Ministerul Mediului

EaPGREEN
Partnership for Environment and Growth

This project is funded by the EU

OECD
BETTER POLICIES FOR BETTER LIVES

UNECE

UN environment

UNIDO

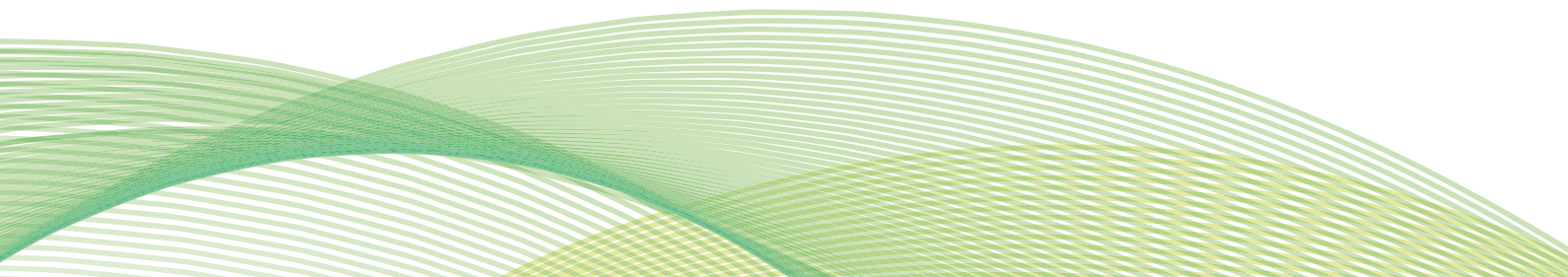
MEASURING THE PERFORMANCE OF GREEN ECONOMIC DEVELOPMENT IN THE REPUBLIC OF MOLDOVA

National Report based on the OECD set of Green Growth Indicators

CHISINAU, 2017

MEASURING THE PERFORMANCE OF GREEN ECONOMIC DEVELOPMENT IN THE REPUBLIC OF MOLDOVA

National Report based on the OECD set of Green Growth Indicators



Editor: Victoria ELLIOTT
ISBN 978-9975-87-292-8.

Printed on recycled paper.

Foreword

The green growth concept has been promoted in the Republic of Moldova as a model of social and economic development for economic growth, improved human well-being and social equity. Its goal is to achieve a low-carbon, resource-efficient and socially inclusive economy, significantly reducing environmental risks and the impact on human health.

These efforts were accompanied by the development of a green growth measurement framework to monitor and evaluate progress and support an efficient framework for decision making. The work on green growth measurement at the national level began in 2013-2014, with the preparation of the draft pilot report "Measuring the Green Growth in the Republic of Moldova" (OECD, Expert-Grup, 2014). The next phase of this process benefited from other initiatives, such as the adjustment of a set of environmental indicators established by the United Nations' Economic Commission for Europe (UNECE) (SEIS, 2016), conducted by the Ministry of Environment, and the development of the revised version of the State of Environment Report (2016). Several country reports and statistics were used as sources for analysing green growth in the Republic of Moldova, including the Third National Report on Millennium Development Goals (UNDP, 2013), the National Report to the United Nations Commission on Sustainable Development (UNCSD) (2012) and specific country reports to UN Conventions, Multilateral Environmental Agreements and international statistics. The chief data source was the Statistical Yearbook of the Republic of Moldova 2016 and updated macroeconomic data as of 15 March 2017.

The current report was prepared in the framework of the project on "Greening Economies in the European Union's Eastern Neighbourhood" (EaP GREEN), which is funded by the European Union. The EaP GREEN assists six Eastern Partnership (EaP) countries (Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova and Ukraine) to strengthen the analysis, policy instruments and capacities needed to make the transition to a green economy. The project has been implemented by the Organisation of Economic Co-operation and Development (OECD) in partnership with the United Nations Environment Programme (UN Environment), the United Nations Industrial Development Organization (UNIDO) and the United Nations Economic Commission for Europe (UNECE).

The OECD is supporting EaP countries in this project to develop Green Growth Indicators (GGIs). The OECD shares experience on the use of GGI, promotes good practices and raises awareness of the value of GGIs. In practice, the EaP GREEN project entails the adaptation of the OECD set of GGIs and the identification of headline GGIs in three EaP countries, including the Republic of Moldova. This work has included developing the country's environmental and sustainable development goals (SDGs).

The shortlist of GGIs for Moldova is intended to serve as a basis for policy development and for monitoring the country's performance towards the green economic development. The list will be further improved and expanded to add the qualitative dimension to the quantitative indicators selected to measure progress achieved in this domain in the coming years.

Acknowledgements and Disclaimers

This report has been developed within the framework of the project on "Greening Economies in the European Union's Eastern Neighbourhood" (EaP GREEN), funded by the European Union (EU), implemented by the Organisation of Economic Co-operation and Development (OECD) in partnership with the United Nations Environment Programme (UN Environment), the United Nations Industrial Development Organization (UNIDO) and the United Nations Economic Commission for Europe (UNECE).

The report's development has been co-ordinated by the Inter-ministerial Working Group on Sustainable Development and Green Economy, co-chaired by the Ministry of Environment and Ministry of Economy of the Republic of Moldova and was prepared by Andrei Isac, consultant to the Ministry of Environment and to the OECD within EaP GREEN.

For their active participation, co-ordination of process, methodological and information/data support, the authors express their gratitude to: Members of the Inter-ministerial Working Group on Sustainable Development and Green Economy of the Republic of Moldova and the institutions and experts who have participated in the project, including: the Ministry of Environment of the Republic of Moldova: Maria Nagornii, Veronica Lopotenco, Vasile Scorpan, Tatiana Tugui, Serafima Tronza; the Ministry of Economy: Svetlana Turcanu, Victoria Blanuta, Lilia Tolocico; the National Bureau of Statistics: Elena Orlova, Ludmila Lungu; Working Group Members: Petru Bacal, Anatolie Ignat, Marcela Stahi, Igor Malai, Mariana Goras, Iuliana Palade, Liudmila Stihi, Eugenia Eni, Valentin Crismaru, Manole Balan, Rodica Iordanov, Silviu Neghina; the OECD Secretariat: Mikaela Rambali, Krzysztof Michalak; NGOs from the Republic of Moldova: Expert-Grup Independent Think-Tank, Public Association EcoContact. Special thanks are extended to Angela Bularga for initiating the project as part of the OECD Secretariat and her further support on behalf of the European Commission.

