional organizations within the UN system, SCO, EurAsEC, IFAS,

ICWC, ICSD, etc.

17 Tajikistan is a Party to bilateral and multilateral agreements on economic cooperation, joint use of water resources, planning of their development, information exchange and other joint activities signed with the Central Asian states, Afghanistan, Russia, Belarus, other CIS, and non-CIS countries.

18 Public Participation for a Safe Environment. The Aarhus centers. OSCE Magazine, No. 3/2011.

its economic development, strengthen state power ensuring political stability, security, social equity and public order and to provide every citizen with opportunities to develop in a healthy economic and social environment. Forced use of significant financial, material and technical resources to ensure security and preserve the country's defense capacity, however, significantly decreases tempos of the achievement of the objectives set.¹⁹

With its diverse natural resources and sufficient human capital, the country, however, can successfully achieve sustainable economic development. Having rather limited hydrocarbon resources, Tajikistan, using the concept of a "green" economy, can choose a new model of economic development, i.e. use of all natural resources on the basis of wide application of "green" technologies and, on their basis, creation of

¹⁹ Tajikistan has to spend huge funds to protect its frontiers from drug trafficking and potential terrorist threats.

employment opportunities for the whole employable population, improvement of economic, technical, technological and environmental education quality, development of the regional and international integration and trade, and development of the country's export potential through the production of "green" products.

Creating conditions for the development of a "green" economy is seen as a long process, and sustainable development in Tajikistan will be implemented at the initial stage in the following areas:

- building of a pro-social market economy;
- efficient economic management and careful use of natural resources; and
- establishment of a civil society.

To achieve success in these areas, it is needed to implement deep reforms to improve governmental economic management and social development institutions.

4.2 TAJIKISTAN'S EFFORTS TO TRANSIT TO A LOW-CARBON ECONOMY THROUGH USING RENEWABLE ENERGY SOURCES, INTEGRATED WATER RESOURCES MANAGEMENT AND ENVIRONMENTAL SUSTAINABILITY

According to UNEP, transition to a low-carbon, resource-efficient economy can be initiated by investing in 10 key sectors just 2% of global GDP. Transition to a "green" economy can be ensured by annual contribution, in 2012-2050, of approximately USD 1.3 billion to key sectors, such as agriculture, housing and public utilities, power engineering, fishery, forestry, industry, tourism, transport, waste and water resources management. Focused and efficient use of these investments, however, can be ensured by the adequate reforming of national and international policies.

Developing countries, including Tajikistan, have a huge unused potential.

Nevertheless, sustainability of the next stage of their development will be connected with the step-by-step introduction of a "green" economy.

While "brown" and "black" economies are preserved, there is a tendency to increase material costs associated with the intensive use of natural resources and environmental pollution (Figure 4.1). At the same time, up-to-date resource-saving technologies are used primarily in developed countries, and developing countries use relatively lagging technologies that pollute the environment.

Use of "green" technologies will mean the replacement or initial use of re-

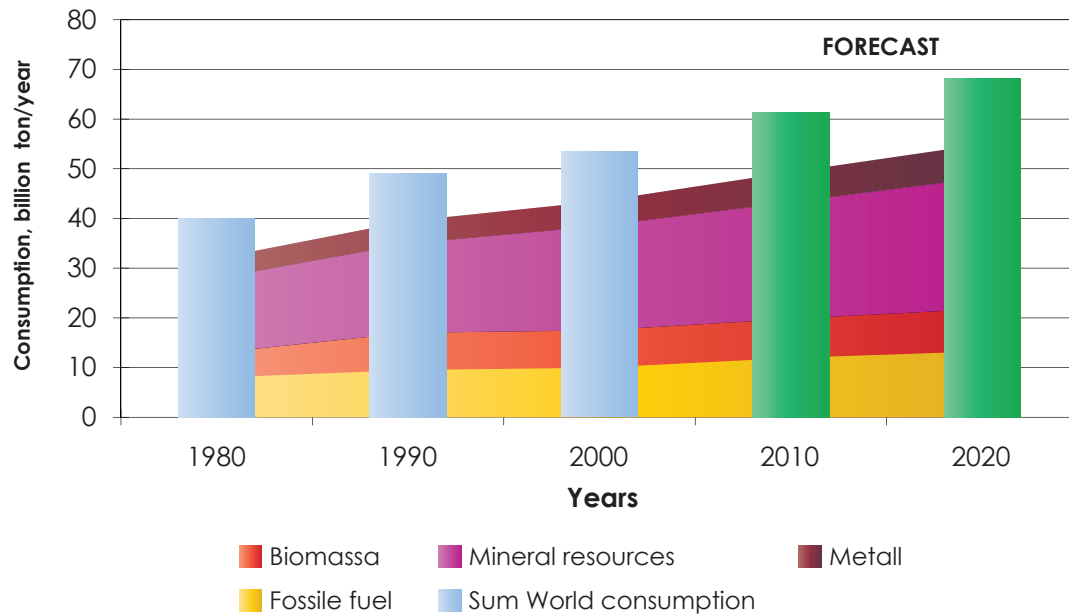


Figure 4.1 Consumption of natural resources by World production

source-saving technologies, management and labor organization methods intended to save resources, reforming of management institutions, minimization of losses of natural resources when using them in production, and prevention of any types of corruption.

Air Pollution. In Tajikistan with its scarce hydrocarbon resources, transition to a low-carbon economy is of strategic importance, and it is implemented in a broad range of areas, first of all, through the development of small and large hydropower engineering, ensuring of energy and resource saving, improve-

ment of the tariff system, measurement of energy and water consumption, expansion of forest areas, etc. Country-wide introduction of up-to-date energy-saving equipment in all sectors of the economy, training of highly qualified specialists, development of science and technologies, awareness raising among the population as energy and resource consumers remain a parallel pathway to transit to a “green” economy.

At the current stage of Tajikistan's development, major contributors to the total emissions by stationary pollution sources are iron and steel, chemical, mining and energy enterprises.

Since 2009, emissions have been reduced by 5% as a result of the reconstruction of gas purification plants, modernization of some industries, implementation of environmental protection measures and strengthening of state control over vehicles' exhaust emissions. This being the case, emissions by stationary sources decreased from 41.2 thsd tons to 39.0 thsd tons, or by 5.34%; and emissions by mobile sources decreased from c 261.6 thsd tons to 249.1 thsd tons, or by 4.8%. Works in this direction are still being undertaken.

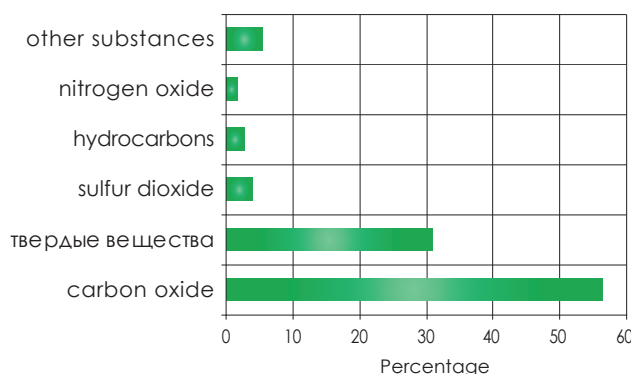


Рис. 4.2. Pollutant emissions to the atmosphere, 2009

Source: Committee for Environmental Protection under the Government of the RT

Efforts to decrease amount of CO₂ emissions are closely connected with the increase of economic energy efficiency and will provide an opportunity to get the double dividend effect. Specific decrease of the hydrocarbon fuel use has a positive impact on sustainability of power supply in Tajikistan. Use of hybrid vehicles, road rehabilitation and improvement, and other activities will give 2-3-fold effects and contribute to sustainable economic development.

In most cities/towns and industrial centers of the republic, the atmosphere quality is within the standard rate of 0.04 kg per capita. In general, atmosphere is protected in accordance with the *National Environmental Action Plan of the Republic of Tajikistan* adopted in 2006 and *State Ecological Programmes* for 1998-2008 and 2009-2019.

Commitments undertaken by the Republic of Tajikistan under the *Vienna Convention* and *Montreal Protocol* are performed at the level of the *National Programme on Ozone-Depletion Substances Mitigation*. This Programme was approved by GEF and Tajik Government

in 2002. The Government of Tajikistan approved the *Regulations On Order of Importing Ozone-Depleting Substances to the Republic of Tajikistan and On State Licensing of Activities Related to the Use of Ozone-Depleting Substances and Products Containing Such Substances* (2002). There have been established three Technological Centers for Recovery and Recycling of Ozone-Depleting Substances in Tajikistan, and 129 sets of the relevant equipment were distributed to all regions of the country. Recycling and reuse of ozone-depleting substances prevented emission of 153.2 metric tons of ozone-depleting substances to the atmosphere.

Currently, the greenhouse gas emissions have decreased, accounting for about 35-40% of the emission level of 1990 (Figure 4.2). As the economy grows, however, it will be necessary to implement adequate measures to prevent increase in the emission volumes.