The authors express their hope that this report will prove useful for policy makers, researchers, NGOs, all those interested in green economic development and for international comparison.

Green growth statistics are rapidly evolving. The cut-off date for inclusion of statistics in this report was 15 March 2017. The data and information presented are based on the Statistical Yearbook, 2016.

Contents

CHAPTER 5

ECONOMIC OPPORTUNITIES AND POLICY RESPONSES

List of Figures

List of Tables

Abbreviations and Acronyms

BIG-E	Batumi Initiative on Green Economy
EaP GREEN	EU-funded "Greening Economies in the Eastern Neighbourhood" project
EE	energy efficiency
EEA	European Environment Agency
EfE	Environment for Europe Process
EU	European Union
GE	Green Economy
GGIs	Green Growth Indicators
GHG	greenhouse gas emissions
GoM	Government of Moldova
INCE	National Institute for Economic Research
LEDS	Low Emissions Development Strategy
LULUCF	land use, land-use change and forestry
MAFI	Ministry of Agriculture and Food Industry
MEAs	Multilateral Environmental Agreements
MoEnv	Ministry of Environment
MoEc	Ministry of Economy
MDGs	Millennium Development Goals
MDL	Moldovan lei
$MtCO_2e$	million tonnes of CO_2 equivalent
NBS	National Bureau of Statistics
NEF	National Ecological Fund
NCPP	National Cleaner Production Programme
NDS	National Development Strategy "Moldova 2020"
OECD	Organisation for Economic Co-operation and Development
RECP	resource-efficient and cleaner production
RM	Republic of Moldova
SCP	sustainable consumption and production
SEA	Strategic Environmental Assessment
SEI	State Ecological Inspectorate
SD	sustainable development
SDGs	Sustainable Development Goals
SMEs	small and medium enterprises
UNECE	United Nations Economic Commission for Europe
UNEP	UN Environment, United Nations Environment Programme
UNDP	United Nations Development Programme
UN CSD	United Nations Conference on Sustainable Development
UNIDO	United National Industrial Development Organization
UNFCCC	United Nations Framework Convention on Climate Change
WB	The World Bank
WG	Working Group
WEEE	Waste Electrical and Electronic Equipment

Executive summary

The green growth concept has been promoted in the Republic of Moldova as a model of social and economic development for economic growth, improved human well-being and social equity. Its goal is to achieve a low-carbon, resource-efficient and socially inclusive economy, significantly reducing environmental risks and the impact on human health.

The efforts to green the Moldova's economy have been reinforced by the establishment of the Inter-ministerial Working Group on Sustainable Development and Green Economy and the development of the Road Map on Green Economy which outlined short- and medium-term actions for 2018-2020 and of the Environmental Strategy for the period 2014-2023.

Measuring the performance of the green economic development will be a vital part of sustainable economic and environmental governance in the Republic of Moldova. This report is intended to support these activities, providing background and establishing a national framework for monitoring and implementing Green Growth Indicators, as well as for the Road Map on Green Economy promotion.

Key green growth findings: improvements

In the past decade, progress has been made in achieving green growth goals in the Republic of Moldova. This has included improving energy efficiency, energy intensity and the use of renewables, the reduction of GHG emissions and enhanced CO_2 productivity. Thanks to the adoption of renewable energy sources, improving energy efficiency and reducing intensity, the country has gradually been able to reduce its dependence on imported energy. Meanwhile, the renewables sector has created new business opportunities and jobs.

Improvements have also been made in the drinking water supply and waste management in the past decade. A greater proportion of the population is now connected to centralised water supply networks and waste water treatment facilities. This has been achieved as a result of the development of new policy measures and significant support from government and development partners in these areas.

Key green growth findings: challenges

Sectoral challenges remain, however, including the significant level of pollution from transport sources and agriculture. Both sectors need a new strategic vision to introduce green policies. The transfer of best European practices and mobilising financial flows will help to expand the potential for green growth.

Another challenge is presented by the qualitative dimension of a number of quantitative indicators. The percentage of the population connected to centralised drinking water supply or waste water treatment networks is not always a guarantee of water quality or of a high level of waste water treatment. The coverage by natural areas or forest now protected by the government has been increased, but proper management, protection and restoration of rare species has yet to be fully instituted.

Finally, more transparency on the funding for environmental protection (through the National Ecological Fund), and on environmental investments in the private sector will help to suggest how progress can be made in improving the general environmental quality in the Republic of Moldova.

Key findings on green growth measurement

The current work on developing the list of GGIs for the Republic of Moldova, and the previous pilot testing of GGIs supported by the OECD (2014), showed that statistical and inter-ministerial data is available and can be used to measure the performance of green economic development.

The development of the GGIs report was co-ordinated by the Inter-ministerial Working Group on Sustainable Development and Green Economy, co-chaired by the Ministry of Economy (MoEc) and the Ministry of Environment (MoEnv), and included the active participation of the National Bureau of Statistics (NBS).

Development of the GGIs was part of a broader process of developing the Road Map on Green Economy promotion in the Republic of Moldova and can serve as background for the monitoring of performance in green growth. This process was carried out with the development of the national sustainable development goals (SDGs) and indicators (from August 2016 to March 2017). As a result, a number of GGIs and SDGs (on energy efficiency, emissions, wastes, water and biodiversity) were harmonised and given the same title, definition, data sources and measurement units.

The list of selected GGIs include 33 indicators in different fields, of which only 8 did not fully correspond with the set proposed by OECD and which need further development. Such indicators as material productivity of the economy and subsidies for organic agriculture were considered important and were recommended for development in the next country report in 2018. General recommendations formulated and presented by the members of the Working Group to all selected GGIs are included in Table 2 in the annexes.

Recommendations

Data collection: The most challenging task in developing the GGIs report was data collection, and the comparison of definitions, methodologies and data sources. Data or indicators collected or applied in the Republic of Moldova were not always in comparable measurement units. In addition, they were either not calculated on a systematic basis or were project driven. The establishment of an institutional framework, the Road Map on Green Economy and the Environmental Strategy 2014-2023, will help to ensure continuous data collection and catalyse the collection or calculation of new data. Lessons learned, existing data and new data flows have yet to be introduced and applied efficiently.

Institutional co-ordination: The Inter-ministerial Working Group on Sustainable Development and Green Economy, with the active participation of the Ministry of Economy (MoEc), Ministry of Environment (MoEnv),

National Bureau of Statistics (NBS), Institute of Ecology, the National Institute for Economic Research (INCE) and NGOs, should further support the co-ordination of the process, providing guidance to strengthen inter-ministerial collaboration and information sharing on green growth. The Ministry of Environment and the Ministry of Economy, in co-operation with all the participating institutions and development partners, have the responsibility to ensure continuity and ensure the sustainability of the activities of the Working Group.

Policy integration: Sectoral ministries and governmental agencies should better integrate the identified indicators in their policy making and reporting. National environmental indicators, GGIs and SDGs need to be streamlined, and synergy between these processes has to be ensured. The role of the State Chancellery (General Secretary of the Government) and of the Council on Sustainable Development under the Prime Minister of the Republic of Moldova need to be clearly specified and co-ordination encouraged.

The next steps

The green growth indicators included on this pilot shortlist will need to be expanded and improved in due course, both in the quantitative and qualitative dimensions.

The next report on GGIs in the Republic of Moldova is planned for 2018, as part of the implementation of the Road Map. Priorities for this next stage could include updating the list of indicators, addressing recommendations, reviewing progress towards green growth over 2008-2018 by developing further background information, and working on harmonising methodologies for national and international comparison.

The GGIs report can be a considerable asset in implementing the Road Map on Green Economy. Its indicators can help to monitor the progress achieved as the green economy is adopted in each economic sector. It should also serve as an important tool for public information, motivating firms and the general public to support and contribute to the green transformation of the country, in line with sustainable development goals.

Introduction

The National Development Strategy of the Republic of Moldova for 2012-2020, "Moldova 2020", adopted the priorities of outlined in the Outcome Declaration of the United Nations Conference on Sustainable Development ("The Future We Want", Rio de Janeiro, 20-22 June 2012). In choosing this course, the government has committed to ensuring a transition to green economic development. The goal is to promote sustainable development principles and help to reduce poverty, through better governance and by integrating environmental protection into all aspects of socio-economic development. This process was further supported by the Declaration of Intention on Sustainable Development and Green Economy, signed by the Ministry of Economy, Ministry of Environment, Ministry of Agriculture and Food Industry (MAFI) on 8 April 2014.

As a result of these actions, the government approved the Environmental Strategy 2014-2023, establishing promotion of the green economy as a priority at the national and sectoral level. This provided the basis for further introducing the green economy in agriculture, transport, energy, industry, construction and regional development, education and procurement. The proposed strategic actions and introduction of inter-ministerial co-ordination on sustainable development resulted in the development of the Road Map on the Promotion of Green Economy in Moldova, outlining short- and medium-term actions for 2018-2020.

To measure the performance of green growth promotion and decision making in this domain, data must be developed. At present, indicators for resource productivity, energy intensity, share of renewables and waste recycling, environmental services and investments in the field of environmental infrastructure are not broadly applied. Thus, supported by analytical research, the EaP GREEN project is assisting the Republic of Moldova to develop national Green Growth Indicators (GGIs) for monitoring and analysing its transition towards green growth. The resulting green growth framework adapts international definitions and practices to its national circumstances and builds upon the work and experience of the OECD, UNECE, EEA and other organisations. It also uses the System of Economic and Environmental Accounting and the Shared Environmental Information System.

This report is based on the methodological approaches proposed in OECD GGIs (2014), EaP GREEN Measuring the Green Transformation of the Economy (2016), as well as recommendations made at national and international workshops on the possibility of integrating GGIs to monitor progress on the green economy in the Republic of Moldova. Data gaps, necessary adjustments and recommendations for short-term actions in this domain that might be addressed by the governmental agencies (Ministry of Economy, Ministry of Environment, National Bureau of Statistics, etc.) were also discussed. The Inter-ministerial Working Group on Sustainable Development and Green Economy, which supervised the preparation of this report, also co-ordinated the Road Map on Green Economy Promotion in the Republic of Moldova, which includes a chapter on GGIs. This report also aligns green growth indicators with SDGs indicators (Agenda 2030). Proposals and recommendations for further integrating GGIs into the national statistics and environmental data collection system were also developed.

Chapter 1.
The socioeconomic context and characteristics of growth

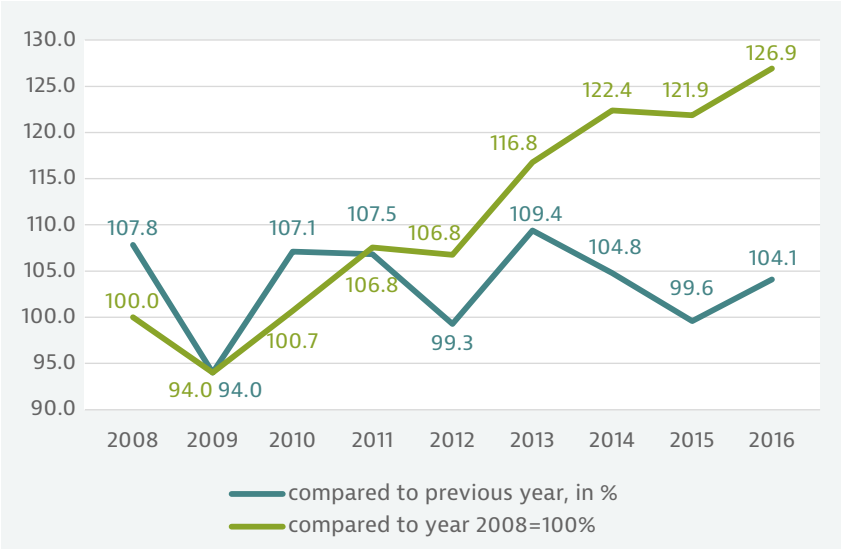
The capacity of the Republic of Moldova to pursue green economic growth depends on its general socio-economic background: its economic structure and macroeconomic performance, its business climate and the extent of foreign investment, and the openness and vulnerability of the economy to external shocks. Indicators on the socio-economic context provide important background information that can be used to track the effects of green growth policies and measures. Assessing the green growth performance of the country based on economic and labour indicators (Indicators 1.1. to 1.9) also ensures that progress towards green growth is linked to social goals such as poverty reduction and social equity.