Among the Central Asian states, Tajikistan contributes the least, only 2-3%, to the total emissions, which is due to considerable use of hydropower resources, relatively small number of transport vehicles, industrial and agricultural restructuring. Per capita greenhouse gas emissions in Tajikistan are almost 5 times less than the

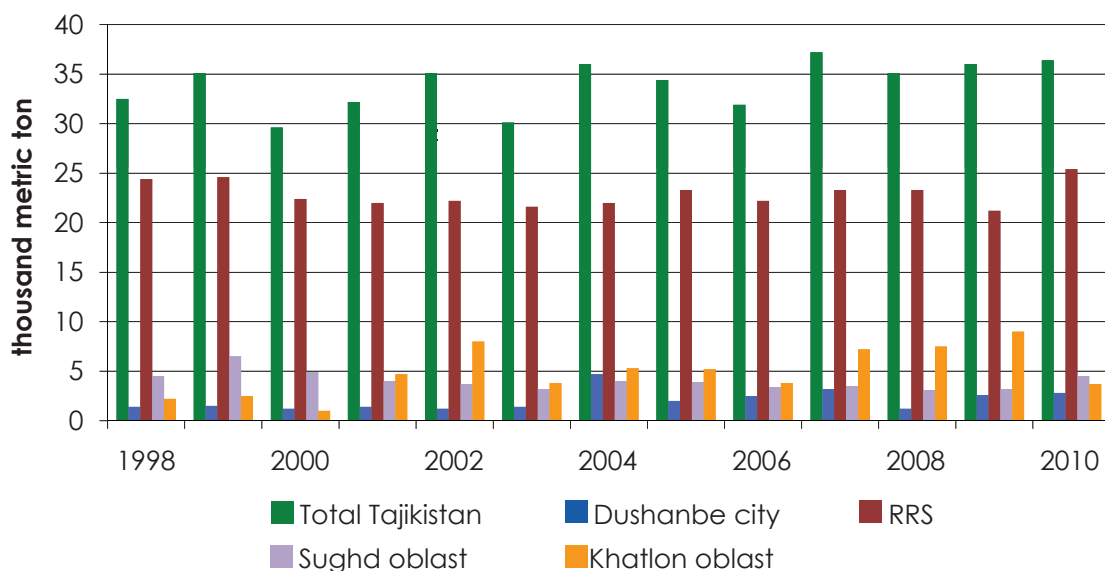


Figure 4.3. Emission of hazardous substances by stationary emitters into atmosphere in 1998-2010.

Source: Goscomstat Tajikistan

Note: Badakhshon oblast not emitting hazardous substabces

average global level, and its contribution to global warming is modest.

Renewable Energy Sources. Tajikistan is generously endowed with enormous environmentally friendly renewable energy sources, such as water and sun. If hydropower generation is currently the most widespread and efficient way of power generation, use of solar energy is now constrained by low efficiency of the existing technologies and high specific capital costs.

To improve the social and economic conditions of its population and achieve average global levels, Tajikistan should increase its economic growth 6.8÷8.5 times against the current level. Such a growth can be achieved only through power engineering development and, first of all, development of hydropower engineering. Increased energy efficiency may then ensure approximately a half of the required economic growth with another half to be ensured only through increased energy consumption, which is 10 to 20 times more efficient than energy export. Construction of large and small HEPPs in Tajikistan as a tool of supporting the *Kyoto Protocol* to reduce greenhouse gas emissions becomes a top priority, and there are huge opportunities in this regard.

No doubt sustainable power supply of the economy will remain one of the guarantees of sustainable development of countries all over the world. This is particularly important for developing countries that do not have developed energy infrastructure. This is completely consistent with the implementation of the *Sustainable Energy for All Initiative* launched by the UN General Secretary with the aim to create conditions for the reproduction of other countries' successful experiences.²⁰

Tajikistan's hydropower resources, technically and economically feasible at this development stage, constitute 317 billion

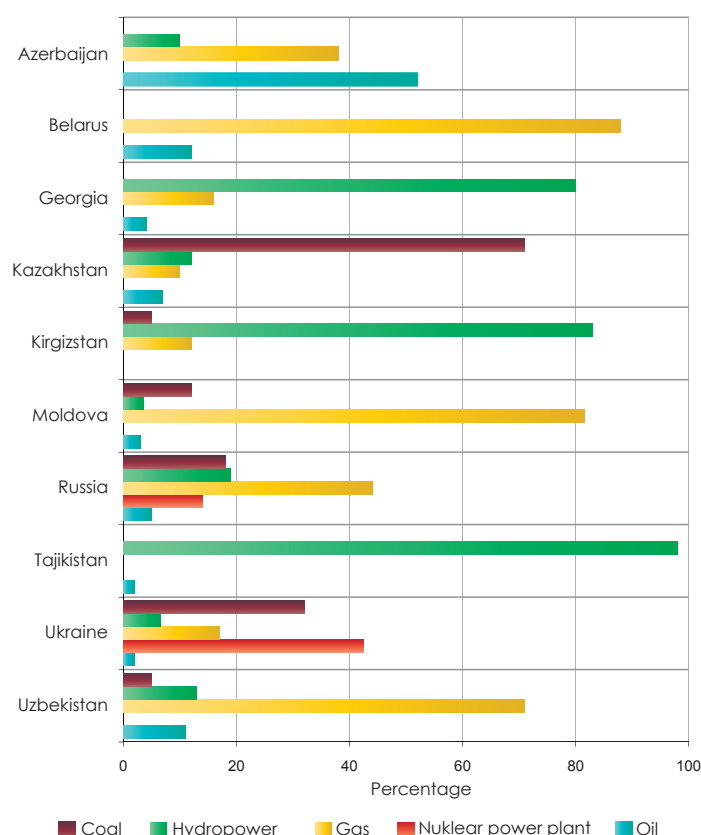


Figure 4.4. Sources of energy generation in FSU countries[1], average 1993–2007.

Note: The absence of appropriate diagram minds absence of appropriate source of energy in relevant country

kWh per year, but only 5% of them have been used so far. Tajikistan has 10 large and over 265 small HEPPs with a total capacity of 5,070 MW, and two thermal power plants with a capacity of 318 MW. The annual electric power generation amounts to approximately 17 billion kWh. About 98% of electric power is generated by hydroelectric power plants (Figure 4.3). Located on the Vakhsh River, the multi-purpose Nurek HEPP, largest in Tajikistan with a 300-meter-high dam and capacity of 3,000,000 kW, generates over 11 billion kWh of electric power per year. Completion of the construction of the Roghun HEPP with a capacity of 3,600 MW and yearly electric power output of 13.1 billion kWh is a priority for the Tajik power engineering and is a profitable investment for investors. The feasibility study of this project is currently being implemented with the support of the World Bank to study the project's transboundary social and environmental impacts. Together with the other water reservoirs, this HEPP's

20 UNDP's communications "narrative" for Rio+20, 2012, and Message of the President.

water reservoir, with a capacity of 13.3 km³, will ensure multi-year regulation of the runoff into the Amudarya Basin to increase sustainability of water supply for about 5 million ha of lands in the riparian states in low-water and drought periods. Further development of power engineering and construction of water reservoirs in Tajikistan, in cooperation with the interested neighboring states in the region, may become a solid foundation for sustainable development and joint transition to a "green" economy.

Along with the general electric power shortage in the winter period, its supply to the mountainous areas remote from the basic infrastructure is also a pressing problem for Tajikistan. Apart from development of large hydropower engineering, great importance is also attached to the construction of micro and small hydroelectric power plants, particularly in the mountainous areas. To this end, the Government of Tajikistan has adopted the *Long-Term Programme for Small HEPPs Construction for 2009-2020*²¹ that implies three implementation stages:

- Short-term activities – 2009-2011: in total, 66 electric power plants with a total installed capacity of 43,530 kW;
- Mid-term activities – 2012-2015: 70 electric power plants with a total installed capacity of 32,850 kW; and
- Long-term activities – 2016-2020: in total, 53 electric power plants with a total installed capacity of 26,801 kW.

Thus, 189 small electric power plants with a total installed capacity of 103,181 kW and annual output of 641,645.9 thsd kWh will have been constructed by 2020.

The overall capacity of small HEPPs in Tajikistan exceeds 30,000 MW, or 100 billion kWh per year. Unit cost of their construction is about USD 2,500-3,000 per 1 kW

of the installed capacity. Although unit costs of small HEPPs are a bit higher than those of large hydroelectric power plants and such HEPPs have uneven seasonal water availability, they are still very important for power supply to the isolated mountainous areas remote from high-voltage transmission lines. Development of these resources will provide multiple benefits: supply of the population with accessible electric power, decreased logging of mountain forests, decreased greenhouse gas emissions to the atmosphere as a result of the reduced use of coal as fuel, and increased well-being of the mountainous areas' population.

Currently, different countries are making efforts to increase the proportion of non-traditional energy sources, such as sun, biogas and biofuel. The European Union has set a task to produce, by 2020, 20% of its energy from renewable energy sources. According to the forecasts of the U.S. Energy Information Administration (US EIA), in 2030 the USA will generate from renewable energy sources about 12.5% of the total electric power. At the same time, such an increase will be ensured, to a large extent, by the use of wind energy; currently, the USA produce 8% of electric power from renewable energy sources, primarily, from hydropower resources and biomass.

Having huge hydropower resources, Tajikistan treats nontraditional energy sources as alternative energy sources at the level of collective and individual farms, separate enterprises, and also in case if there are no other energy sources. Because of the systematic growth of the electric power prices over the recent years, the population, however, shows sufficient deal of interest in using these energy sources.

Tajikistan has a significant solar energy potential. According to the surveys conducted, 60-80% of the population's demand for electric power can be satisfied, during 10 months in the year, by solar energy. The country has a huge potential to develop solar power engi-

²¹ The Programme has been approved by Decree of the Government of the Republic of Tajikistan No. 73 dated 02.02.2009.

neering since solar radiation in Tajikistan is one of the most intensive in Central Asia: there are 280-330 sunny days a year, and the total sunshine duration is 2,100 – 3,170 hours per year. According to estimates, 1 m² of a heliocollector allows saving 0.15-0.2 TFOE per year (i.e. 150-200 kg of coal, or about 100 kg of oil products). A helioplant of 10 m² allows saving up to 200 tons of coal per year. A major obstacle for the wide expansion of helioplants is their relative expensiveness that has a tendency to decrease.

The country's areas with sufficient annual mean wind speed of 5-6 m/sec are studied rather well and zoned. The first modern low-power wind-driven power plants in Tajikistan appeared 10 years ago in Sughd oblast and in some Rayons of Republican Subordination.

In Gorno-Badakhshanskaya Autonomous Oblast, Hissar and Rasht Valleys, net geothermal water zones have been detected, and a part of these waters is used currently for sanatorium treatment. They also can be used to generate electric power, heat premises and greenhouses.