Economic growth and structure

INDICATOR 1.1 **GDP GROWTH**

In the past decade, real annual GDP growth has registered periods of both growth and decline (Figure 1). But when compared with real growth, it experienced a steady increase with regard to a base year (2000 or 2008). For example, GDP grew by 26.9% in 2016, by comparison with the year 2008, and by 4.1% compared to 2015.

Figure 1. Trends in GDP growth (%)

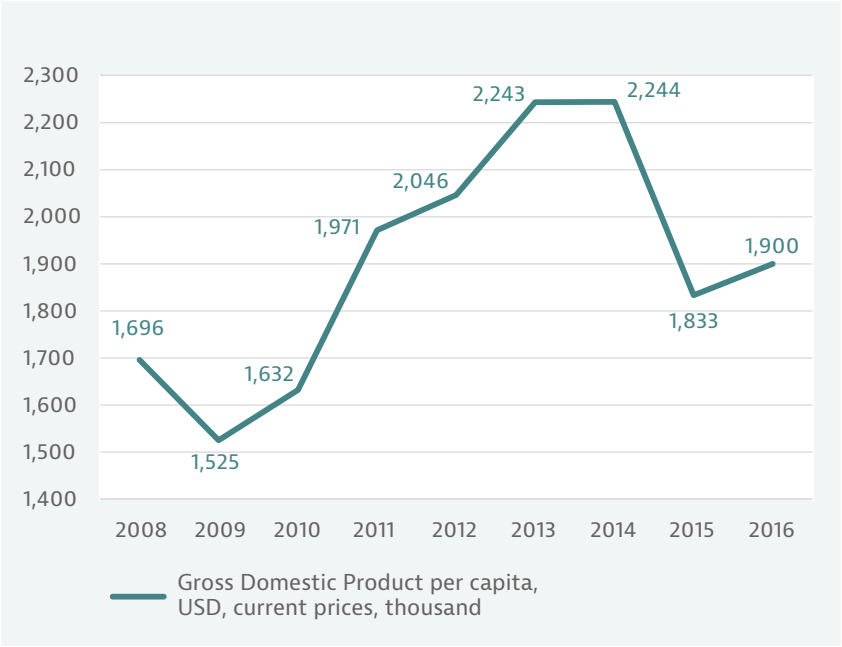


Source: NBS (2017), Statistical Yearbook 2016; NBS, "Dynamics of major macroeconomic indicators", 15 March 2017; MoEc, 2017.

Definition:
Gross domestic product (GDP) represents the final value of goods and services for final consumption. The GDP growth rate measures how fast the economy is growing. GDP growth is driven by consumption, investment and exports.

Key message:
Annual GDP growth has been very uneven since 2000, especially in recent years. However, the nominal level of GDP has been on the rise since 2009.

Figure 2. GDP per capita



Source: NBS (2017), Statistical Yearbook, 2016; NBS, "Dynamics of major macroeconomic indicators", 15 March 2017; MoEc, 2017.

Although the economy of the Republic Moldova has shown some signs of recovery, and a slight GDP increase, it has been negatively affected by a number of internal and external factors due to general global instability period in the past decade (especially in the past four years). Such shocks include the economic crisis in the United States; the sanctions imposed by the EU on the Russian Federation, as well as restrictions Russia imposed on the imports of a number of agricultural products from Moldova; the crisis in Ukraine; problems in the banking sector; a continuous decline in remittances; internal and external migration; and a drop in prices of agricultural products. In this period, public trust in the governing structures was very low and continued to decline.

The National Development Strategy "Moldova 2020" proposed several scenarios for economic growth. The implementation of its priorities, as updated in 2016, forecasts that for the years 2017-2020, the national economy will record average annual growth of about 4% (2017: 4.5%; 2018: 3.5%; 2019: 4%; and 2020: 4%).