The Government of the Republic of Tajikistan has approved, by its Decree dated February 2, 2007, the *Comprehensive Target Programme for Extensive Use of Renewable Energy Sources for 2007-2015*. On February 23, 2009, the Parliament of Tajikistan adopted the Law of the Republic of Tajikistan On Use of Renewable Energy Sources, which is indicative of the prospectiveness of the course chosen.

In development of the use of renewable energy sources (RES), it is important to:

- Establish in-house material and technical base for the production, installation, adjustment, maintenance and repair of nontraditional power plants;
- Improve the legislative framework for the use of RES and economic mechanisms for stimulating the production using nontraditional power plants;

- Undertake focused activities to raise awareness among the population and decision makers on RES benefits;
- Stimulate expansion of the political support to ensure the accelerated promotion of investments in renewable power engineering; and
- Develop cooperation and interaction mechanisms for governmental and public ecological organizations to implement the UN General Secretary's *Energy for All Initiative* in Tajikistan.

The use of nontraditional energy sources in Tajikistan is currently at the initial development stage. This is caused by equipment expensiveness, lack of awareness among the population, and lack of local equipment producers. Nontraditional energy sources are used on a pilot basis in rural areas under the implementation of international organizations' projects.²² It's obvious that as electric power cost increases, they will be used more extensively.

Energy saving. Generation of only "green" electric power is not sufficient to achieve sustainable development. It's also necessary to achieve its efficient use. Energy saving and rational energy consumption are a key aspect in environmental protection and sustainable development. The energy saved can be used instead of the newly generated, and thus this will reduce the environmental pollution. Besides, energy saving is cost-effective. Activities on energy saving are 2.5-3 times less expensive than generation and transmission of the same amount of the newly generated energy.²³

Electric power and gas losses in the Tajikistan's economy are significant; therefore,

22 UNDP Project "Promotion of Renewable and Sustainable Energy Use for Development of Rural Communities in Tajikistan" for 2010-2013, and Project of the Youth Ecological Centre of Tajikistan "Alternative Energy Sources" <http://www.ecocentre.tj/ru/index/index/pageld/188/>

23 Data of ecological NGOs of Tajikistan.

the Government of Tajikistan requested the World Bank to provide technical assistance in the development of loss reduction ways.²⁴ The Government has also adopted the *Programme for Efficient Use of Hydropower Resources and Energy Saving for 2012-2016*. The Programme notes that complete transition to the use of energy-saving technologies is one of the key ways to save energy and reduce pressure on the electric power system. It is implementation of this activity that enables rational use of hydropower resources, and during 5 years after the programme implementation it will be possible to save 3.2 billion kWh. This figure is comparable to winter electric power shortages in the country. Energy saving, however, implies not only use of energy-efficient equipment and technologies, but also use of energy-saving approaches in all sectors of the economy, such as agriculture, construction, industry and household energy consumption. For instance, construction of residential houses initially on the basis of an energy-saving approach allows saving 5 times more energy per a specific area.²⁵

To minimize adverse consequences of low-quality projects on construction and repair of public buildings and facilities, it is reasonable to:

- Abandon practices of construction and repair of public buildings and facilities that do not meet modern energy efficiency standards (EU Directive EC 2002/91/EC – EPBD should be a guiding landmark);
- When purchasing and installing new equipment for schools, health centers and other public institutions, follow European energy efficiency standards of equipment. The most efficient equipment has

labels A or A++ (according to the labeling of product's energy efficiency adopted in the EU);

- In the planning and designing of buildings, take account of the aspects of rational and efficient energy use. This will contribute to conservation of natural resources, reduction of financial costs and improved comfort. All new and thoroughly repaired buildings should meet the modern energy efficiency requirements and standards;
- Carry out an energy audit of projects before their start (technical expertise of energy consumption and energy saving);
- Expand equipping new and rehabilitated buildings with technologies using renewable and autonomous energy sources, and advanced heating, ventilation and lighting technologies; and
- Develop projects and programmes that imply use of new energy-saving technologies, extensive use of renewable energy sources by local communities, training of local specialists in energy saving skills.

Implementation of these recommendations should be approached on a case-by-case basis using maximally local opportunities without significant increases in cost of buildings and facilities in question. For Tajikistan with its scarce state budget and high proportion of the poor population, construction of buildings and facilities on the basis of the European standards remains a hard task.

Integrated Water Resources Management. Discussion of water problems under the global water processes, such as the International Year of Freshwater (2003), International Decade for Action 'Water for Life' (2005-2015) and a number of other activities, clearly showed that water problems will deepen every year as the population grows and water needs of the national economies increase. It will be difficult, or even impossible, to achieve sustainable development without sufficient water resources.

24 World Bank Technical Assistance Project. Additional Financing for the Energy Loss Reduction Project, P122141, 2012.

25 Programme for Efficient Use of Hydropower Resources and Energy Saving for 2012-2016 was approved by Decree of the Government of the RT No. 551 dated November 2, 2011.

The current levels of the inefficient use of water resources in most arid countries will not allow these countries to provide their population with sufficient amount of water resources for water supply, food production and other needs (Figure 4.4).

It's obvious that without "green" irrigation technologies, it will be difficult to ensure sustainable development of irrigated agriculture in the Central Asian states, including Tajikistan, already in the next few decades. The rapid growth of electric power cost, soil erosion, processes of salinization and bogging of the irrigated lands will prevent further extensive development of irrigated agriculture.

Integrated water resources management applied in some developed and developing countries proved its consistency and efficiency and became a modern ideology of sustainable water use. Since 2009, Tajikistan has been implementing the water sector reform to transit to integrated water resources management. This process involves governmental, private and public organizations engaged in the field of water consumption. IWRM introduction implies the following:

- abandoning the administrative and territorial principles of water

- management in favor of the basin principle of water management;
- establishing basin management institutions;
- separating political and economic functions of water management;
- establishing Water Users Associations (WUAs) country-wide on the basis of geographical and public democratic principles guaranteed by the Law On Water Users Associations;
- Establishing WUA Federations, if necessary;
- transferring the rights to manage water resources in lower segments of the water infrastructure to WUAs and WUA Federations; and
- involving water users in decision making.

IWRM introduction and the parallel deepening of the agricultural reform will provide WUAs and WUA Federations with additional stimuli for their further development (equal access to water, improved land quality because of the implementation of ameliorative activities, increased income, etc.).

While cooperating with international organizations, the Government of Tajikistan pays a great attention to step-by-step

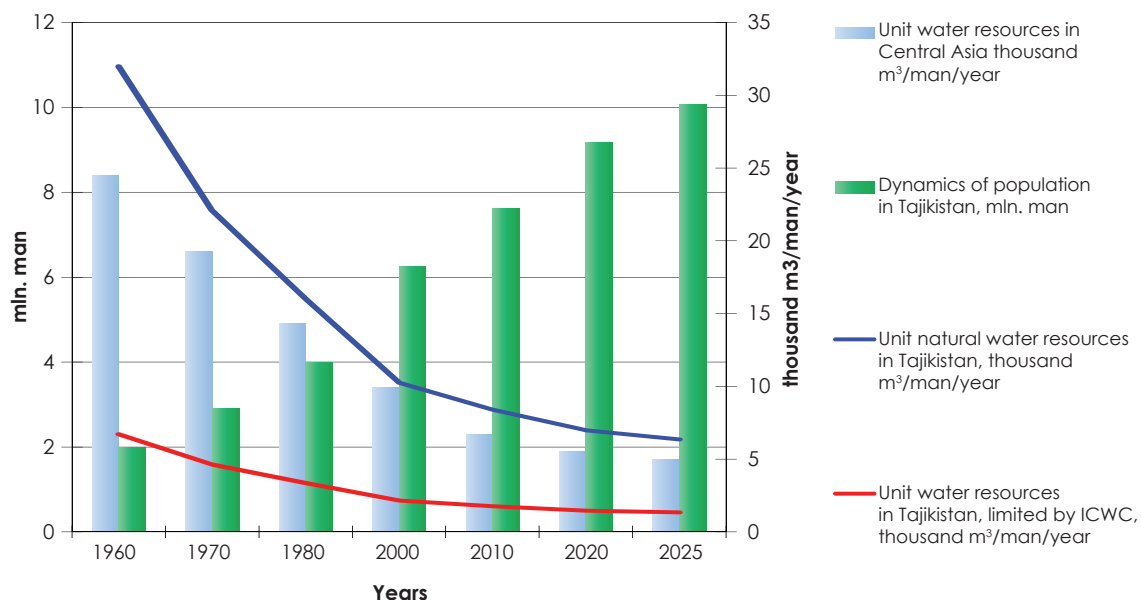


Figure 4.5 Forecast of changes of unit water resources per man in Tajikistan and other Central Asia countries

introduction of the IWRM principles to improve efficiency of water and land management. To this end, it is necessary to develop and implement a programme for the introduction of energy-saving "green" irrigation technologies, i.e. sub-irrigation, drip, mist and sprinkling irrigation, and improve traditional surface irrigation methods using opportunities of modern technologies. Use of the tested "green" irrigation technologies allows saving water resources and maintain good environmental situation, thus preventing, actually, groundwater table rise, soil erosion and salinity. Together with implementation of the relevant agro technical and other activities, this will significantly increase crop productivity.

In introducing IWRM, Tajikistan also takes account of interests of the riparian states in the transboundary Amudarya and Syrdarya River Basins. These are:

- Maximum permissible extraction and rational use of hydropower potential of the mountain rivers;
- River flow regulation to ensure sustainable water supply to the riparian states, especially in low-water years;
- Introduction of water- and energy-saving technologies in all areas of water and energy consumption;
- Distribution of water resources be-

tween the region's states against the quotas mutually agreed upon;

- Provision of the region's states with environmentally friendly electric power in accordance with their needs; and
- Protection against mudflows and floods, and drought mitigation.