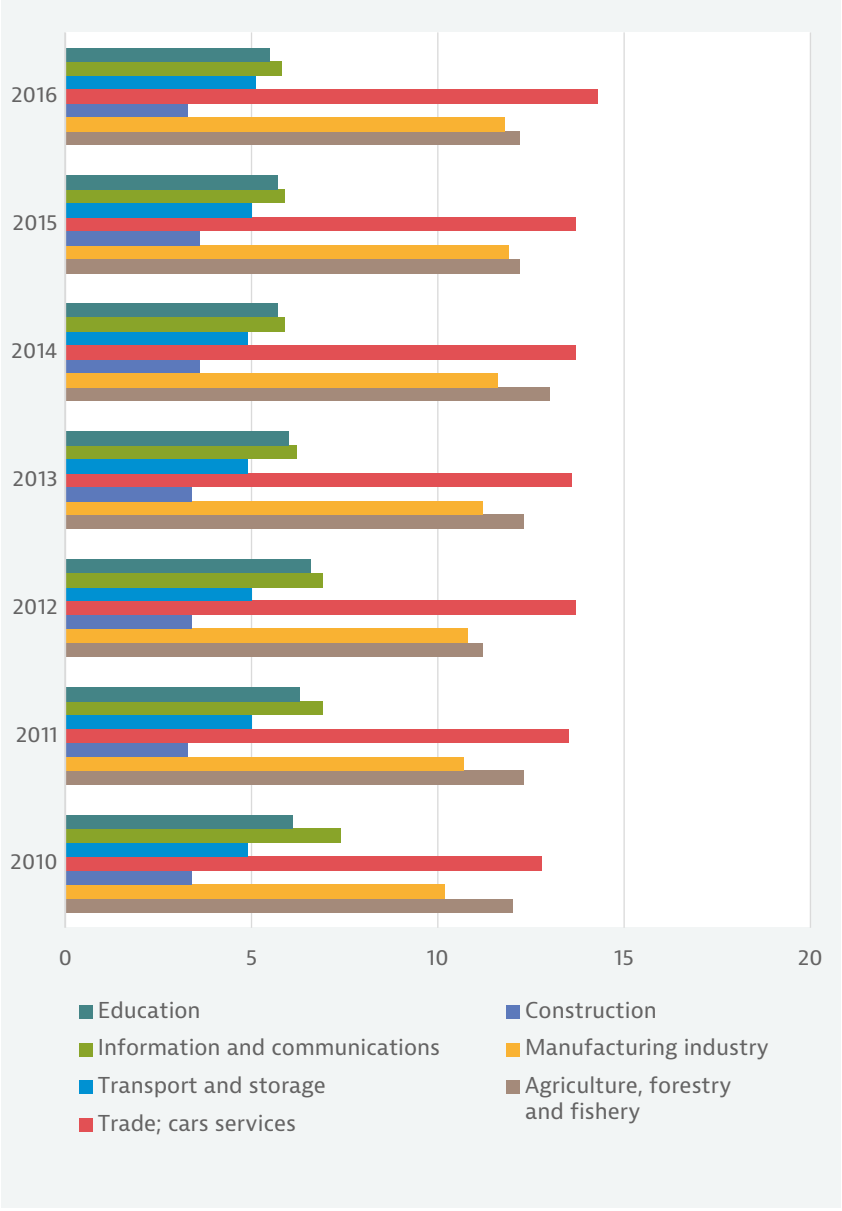
GDP per capita has risen substantially since 2000: from USD 354 in 2000, to USD 1 696 in 2008 and USD 1 900 in 2016 (Figure 2). It nevertheless remains low by comparison with EU levels.

INDICATOR 1.2 **GDP STRUCTURE**

GDP grew by 4.1% in 2016 compared to 2015, buoyed by agriculture, followed by trade, industry, transport, information and communications. The agricultural sector, which recorded the highest growth, thanks to an increase in the production of vegetables and livestock, contributed growth of 2.2 percentage points (p.p.), followed by trade (0.9 p.p.) and industry (0.3 p.p).

However, total final consumption in 2016 (MDL 142.1 million) was 105.7% of GDP (MDL 135.5 million). Consumption thus exceeded GDP by 5.7%.

Figure 3. Contribution of economic sectors to GDP, %



Source: NBS (2017), Statistical Yearbook, National Accounts, 2016; NBS, MoEc (according to the new classification of activities, or CAEM2, March 2017).

Definition:

GDP structure provides information on the contribution of the main economic activities to the GDP and its growth (real GDP broken down by major economic sector).

Key message:

GDP in the Republic of Moldova (Figure 3) depends on the following economic sectors (figures for 2016): trade and car services (14.3%), agriculture (12.2%), the manufacturing industry (11.8%), information and communication (5.8%), transport and storage (5.1%).

INDICATOR 1.3 **ECONOMICALLY ACTIVE POPULATION**

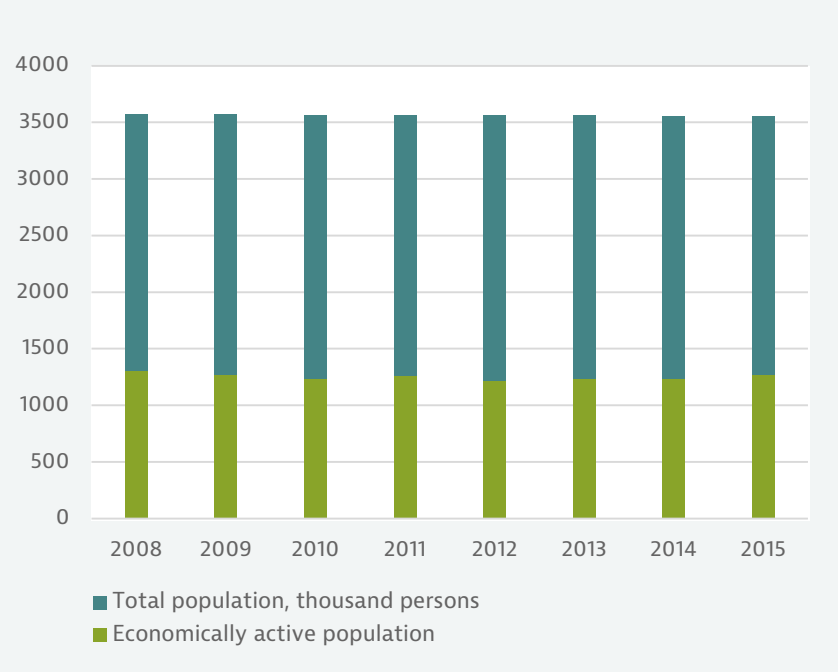
Definition:
Persons forming the labour force available for the production of goods and services, including both the employed and unemployed population.

Key message:
The labour force has been declining in absolute terms since 2000, due to outmigration. Most of the workforce is in rural areas and has a low level of qualifications. The economically active population composes only one-third of Moldova's population, and is expected to drop even further in the near future owing to demographic and migration trends, compromising the country's potential for economic development.

In 2015, 1.26 million people in Moldova were economically active. Although this represented a 2.7% increase over 2014, the long-term trend has been in decline. A little more than half the active population was located in rural areas (53.1%). In recent years (2015-2016), figures for emigration of the labour force declined, putting increased pressure on the internal labour market.

The population activity rate according to the EU Eurostat methodology is 46.9%.

Figure 4. Distribution of population by participation in economic activity, thousand persons



Source: NBS (2017), Statistical Yearbook, National Accounts, 2016.