The energy sector needs water not only to produce electric power; water is also used to produce nearly all types of energy:²⁶ extraction and processing of different fuels, such as coal, oil, natural gas and uranium, and steam production and cooling at thermal power plants. At the same time, electric power is needed to pump water from wells to various heights, transmit water through pipelines and to desalinate and treat waters. Energy producers are the major water consumers, and energy production growth implies increased access to water resources accordingly. In the interests of green economic development, water and energy resources, therefore, should be treated as inextricably linked.

²⁶ Trends and Progress in the Field of Environment and Development: Emerging and Persistent Issues in Rational Water Resources Management. UN Economic and Social Council. Economic and Social Commission for Asia and the Pacific. Committee on Environment and Development. Second Session. Bangkok, February 22-24, 2012. E/ESCAP/CED(2)/5.

4.3 INVESTMENTS IN SUSTAINABLE MANAGEMENT OF NATURAL RESOURCES

The concept of a "green" growth stresses the importance of integrating environmental and economic policies, and such integration will allow revealing new potential sources of economic growth, while avoiding increased pressure on the quantity and quality of natural resources. Transition to a "green" economy requires a broad range of activities including economic instruments, such as taxes, subsidies and emission trading schemes, state regulation measures,

such as standard setting, and non-economic measures, such as voluntary initiatives and information sharing.²⁷

Investments are important to establish required "green" infrastructure in all sectors, provide professional training, perform scientific researches and innovation activities, deploy "green" technologies, and support large- and small-scale envi-

²⁷ Europe's Environment Assessment of Assessments. Green Economy, UNEP, 2012.

ronmental projects. It is rather difficult to identify the size of the investment needs of the whole "green" economy. Amounts of state and private investments required for transition activities can be significant and may vary depending on specific countries and sectors.

In the USA, environmentally friendly technologies already rank 3rd (behind information technologies and nanotechnologies in the ranking) in terms of the size of venture investments. In China, such venture investments have increased, over the recent years, more than 2 times, having amounted to 19% of the total investments.²⁸

Water, energy, land, forests and other resources are a basis of any economy, and "green" economy in particular. In Tajikistan, the economic mechanism of natural resources management is regulated by the relevant laws, decrees of the Government of Tajikistan and departmental regulatory documents.

According to the World Bank,²⁹ cost of environmental degradation in Tajikistan is estimated at about 10% of GDP. Because of the degradation of the agricultural lands alone (decreased crop productivity as a result of soil erosion and salinity), every year the country receives revenues 3.7% of GDP less than due. Establishment of efficient economic mechanisms of environmental management will sharply decrease such losses.

The objective of a "green" economy is to facilitate reforms implemented in all sectors of economy and policy, while encouraging investments in environmental protection. This may have a positive horizontal impact on economy and give substantial benefits that allow reducing poverty and contribute to the progress in achievement of the Millennium Devel-

opment Goals (MDGs) formulated in the *Millennium Declaration*.³⁰ Conservation or improvement of the national natural capital quality usually has great benefits for the vulnerable population that relies largely on the natural capital for livelihoods. Significant increase of investments in "green" infrastructure, particularly in such sectors as power engineering, transport, agriculture and waste management, usually ensures high social returns.

The economic mechanism of environmental protection implies use of natural resources for a fee, compensation of the damage caused, tax and loan privileges, material and moral motivation of activities of organizations and enterprises of all forms of ownership and accountability, their employees, and citizens.

According to the legislation of Tajikistan, users of natural resources should pay for:

- Use of natural resources (land, sub-soil assets, water, forests, flora, fauna, recreational and other natural resources);
- Use of natural resources within the prescribed limits;
- Above-limit and irrational use of natural resources;
- Reproduction and protection of natural resources;
- Emissions, discharges of pollutants, placements of wastes, and other types of pollution within the prescribed limits, and separately for exceeding such limits.

These funds and population's voluntary contributions are used to form the Environmental Protection Fund to implement, under the guidance of the Committee for Environmental Protection under the Government of the Republic of Tajikistan, environmental protection activities.

Investments in the development of a "green" economy in Tajikistan are attracted from the following sources:

28 National Human Development Report, 2008–2009. Employment in the Context of Human Development. UNDP, Dushanbe, 2010.

29 Inclusive Green Growth. The Pathway to Sustainable Development. The World Bank, 2012.

30 The Seventh "Environment for Europe" Ministerial Conference. Astana, Kazakhstan, September 21–23, 2011. ECE/ASTANA. CONF/2011/GE.11-23293 5.

- Republican and local budgets;
- Funds received from economic activities and paid services;
- Loans, including concessional loans, budget and customs privileges, donations, subventions, foreign investments, other sources not prohibited by law, and a clean development mechanism in particular.

State investments are allocated through capital investments in the construction and rehabilitation of hydropower plants and treatment facilities; foreign investments are also attracted. At the same time, investments in hydropower engineering represent, to a large extent, investments in the conservation of forests, fossil fuels and irrigated agriculture, development of education and healthcare, protection of the environment, etc. So, the project on reduction of electric power losses in the *Barki Tojik* OJSHC's networks is being implemented with the aim to ensure energy saving. Reconstruction and repair of pump

stations and pumped drain wells and reduction of water losses in the water supply systems, where state and water users' funds are attracted to, are also long-term investments in sustainable development. Inventory of the irrigation and drinking water supply systems and their assigning to appropriate owners will also allow attracting investments in their operation and maintenance improvement.

Transition to a "green" economy will require changes to the investment policy to integrate "green" technologies in production processes, create favorable economic conditions and elaborate various material and moral incentives to use simple and sophisticated "green" technologies by both large enterprises and dekhkan farms. Thus, investments in a "green" economy will contribute to creation of more jobs and significant poverty reduction to compare with the current investment practices.

4.4. ESTABLISHMENT OF AN ADEQUATE MARKET AND LEGAL AND REGULATORY FRAMEWORK TO IMPROVE THE MANAGEMENT ENVIRONMENT AND INVOLVE THE PRIVATE SECTOR

In Tajikistan, establishment of an adequate market and legal and regulatory environment is aimed at legal regulation, reduction and gradual termination of environmentally hazardous subsidies, mobilization of financial resources and expansion of access to them, innovative state and private solutions, stimulation of private environmental investments and innovations, establishment of small green enterprises and introduction of environmental protection technologies, expansion of capital uses, insurance and pension funds for sustainable development, reduction of risks for private investments and ensuring of equitable and equal approaches to them.

As the Republic of Tajikistan deepens the reforms and develops its international relations, good conditions for attracting foreign investments, supporting market structures and developing financial and banking systems are being created. So, external trade, pricing policies and foreign exchange transactions have been liberalized, and a moratorium on inspections of economic and financial activities of newly established commercial entities within first 3 years of their activities has been set. A multifunctional commodity exchange and interbank foreign exchange market are founded and function. Now Tajikistan is preparing to enter the World Trade Organization.

The Laws On Foreign Investments in the Republic of Tajikistan, On Foreign Economic Activities, On Joint-Stock Companies, On Concessions and the Tax and Customs Codes ensure protection of foreign investors' rights, interests and property, guarantee a legal basis for exercising commercial activities and stimulate foreign investors' participation in privatization of facilities of the national economy on an equal basis with Tajikistan's citizens. Laws of the Republic of Tajikistan protect foreign investors and foreign invested enterprises against nationalization and other types of seizure.

In reinvesting, foreign investors enjoy full legal protection, guarantees and privileges prescribed by the Tajik legislation. In case of subsequent amendments to the legislation of the Republic of Tajikistan to increase the overall tax burden on the activities of foreign investors and foreign invested enterprises, within 10 years thereafter they will be provided with privileges prescribed by the legislation active at the moment of the enterprise registration. They will also enjoy rights to use and rent lands, independently determine prices for products produced by them, identify order of their sale and chose product suppliers, acquire stocks and other securities, and perform prospecting, development and exploitation of natural resources in the economic zone of the Republic of Tajikistan.

In the republic, export of goods, works and services is exempted from the value added tax, except for exports to the countries that do not apply a similar fiscal mechanism in relation to Tajikistan. The tax and customs legislation provides exemptions from the value added tax and customs duties on technological equipment and its accessories imported by foreign invested enterprises to Tajikistan to form and replenish their statutory funds. Foreign invested enterprises engaged in material production, except for enterprises engaged in development and use of natural resources, are also provided with privileges including exemptions from the profit tax within 2

to 5 years from the moment when they received a pretax profit, provided that the paid share of a foreign investor in the statutory fund exceeds 30% and the volume of foreign investments is USD 100,000 to USD 5,000,000.

Tajikistan is undertaking further steps to optimize the investment climate. Particularly, the Water Code envisages state support in the form of donations, subventions, concessional loans, budget and customs privileges for those engaged in the implementation of the republican and local drinking water supply programmes. The Government of Tajikistan may also provide, on a tender basis and through contract reward, a right to manage state-owned water facilities within a limited territory to specialized local and foreign legal entities. Transfer of the intracompany pump stations, irrigation and drain wells to Water Users Associations and dekhkan farms is already taking place on this basis.

In Tajikistan for the period 1997-2009, social tax to be paid by organizations and entities from their wage funds has been reduced from 38% to 25% to facilitate creation of new jobs through supporting the private sector and entrepreneurship and attracting investments. Entrepreneurship and business training courses being conducted, issuance of concessional loans and establishment of independent employment and entrepreneurship centers also contribute to the resolution of employment issues. Currently, the *State Labor Market Development Strategy of the Republic of Tajikistan until 2020* is being implemented in follow up of the Decision of the Government of Tajikistan. Particularly, this enables efficient regulation of labor resources flows both inside the country and abroad.

To strengthen the country's export potential and diversify export commodity structure, the Government has adopted the *Export Development Programme of the Republic of Tajikistan until 2015*. The strategic objective of this document is

to improve the structure of the domestic export, diversify and improve quality of products, improve export's commodity and geographical structure and to transit to progressive forms of the international trade and economic cooperation.

The Tajik tax legislation offers a favorable tax regime for the construction of hydro-power plants and for enterprises with a complete cycle of lint cotton processing into the final product.

Currently, the Law On Investments is in force, and the Law On Investment Agreements intended to further improve procedures, stimulate and provide state support to investors on the territory of Tajikistan is at the endorsement stage. In pursuance of Law On Environmental Protection No. 760 adopted on August 2, 2011, the following legal and regulatory acts have been developed and enacted:

- Methodological guide for calculation of the environmental cost of the illegal use of food and medicinal plants;
- Limits of regulatory payments for environmental pollution;
- Order of identifying and issuing consent requirements for production and consumption waste management.

Efficiently developed regulations, including use of best available techniques (BAT), may contribute to the business community's confidence that they make proper investment decisions to use more environmentally friendly technologies or produce "green" products, activation of investments in environmental protection activities and assistance in the development and expansion of environmentally friendly technologies and to the regulation of behaviors not consistent with the sustainable development objectives.

Agricultural, housing and utilities and irrigation reforms are being implemented and political and economic functions in the power engineering and industrial sectors have been separated to im-

prove the management environment. All this forms a basis for the current state governance reform and establishment of a governance model adapted to the "green" economy needs involving the private sector in partnership with local executive authorities and local governments. Tajikistan is among the top ten countries in terms of investment intensity, support to the private sector and tempo of state property privatization.

The Government of Tajikistan has established 4 free economic zones (FEZs) for 25 years, they are: complex *Panj* FEZ, 400 ha, in Qumsanghir district of Khatlon oblast; industrial and innovative *Sughd* FEZ, 320 ha, in Khujand city of Sughd oblast; technological and commercial *Ishkoshim* FEZ, 200 ha on separate land plots, in Ishkoshim district of Gorno-Badakhshanskaya Autonomous Oblast; industrial and innovative *Dangara* FEZ, 242.31 ha on separate land plots, in Dangara district of Khatlon oblast. The Ministry of Economic Development and Trade of the Republic of Tajikistan has been appointed a competent authority to deal with issues related to the establishment, management and functioning of free economic zones.

The Government of Tajikistan is highly interested in improvement of the legal and regulatory framework to ensure sustainable development of its economy. The reforming of the country's economy is taking place in different areas. According to the *Concept for Transition to Sustainable Development of the Republic of Tajikistan*,³¹ it is proposed to reorient national, sectoral and regional strategies, programmes and plans in order to implement the *Poverty Reduction Strategy* and achieve sustainable development. Attention is focused on mainstreaming poverty reduction goals and measures in the development of technical and financial assistance programmes. Such an approach enables the reforming of gov-

31 Approved by Decree of the Government of the Republic of Tajikistan No. 500 dated October 1, 2007.

ernmental institutions and governance systems, macroeconomic development, investment climate improvement, private sector and entrepreneurship development, regional cooperation and integration into the world economy.

The following measures are proposed to solve functional/institutional strategic tasks:

- reform the state governance system towards sustainable development;
- consider bringing the judicial and law enforcement systems in line with the market economy requirements and democratic principles, and develop relevant strategies and programmes;
- improve the tax system;
- improve public finance manage-

- ment efficiency, and link the budget to the country's priorities;
- improve monetary policy, and expand domestic and foreign investors' access to the banking market;
- create conditions to increase lending to production sectors of the economy;
- improve legislation in the field of property rights, investment attraction and entrepreneurship development;
- foster development of the private sector, attraction of domestic and foreign direct investments.

Implementation of the tasks set will contribute to sustainable development in the country and foster development of legal and regulatory framework towards transition to a "green" economy.



5

ACTIONS PROPOSED FOR THE DEVELOPMENT OF A «GREEN» ECONOMY





ACTIONS PROPOSED FOR THE DEVELOPMENT OF A "GREEN" ECONOMY

5.1 PLATFORM FOR ACHIEVING RESULTS

Tajikistan has real opportunities, natural and other resources for transition to a "green" economy. Jointly with the civil society and with the support of international organizations, first of all, UN institutions, governmental institutions of Tajikistan will have to develop the country's *Roadmap to a Green Economy* differentiating local, national and international tasks consistent with the outcome decisions of Rio+20 and Cancun agreements on the development of an agreed systematic low-carbon strategy.

Apart from the publication of annual statistics books, the elaboration, with the support of international organizations, of annual and periodic (once per 5 years) national reports on the devel-

opment of a "green" economy could also become a mechanism for monitoring of this process in general. Approval of this *Roadmap* by the Government of Tajikistan may become a broad political call and a basis for the development and implementation of strategies, annual, short- and long-term ecologization plans involving internal and external funds.

International organizations could assist Tajikistan in search of stakeholder countries' consensus on the development of a "green" economy, particularly use of renewable energy sources, including hydropower resources, introduction of advanced "green" technologies and human capital development.

5.2 RATIONAL AND EFFICIENT USE OF WATER RESOURCES AND OTHER NATURAL CAPITAL TO BUILD SUSTAINABLE PRODUCTION AND CONSUMPTION MODELS

Although Tajikistan has abundant water resources, it will be further committed to the policy of sustainable use of water resources and strengthening of partnership at the national, regional and international levels. Development in this direction can be based on both international initiatives focused on economic aspects

and existing agreements of Central Asian nations, including the agreement dated March 17, 1998, between the Governments of the Republic of Kazakhstan, Republic of Kyrgyzstan, Republic of Tajikistan and Republic of Uzbekistan on the use of water and energy resources of the Syrdarya river

basin³² implying the establishment of an economic water use mechanism and electricity flows. This can improve access to water and electric power, increase agricultural sustainability and efficiency, decrease desertification risks, enhance food security, and conserve and expand forest areas. According to experts, extra benefits from a well-established cooperation in the Central Asian region are estimated, based on the factors that can be quantitatively measured, at 5% of regional GDP.³³

A system of measures to prevent and mitigate dangerous water-related geodynamic processes is also required. Apart from hydro technical and organizational measures, conservation and increase of forest areas become particularly important. Development of hydro-power engineering with multi-purpose water reservoirs is seen as a comprehensive solution to water scarcity, climate risks and disaster impacts. The continual reforming of the water sector along with the introduction of integrated water resources management should become a key for the elaboration of sustainable efficient water use models. At the same time, national integrated water resources management should be consistent with regional and global promotion of a "green" economy.

Land resources are crucial for food security, sustainable rural social and economic development and poverty reduction. It's difficult to imagine high productivity of agricultural land use without application of up-to-date highly-efficient technologies. Modern technologies, however, not always ensure sustainable land use if they are based only on application of chemical fertilizers and toxic chemicals. To increase agricultural productivity, green agriculture implies comprehensive use of natural opportunities

combined with the use of advanced innovative technologies. This will allow reducing agricultural dependence on import of chemical fertilizers and toxic chemicals, while increasing efficiency of the use of local natural opportunities.

Introduction of green agriculture requires significant changes to the agricultural development policy to:

- Organize scientifically valid agricultural production;
- Establish efficient market mechanisms for stimulating increased water and land productivity with a focus on the use of local resources;
- Establish stimulation mechanisms for ensuring equitable competition conditions for the introduction of new agricultural technologies;
- Establish stimulation mechanisms for attracting private investments;
- Create the economically sound environment to stimulate the use of local agricultural resources, processing of agricultural products and reuse of their waste;
- Create favorable economic conditions for the use of local renewable energy sources, i.e. biogas, solar and wind energy;
- Introduce soil-saving land use technologies countrywide; and
- Improve the legislation and optimize the bank and tax systems to stimulate the introduction of the principles of a "green" economy in agriculture, while creating as many jobs in the rural area as possible.

In the further reforming of the agricultural complex and establishment of new water and land management institutions, all these tasks should be taken into account. It's also important that entrepreneurs and civil society, including broad participation of women, play an important role in various partnerships and mechanisms under water, energy, food security, forest and financing initiatives.

32 The Republic of Tajikistan joined this Agreement on June 17, 1999.

33 Central Asia Human Development Report (UNDP, 2006).

5.3 GREEN ECONOMY AND POVERTY REDUCTION. SOCIAL ASPECTS

Poverty reduction is a priority area of the social and economic policy of the Government of Tajikistan. In 2000, Tajikistan launched activities to reach the targets of the Millennium Development Goals. The country's *Poverty Reduction Strategies* are designed to implement activities to reach, by 2015, the targets of all 8 goals; however, not all the targets will be reached for different reasons. First of all, this relates to Target 10 of Goal 7 to reduce by half the proportion of people without sustainable access to safe drinking water.

Among the MDGs, the primary goal is Goal # 1: Eradicate extreme poverty, and Target # 1: Reduce by half the extreme poverty rate. Owing to the implementation of the two *Poverty Reduction Strategies* in 1999-2009, both general and extreme poverty rates in Tajikistan stably tend to reduce, and thus the Target of the primary Goal is achieved.³⁴ 40% of the extremely poor population, however, will preserve the problem's priority for the Government of Tajikistan (Figure 7).

A "green" economy opens ways to reduce poverty scales and inequity. "Green" investments in specific sectors will provide opportunities for employment, production and entrepreneurship.³⁵ In Tajikistan, such sectors include agriculture, power engineering, use of solar energy and biogas, production of construction materials, construction, tourism, etc.

A "green" economy will ensure employment creation and increased revenues through state and private investments aimed at increasing efficiency of the resource and energy use, reducing adverse

environmental impacts of economic activities and conserving biodiversity and biosphere productivity to the benefit of the poorest groups and population in general.