INDICATOR 1.4 UNEMPLOYMENT RATE

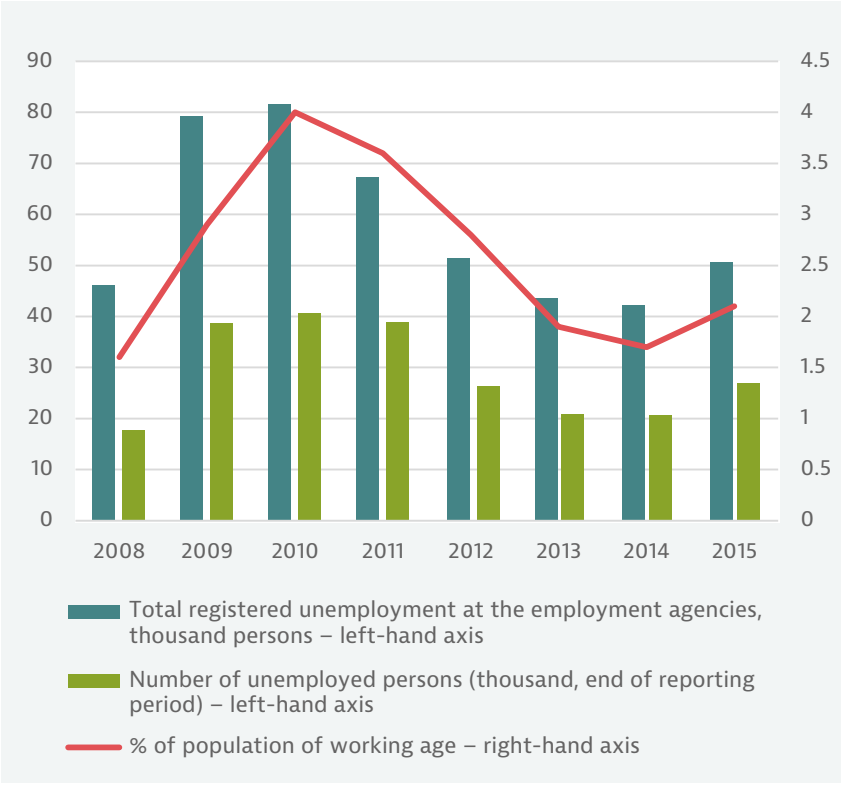
The general labour market and unemployment rate has remained stable in the past three years (1.9% in 2013 and 2.1% in 2015). The unemployment rate is higher among men (4.0% of the population) than among women (2.6%). Unemployment is the highest among young people (15-24 years-old), at 10.7% of the total of the economically active population. It is also higher in urban areas (at 4.6% of the population) than in rural areas (2.3%), although the majority of the economically active population lives in rural areas. In general, the rural population has a lower education level and lower salaries.

Employment has not matched economic activity in the recent past. About 40% of the unemployed have primary or secondary education, but only 20% have completed higher secondary school, 20% have completed secondary professional studies and 20% have higher professional or university education. Most of the vacancies (70%) are for low-skilled workers, and only 30% of these openings request higher school or professional education qualification.

Definition:
Share of total unemployment out of total economically active population.

Key message:
The level of unemployment rose in the years following the economic crisis and has been rising again in recent years. In general, the labour market does not match demand.

Figure 5. Number of unemployed persons and unemployment rate



Source: NBS (2017), Statistical Yearbook, 2016.

INDICATOR 1.5 **POPULATION**

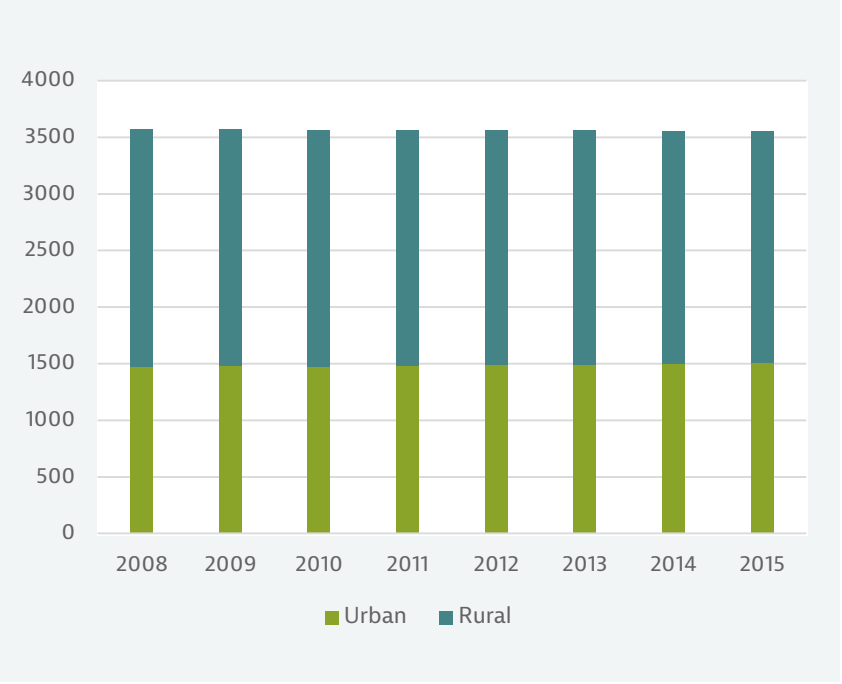
Definition:
Population at the time of population census.

Key message:
The total population is decreasing, due mainly to negative natural increase and emigration.

Moldova's population declined in the past decade. This negative trend results from the negative natural increase (e.g. a drop of 2 930 persons in absolute numbers in 2008 and 1 296 in 2015), external emigration (a drop of 6 988 in 2008 and 2 236 in 2015), external work migration and changes in the age structure of the population. The number of people of age 60 years and over per 100 inhabitants is 16.7, a ratio that has been increasing in the past decade. Demographic dependence is very high, with 53.6 persons per 100 inhabitants unable to work (2015). This figure has also trended upward, with an increase in the number of pensioners.

Internal migration includes migration of people from rural areas to urban areas (capital city and rayon centres) for better work opportunities and living conditions. In 2008, 41.3% of the population lived in urban areas, rising to 42.4 % in 2015.