A "green" economy offers great opportunities for maintaining employment security and even employment growth in the long run.³⁶ The greening of the existing economy and its orientation towards the most vulnerable population, such as women, youth, shadow economy workers and the unemployed, could contribute to increased number of jobs, economic growth for all and sustainable development.³⁷

According to the UN-FAO's materials elaborated under preparation for the Rio+20 International Conference, a program for the economy greening on the basis of agriculture can be implemented through the ecosystem approach taking account of multiple societal needs and desires without jeopardizing the rights of future generations to benefit from the full range of goods and services provided by the terrestrial, aquatic and marine ecosystems. This is especially important for the natural and climate conditions of Tajikistan's mountainous areas where violation of environmental conservation measures may result in very adverse consequences.

34 Poverty Reduction Strategy of the Republic of Tajikistan for 2007-2009 and Poverty Reduction Strategy of the Republic of Tajikistan for 2010-2012.

35 Background paper for the ministerial consultations. Addendum. Green economy. Discussion paper. Governing Council of the United Nations Environment Programme, UNEP/GCSS.XII/13/Add.1.

36 UNEP: Towards a Green Economy. Pathways to Sustainable Development and Poverty Eradication (Nairobi, November 16, 2011). Go to: www.unep.org/greeneconomy/GreenEconomyReport/tabid/29846/Default.aspx, and International Labor Organization: "Skills for green jobs: a global view" (Geneva, 2011). Go to: www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_159585.pdf.

37 Environment Management Group, "Working towards a Balanced and Inclusive Green Economy: A United Nations System-wide Perspective" (New-York, December, 2011). Go to: www.unemg.org/MeetingsDocuments/IssueManagementGroups/GreenEconomy/GreenEconomyreport/tabid/79175/Default.aspx.

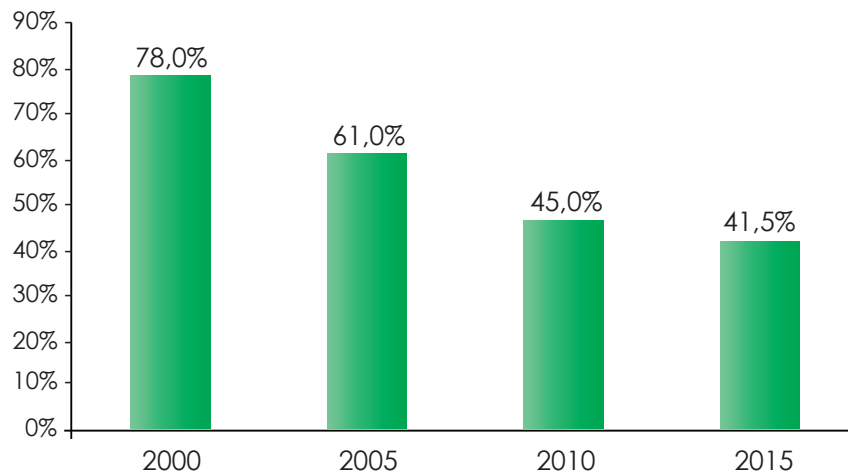


Figure 7. Dynamics of poverty decreasing in Tajikistan

In the context of Tajikistan as a developing country, job creation, particularly in rural areas, is highly important. Development of solar and biogas technologies offers great opportunities for establishing multiple production units, employing 4 to 10 people, to fully supply raw materials for the production needs.

Even under a “green” economy scenario, sustainable development and employment, however, will still depend on both anthropogenic and natural factors, particularly on climate change. It is noted in the Asian Development Bank’s study that “more frequent droughts, disastrous floods caused by over-flows of glacial lakes, washing-out of mountainous slopes and more frequent landslides will result in increased economic damage, threats to the people’s safety, and will also reduce people’s opportunities to move out of poverty. These adverse impacts will be exacerbated by the

forecasted 67-percent growth of the country’s population in the 21st century, and thus social and economic and environmental problems will deepen even more.”³⁸ Tajikistan is included in the list of 9 countries participating in the *Pilot Program for Climate Resilience (PPCR)* financed by the Strategic Climate Fund. With its total cost amounting to USD 50 million, the Programme is aimed at assessing and implementing specific activities to foster sustainability in the Tajikistan’s sectors, such as power engineering, agriculture, water resources and hydrologic monitoring.

The process of transition to a “green” economy will take place in different countries, taking account of their local circumstances. For Tajikistan as a developing state, transition to a “green” economy offers a real chance to eradicate poverty and improve social and economic conditions in the country.

³⁸ Climate Change and Migration in Asia and the Pacific. Asian Development Bank Report, 2012, - p. 85.

5.4 TOOLS FOR HUMAN CAPITAL DEVELOPMENT

A human being is a basic unit of any economy in the world. To develop human capital, equal opportunities and innovative professional education should be ensured. Tajikistan’s policy on human capacity development is in-

tended to overcome the disproportion in education coverage and quality, provide equal access to professional education and bring it in line with the market and environmental protection requirements. The implementation of

the *National Development Strategy of Tajikistan until 2015* contributes to the training of more qualified specialists. Given the market realities and the existing environmental situation, already now it is reasonable to:

- Develop, with the support of international organizations, a relevant short-, mid- and long-term methodology for improving quality of state and regional forecasts of demand for specialists;
- In the development of training and educational programmes, consider the need for continuity of general and professional pro-environmental education programmes;
- Broader practice job fairs for graduates of secondary special and higher institutions as a possible option to incorporate them in sectors of the national economy;
- In planning, really consider rural population's needs for essential specialties (handicraft, farm keeping, irrigation, processing of agricultural raw materials, etc.); and
- Expand the practice of specialist training under the "Presidential Quota" given needs of the country's particular regions.

To ensure equal access to the professional education system, it's reasonable to:

- Develop educational lending, preserve and further develop the system of state privileges for access to education and financial support for socially vulnerable categories of students;
- Expand support to highly gifted children; and
- Persistently support and develop specialized education and early professional orientation.

To improve education quality, it's also required to:

- Establish and support scientific and training-and-production centers under the leading higher education institutions with their pro-

grammes addressing energy and water saving issues and rational and efficient use and protection of natural resources in general;

- Increase attractiveness of scientific activities to young scientists through the expansion of grants, special support programmes and projects;
- Develop and improve the post-graduate and doctoral education systems; and
- Develop and approve state indicators of professional education performance and rating of education institutions.

Required specialists can also be trained at the regional and international levels through cooperation with relevant stakeholders. Improvement of the health and maternal and child care system is also an important contributor to the human capital.

The education and training system should be synchronized with the labor market policy and job creation and envisage:

- Consultations and professional orientation;
- Setting quotas for the youth;
- Economic support to the population in organization of dekhkan farms; ensuring access to lending resources and tax incentives;
- Organization of a job bank, and employment assistance through retraining and information sharing;
- Stimulation of small and medium business; and
- Target support to, and protection of, all categories of the population on the labour market.

One should bear in mind that a demand for highly qualified specialists arises when the economy develops, and economic development requires, in its turn, participation of properly qualified specialists. This issue can be resolved through a well-established primary to higher education system. Establishment of a fair salary ac-

counting system is the most efficient solution to the issue related to economic stimulation of continuous development of hu-

man resources. Every employee should be confident that highly qualified performance will be properly paid accordingly.

5.5 IMPROVING THE SYSTEM OF INTEGRATION PROCESSES AND ECONOMIC MECHANISMS MANAGEMENT TO STRENGTHEN WATER AND ENERGY SECURITY IN THE CONTEXT OF GLOBAL CLIMATE CHANGE

Cooperation and regional integration are a precondition for states' efficient development. For Tajikistan, the importance of cooperation arises from the huge significance of Central Asian trans-boundary basins' water resources for hydropower engineering, irrigation, economy in general, and environmental protection. All the Central Asian states may treat a course for the water and energy market regionalization as the establishment of a Eurasian subregional economic area, and as the strengthening of the international integration processes in the water and fuel-and-energy complexes in particular. The establishment of a water-and-energy consortium declared by the Heads of the Central Asian states in 1998, 2003 and 2004 may become an important element of this process. The Consortium will enable the establishment of an electric power market, rational and efficient management of water resources on the basis of the economic mechanism of water use, thus contributing to environmental protection. To this end, a relevant feasibility study should be developed. Renewal of activities of the High Level Group on Water Problems under the EurAsEC might also become an invaluable contribution in this regard. The

acceleration of the CIS single customs area formation, establishment of the agro-industrial and transport consortiums and resolution of migration problems will also contribute to the integration of the former Soviet republics and resolution of water and energy problems.

To optimize the systems of managing the integration processes and environmental security in the context of climate change, it will be reasonable to improve, link and harmonize legal and regulatory acts and enter into new agreements regulating relevant fields of life. In identifying priorities of future development and integration prospects, Tajikistan is taking account of the country's geographical peculiarities, demographic situation, poverty rate and gaps in the management structure and methods. The measures undertaken by Tajikistan to improve communication with the outer world are supported by the deepening of the reforms, development of the internal growth sources, first of all, development and strengthening of the private sector, particularly in agriculture, and development of power engineering and human capacity as a driver of the country's economic growth and stability.

5.6 CONTRIBUTION OF WATER COOPERATION TO THE DEVELOPMENT OF A GREEN ECONOMY

Transition to sustainable development, particularly in Tajikistan, can be ensured only on the basis of the efficient regional and international cooperation. In its wa-

ter policy, the Republic of Tajikistan proceeds on the assumption of the need to ensure sustainable development of its economy, rational use and protection of

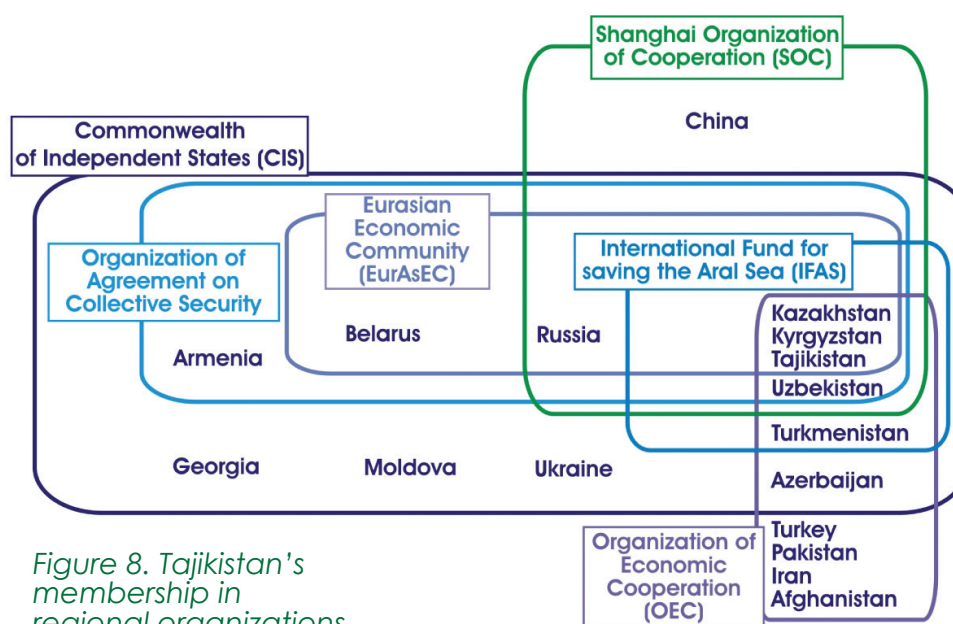


Figure 8. Tajikistan's membership in regional organizations

water resources on the basis of the principles of international law, win-win and friendly cooperation with foreign states and global environmental security.

Sovereign Tajikistan entered the United Nations Organization in March, 1992, just before the UN Conference on Environment and Development in Rio de Janeiro (Brazil). The country cooperates with many international and regional organizations, including UN agencies, multilateral development banks, donor organizations, international NGOs, and other development partners. Tajikistan is a member of the Commonwealth of Independent States, Shanghai Cooperation Organization, Eurasian Economic Community, Organization of the Islamic Conference, Economic Cooperation Organization (ECO), etc. The country is a co-founder of the International Fund for saving the Aral Sea (IFAS) and its two main commissions, i.e. Interstate Commission for Sustainable Development (ICSD) and Interstate Commission for Water Coordination of Central Asia (ICWC).

Being a full-fledged member of the international community, Tajikistan is actively engaged in the international processes to perform commitments undertaken under *Agenda 21* (Rio de Janeiro, 1992), Millennium Development Goals approved at the UN Millennium Summit (New-York,

2000), and *Johannesburg Declaration on Environment and Development* (Rio+10, Johannesburg, 2002). The declarations and international agreements that Tajikistan entered into and relevant national and sectoral development programmes are listed in the annex. Broader interaction and international assistance are needed for their successful implementation. Tajikistan has signed the *Framework Convention on Environment for Sustainable Development of Central Asia* and is supporting the development of the *Central Asia Sustainable Development Strategy*.

The country participates in many regional projects aimed at improving water resources management at the transboundary level. Particularly, such projects as "Promoting Integrated Water Resources Management and Fostering Transboundary Dialogue in Central Asia" (supported by the EU and UNDP), "Transboundary Water Management in Central Asia" (GIZ), "Integrated Water Resources Management in Ferghana Valley" (SDC), "Strengthening Transboundary Cooperation in Water Resources Management between Tajikistan and Afghanistan in the Panj River Basin" (UNECE and EU) contribute to this process through the dialogue development and cooperation strengthening. The National Water Policy Dialogue on Integrated Water Resources Management in Tajikistan is developing

under the auspices of the EU Water Initiative to support the intersectoral dialogue and coordination of activities on extensive promotion of integrated water resources management in the country, while increasing a pool of participants. The OSCE-supported "Development of International Water Law Curricula for Higher Education Institutions and Short-Term Courses" Project allows developing national capacity in the field of water law as a key element in the development of the interstate water cooperation.

The basic infrastructure of the water-and-energy complex in Tajikistan and other Central Asian states was built on the integration principles. Hydroelectric power plants of Tajikistan and Kyrgyzstan and thermal power plants of Kazakhstan, Turkmenistan and Uzbekistan have been functioning, complementing each other, under the Unified Energy System. Irrigated agriculture primarily developed in the countries in the lower reaches of the rivers was supplied with water from major water reservoirs of the countries in the upper reaches. Intersectoral cooperation was ensured through the integrated stream flow regulation and smooth seasonal electricity flows. Currently, due to the poor economic mechanism of water use and reduced cooperation at the transboundary level, it's reasonable to solve these tasks through negotiations and with the support of international organizations.

The Tajikistan's natural resources, particularly its huge hydropower potential, could contribute to "green" growth and environmental improvement in other countries, too. Central Asia may serve as a case study in this regard, where two countries in the upper reaches, i.e. Tajikistan and Kyrgyzstan, have abundant water resources accounting for over 80% of the runoff into the Aral Sea, while three other countries in the lower reaches, i.e. Kazakhstan, Turkmenistan and Uzbekistan, have rather significant raw hydrocarbon deposits: oil, gas, and coal. Accordingly, countries in the upper reaches use water as a primary source of electric

power generation, i.e. have hydropower energy (over 95% of the generated electric power), while countries in the lower reaches use hydrocarbon resources to generate power (over 98% of the generated electric power). In the composition of the regional fuel-and-energy complex, the proportion of the organic fuel accounts for over 70%, while that of hydropower, very cheap and environmentally friendly, accounts for over 25%. Use of the Tajikistan's huge hydropower potential, 3 times exceeding the current region's needs, would both reduce billions of tons of carbon dioxide emissions to the atmosphere and significantly save oil, gas and coal resources currently intensively used for power generation.

Thus, it's obvious that development of the transboundary water cooperation could become a good platform for the wider use of renewable energy sources and reduction of greenhouse gas emissions to the atmosphere, which is one of the key elements of a "green" economy.

Considering the importance of the water cooperation as a stability and development factor, the UN General Assembly, at the initiative of the Republic of Tajikistan, declared, by its Resolution 65/154 adopted by the Consensus as of December 20, 2010, the year of 2013 as the International Year of Water Cooperation. On the UN part, UNESCO and UNECE are authorized to coordinate the activities under the Year. Being an initiator of this Resolution, the Government of the Republic of Tajikistan is highly interested in the successful implementation of the Year, and organized, under its auspices, a High-level Roundtable under the 6th Global Water Forum in Marseilles, France, and a special meeting under the International Day of Water Resources in New-York, UN headquarters. To implement the goals of the Year, Tajikistan also proposes to hold, on March 21, 2013, the Interactive Dialogue of the UN General Assembly and, at the end of the same year, UN International Conference on Water Cooperation.



6



NEXT STEPS





NEXT STEPS

Tajikistan is one of the countries with a modest contribution to the environmental damage. The country is at the stage of developing its industry. According to Sha Zukang, United Nations Under-Secretary-General,³⁹ “many developing countries have not yet entered the industrialization stage, and in such a context it’s difficult for them to develop a “green” economy in compliance with the standards of developed countries.” According to him, developing countries have to solve the following issues: develop their economies to enhance living standards of their people, spur their social development to facilitate social equity and solve the environmental problems. It is developed countries, not developing nations, that gave rise to the environmental challenges as a result of the industrialization process. Therefore, a key for the regulation of these challenges lies in that developed countries keep their promises with good faith, on the principle of “common but differentiated responsibility”, and assist developing states financially and by sharing technologies.

It is to be stressed that all countries, including developed ones, still have to identify their clear strategies for transition to a “green” economy since key provisions of the global “green” economy policy will be presented to the world community only at the Rio+20 Conference.

Given the current levels of economic development and socio-economic conditions, Tajikistan obviously will need support of developed countries to develop

its “green” economy. Systematic enhancement of the population’s well-being will remain the most important task of the Government of the Republic of Tajikistan in transition to a “green” economy. A “green” economy will be supported by its people only if it improves socio-economic conditions of every family.

Tajikistan has a vast experience of cooperating with UN. Ways of economic development proposed by this affluent global organization are rational, and their evolutionary implementation will ensure country’s sustainable development. UN’s support and recommendations will, therefore, offer developing countries good opportunities to establish a system of a “green” economy and ensure long-term sustainable development.

UNDP and UN organizations support transition of national economies to sustainable development through:⁴⁰

- Fostering actually integrated national approach to development that focuses on the “trifecta” policy and programme;
- Providing political and technical support to the governments, including support through innovative development programmes, such as *Poverty and Environment Initiative*, *Promotion of Green Goods and Legal Empowerment of the Poor Initiative*, that will help them to move towards “trifecta” development results;
- Ensuring that countries fully support this programme through the UNDP

³⁹ Statement at the High-Level Symposium under the Development Cooperation Forum, Brisbane, May 15 2012.

⁴⁰ UNDP’s communications “narrative” for Rio+20, 2012.

- Resident Coordinator; and
- Establishing partner relations, including relations between donor countries, private sector and civil society, to implement the national vision of sustainable development.

In general, one can say that Tajikistan's further steps to achieve sustainable development under a new paradigm of global development in the context of a "green" economy will be primarily undertaken under the implementation of the *Concept for Transition to Sustainable Development of the Republic of Tajikistan*⁴¹ consistent with the key MDG targets, namely:

- Reduce poverty;
- Achieve energy and food security;
- Ensure social stability;
- Ensure environmental sustainability; and
- Achieve efficient management.

Tajikistan is interested in using high resource-efficient technologies for its development towards a "green" economy. In doing so, Tajikistan, apart from the need to cooperate with international organizations, will have to overcome acute shortage of material and technical and financial resources and focus on the efficient use of its own opportunities and resources. Relevant actions include:

Political economy and improvement of the governance systems:

- Reform the economic management system using adequate international experience;
- Expand involvement of civil society institutions in the process of monitoring of, and control over, the use of natural resources;
- Simplify the system of the management hierarchy;
- Attract professional specialists to public economic management; and

41 Concept for Transition to Sustainable Development of the Republic of Tajikistan approved by Decree of the Government of the Republic of Tajikistan No. 500 dated October 1, 2007.