Figure 6. Population, thousand persons

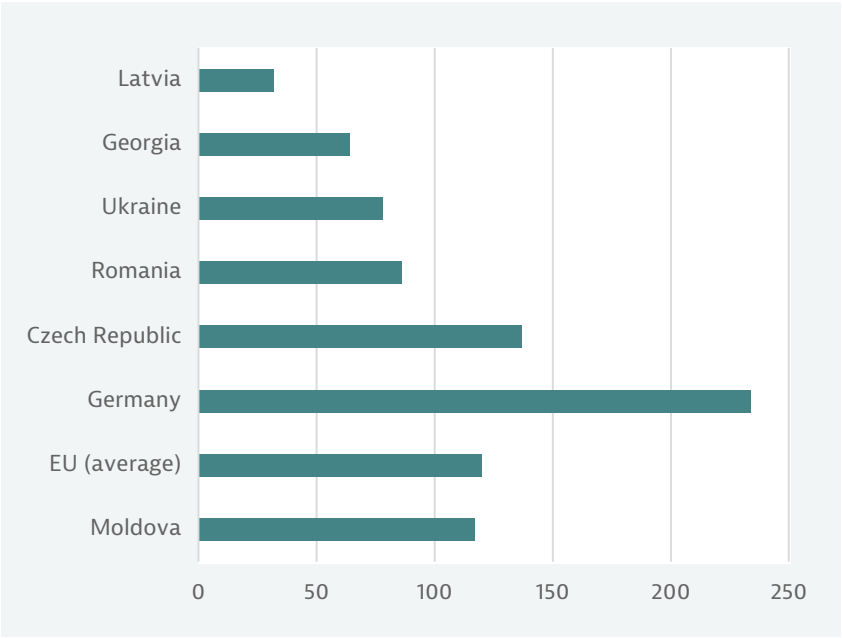


Source: NBS (2017), Statistical Yearbook, 2016.

INDICATOR 1.6 **POPULATION DENSITY**

The gradual decline of the rural population and steady increase of the urban population has persisted for the past decade. The data show that figures for the Republic of Moldova are lower than the average for EU countries, but are much higher than in neighbouring countries, such as Romania and Ukraine (Figure 7).

Figure 7. Population density, persons/square km



Source: NBS (2017), Statistical Yearbook, 2016; The World Bank, Population Density, 2015.

Definition:
Population per km².

Key message:
Population density has remained almost constant for the past five years, and now stands at 117.1 persons per square kilometre.

INDICATOR 1.7 **LIFE EXPECTANCY AT BIRTH**

Definition:
Estimate of average life expectancy, assuming that mortality rates for specific age groups for a given reference year remain unchanged over the lifespan.

Key message:
Life expectancy has improved in recent years, but the large discrepancy between rates for men and for women has remained constant.

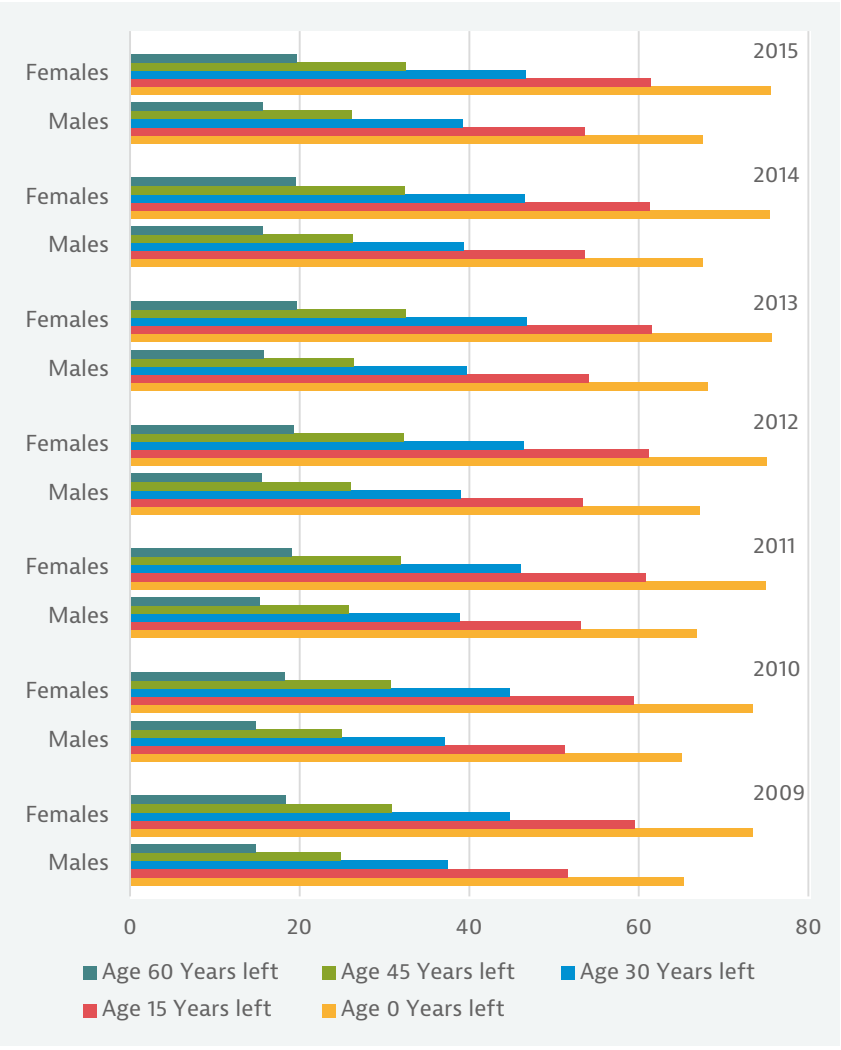
In 2015, life expectancy stood at 67.5 years for males and 75.4 years for females. These levels have not significantly changed in the past three years.

Improved general living conditions and improved access to water and sanitation, health care services and other general goods and services, helped raise life expectancy by an average of two years in the most recent five-year period measured.

The level is nevertheless lower than that of other countries in the EU and Eastern Europe. Life expectancy at birth in the EU-28 was estimated at 80.9 years in 2014, at 83.6 years for women and 78.1 years for men.

The Human Development Index (HDI), based on data for life expectancy, education, and income per capita indicators, ranked Moldova in 107th position (2015), with an HDI of 0.693, placing it among countries of mid-range development. Romania, in 52nd place (0.793); Georgia in 76th place (0.754) and Ukraine in 81st place (0.747), rank higher among developed countries, with EU countries at the top of the scale.