- Systematically improve civil servants' qualifications.

Power engineering:

- Develop hydropower engineering, including medium and small power engineering in mountain areas;
- Construct thermal power plants using advanced environmental protection technologies;
- Foster use of solar energy and establish in-house capacities to produce equipment for solar power engineering;
- Foster use of wind energy in appropriate locations and establish in-house capacities to produce equipment for wind power engineering;
- Foster use of biogas energy and establish in-house capacities to produce biogas plants;
- Widely introduce and apply energy-saving technologies; and
- Support research and development activities on the use of non-traditional energy sources.

Industry:

- Develop a national programme for enhancing natural resources use efficiency in the country's industrial sector using resource-saving technologies enabling improved efficiency of goods production;
- Develop a national programme for developing small industry in rural areas on the basis of "green" technologies;
- Orient a part of the economy towards development of spheres of production where highly skilled manual labour is applied, such as jewellery, production of goods using semiprecious stones, etc.;
- Develop stone milling for construction and other purposes for internal use and export (e.g., production of stone tiles); and
- Create adequate conditions and incentives for the introduction of advanced resource-saving technologies.

Agriculture:

- Conduct a scientifically sound reform of the agro-industrial complex management to create favorable conditions for the development of all areas of this sector, i.e. plant breeding, animal and poultry breeding, fishery, etc.;
- Foster high productivity of the existing irrigated and rainfed lands, reclaim lands using soil-protective technologies and modern irrigation technologies, and use "green" fertilizers;
- Develop a mid- and long-term national programme for amelioration of the used and new irrigated lands focused on the use of "green" technologies;
- Transit, step-by-step, to a stall feeding and foster development of mechanization of natural forage gathering and processing in difficult geomorphologic conditions, thus preventing soil erosion and degradation in water intakes and contributing to forest recovery, forestation and availability of "green" fertilizers for plant breeding; and
- Foster development of the agricultural market and create favorable conditions for farmers to sell the products grown, particularly in mountain areas.

Development of tax and legal frameworks for the creation of a "green" economy:

- Develop and implement a system of legal, economic, administrative and tax measures and moral incentives contributing to the creation and development of a "green" economy aimed at creating million jobs to significantly reduce Tajikistan's dependence on imports;
- Establish a tax and legal system to stimulate: import of advanced energy-saving technologies, establishment of "green" production capacities, irrigation of new lands using energy-saving irrigation tech-

- nologies and use of nontraditional energy sources, etc.; and
- Simplify, and improve transparency of, the taxation system, introduce advanced information technologies for tax payment and reporting.

Education, science and technologies:

- Rehabilitate a network of professional technical colleges;
- Mainstream parallel training in high-demand working professions, agricultural professions, house-keeping, etc. in the secondary education programme;
- Revise curricula of secondary technical and higher institutions to support scientific and economic development, taking account of challenges of the 21st century; and
- Support scientific and research works in the field of development and introduction of equipment and technologies contributing to increased economic efficiency, population's well-being, conservation and protection of natural resources.

Environmental protection:

- Develop a national programme for integrating environmental protection commitments in the production activities of all production and non-production organizations of various forms of ownership;
- Develop an environmental education programme intended to form the pro-environmental mentality; and
- Develop environmental protection legislation, standards, orders and rules contributing to increased efficiency and sustainable development of the economy.

In Tajikistan, the creation of a "green" economy will be linked to the strategic goals of the country, i.e. poverty reduction and improvement of the population's well-being, economic development and employment creation, strengthening of the country's sovereignty and national security.



ANNEXES

7





ANNEXES

INTERNATIONAL ACTS RATIFIED BY TAJIKISTAN

- Vienna Convention for the Protection of the Ozone Layer (1996);
- Montreal Protocol on Substances that Deplete the Ozone Layer and its London Amendment (1997);
- United Nations Convention on Biological Diversity (1997);
- United Nations Convention to Combat Desertification (1998);
- United Nations Framework Convention on Climate Change (1998);
- Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat (2000);
- Convention on the Conservation of Migratory Species of Wild Animals (2000);
- Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (2001);
- Kyoto Protocol to the Framework Convention on Climate Change (2008).

SOCIAL LAWS OF THE REPUBLIC OF TAJIKISTAN:

- Law of the Republic of Tajikistan On Social Partnership, Agreements and Labour Contracts (1992);
- Law of the Republic of Tajikistan On Pension Protection of Citizens in the Republic of Tajikistan (1993);
- Law of the Republic of Tajikistan On Refugees (1994);
- Law of the Republic of Tajikistan On Veterans (1995);
- Law of the Republic of Tajikistan On State Social Insurance (1997);
- Law of the Republic of Tajikistan On Migration (1999);
- Law of the Republic of Tajikistan On Employment Assistance (2003);
- Law of the Republic of Tajikistan On Primary Professional Education (2003);
- Law of the Republic of Tajikistan On Employers Associations (2004);
- Law of the Republic of Tajikistan On Social Protection of Disabled People (2010);
- Labor Code of the Republic of Tajikistan (1997).

LAWS OF TAJIKISTAN REGULATING THE USE OF NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION:

- Law of the Republic of Tajikistan On Nature Protection (1993);
- Law of the Republic of Tajikistan On Atmosphere Protection (1996);
- Law of the Republic of Tajikistan On Protected Areas and Facilities (1996);
- Law of the Republic of Tajikistan On Transport (1997);
- Law of the Republic of Tajikistan On Power Engineering (2000);
- Law of the Republic of Tajikistan On Energy Saving (2002);

- Law of the Republic of Tajikistan On Production and Consumption Wastes (2002);
- Law of the Republic of Tajikistan On Hydro Meteorological Activities (2002);
- Law of the Republic of Tajikistan On Radiation Safety (2003);
- Law of the Republic of Tajikistan On Ecological Expertise (2003);
- Law of the Republic of Tajikistan On Flora Protection and Use (2004);
- Law of the Republic of Tajikistan On Biological Safety (2005);
- Law of the Republic of Tajikistan On Other Obligatory Payments to the Budget (2006);
- Law of the Republic of Tajikistan On Water Users Associations (2006);
- Law of the Republic of Tajikistan On Fauna (2008);
- Law of the Republic of Tajikistan On Environmental Education (2010);
- Law of the Republic of Tajikistan On Alternative Energy Sources (2010);
- Law of the Republic of Tajikistan On Drinking Water and Drinking Water Supply (2010);
- Law of the Republic of Tajikistan On Safety of Hydro Engineering Facilities (2010);
- Law of the Republic of Tajikistan On Environmental Protection (2011);
- Law of the Republic of Tajikistan On Environmental Monitoring (2011);
- Law of the Republic of Tajikistan On Ecological Information (2011);
- Forest Code of the Republic of Tajikistan (1993);
- Land Code of the Republic of Tajikistan (1996);
- Water Code of the Republic of Tajikistan (2000).

STATE AND NATIONAL PROGRAMMES, STRATEGIES AND ACTION PLANS:

- National Development Strategy of the Republic of Tajikistan until 2015 (2007);
- Poverty Reduction Strategy of the Republic of Tajikistan for 2007-2009 (2007);
- Poverty Reduction Strategy of the Republic of Tajikistan for 2010-2012 (2010);
- State Environmental Education and Learning Programme of the Republic of Tajikistan until 2000 and for the long term until 2010 (1996);
- National Environmental Hygiene Action Plan (2000);
- National Action Programme to Combat Desertification (2001);
- State Protected Areas Development Programme for 2005-2015 (2005);
- State Forestry Development Programme for 2006-2015 (2005);
- Bee-Keeping Recovery and Development Programme of the Republic of Tajikistan for 2006-2010 (2005);
- National Environmental Action Plan (2006);
- Programme for Improvement of Clean Drinking Water Supply to the Population of the Republic of Tajikistan for 2008-2020 (2006);
- Programme for Recovery of Hydro Meteorological Stations and Level Gauges of the Republic of Tajikistan for 2007-2016 (2006);
- Comprehensive Target Programme for Use of Renewable Energy Sources (Solar, Wind and Biomass Energy, Energy of Minor Rivers, Energy of Geothermal Sources) until 2015 (2007);
- Comprehensive Target Programme for Extensive Use of Renewable Energy Sources (2007);
- Programme for Recovery and Hail-Suppression Works of the Republic of Tajikistan for 2007-2012 (2007);
- Programme for Improvement of Ameliorative Condition of Irrigated Agricultural Lands for 2010-2014 (2009);
- State Ecological Programme of the Republic of Tajikistan for 2009-2019 (2009);
- State Programme for Bank Protection Works in the Republic of Tajikistan for 2011-2015 (2011);

- State Programme for Glaciers Study and Protection for 2010-2030 (2010);
- State Programme for Planting, Collection and Processing of Medicinal Herbs and Making Drugs of Them for 2005-2014 (2005);
- National Strategy and Action Plan for Biodiversity Rational Use and Conservation (2003);
- National Environmental Action Plan of the Republic of Tajikistan (2006);
- Poverty Reduction Strategies in the Republic of Tajikistan (2007-2009), (2010-2012).

CONCEPTS APPROVED BY THE GOVERNMENT OF THE REPUBLIC OF TAJIKISTAN

- Concept for Rational Use and Protection of Water Resources in the Republic of Tajikistan (2001);
- Concept for Development of Sectors within the Fuel-and-Energy Complex of the Republic of Tajikistan for 2003-2015 (2002);
- Concept for Transition to Sustainable Development of the Republic of Tajikistan (2007);
- Concept for Environmental Protection in the Republic of Tajikistan (2008);
- Concept for Housing and Public Utilities Sector Reforming of the Republic of Tajikistan (2010).



**Ministry of Melioration and Water Resources
of the Republic of Tajikistan**

Shamsi 5/1 str., Dushanbe
Tel: +992 37 235 35 66, Fax: +992 37 235 35 66

E-mail: mwr.tj@rambler.ru