Figure 8. Life expectancy



Source: NBS (2017), Statistical Yearbook, 2016.

INDICATOR 1.8 GINI COEFFICIENT: INCOME INEQUALITY

Definition:
Degree of inequality in the distribution of family income.

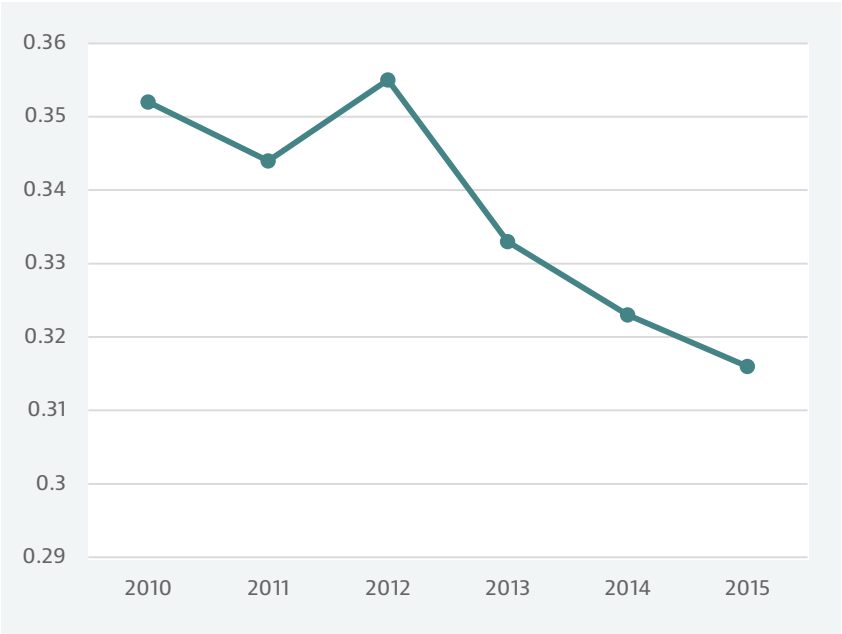
Key message:
Income inequality has decreased in recent years but remains above the EU average.

The Report on Poverty in the Republic of Moldova, Ministry of Economy (2014) and the Information Note from the Ministry of Economy on poverty in the Republic of Moldova (2015) indicate that the reduction in poverty in the country has been accompanied by a decrease in the level of income inequality. In the period 2012-2015, the level of income inequality decreased by 10.2%, according to official data on the Gini coefficient. Consumption expenses show that most of the inequality is concentrated in rural areas.

Remittances from EU countries and Russia remain the most important means of maintaining the welfare of the population. The amount has fallen in recent years, but has been compensated for by the depreciation of the local currency.

According to Eurostat data for 2015, the Gini coefficient for the Republic of Moldova was on a par with the EU-28 average. Lower levels of inequality were registered in Belgium, the Czech Republic, the Netherlands and Scandinavia, but countries such as Romania, Bulgaria, Estonia, Greece, Spain and Latvia had a higher Gini coefficient than the Republic of Moldova.

Figure 9. Gini coefficient



Source: NBS (2017), Statistical Yearbook, 2016.

INDICATOR 1.9 **EDUCATIONAL ATTAINMENT BY LEVEL**

Definition:
% of enrolment of children/ students in educational institutions.

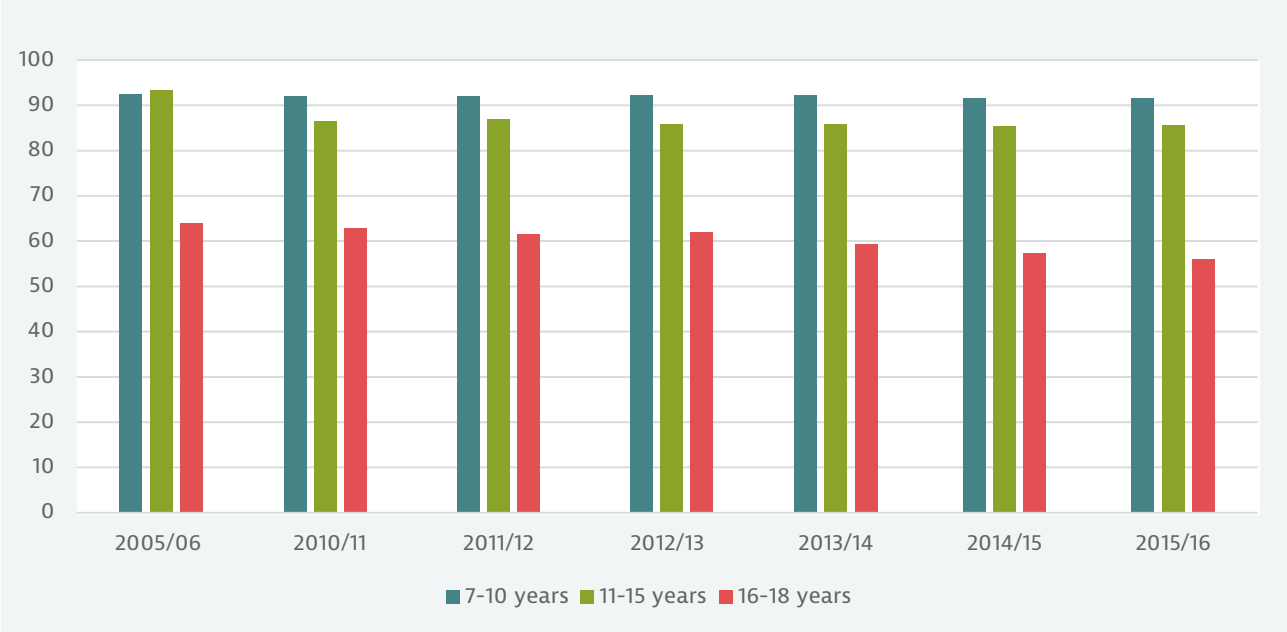
Key message:
In the past decade, the number of children in schools and of students in the Republic of Moldova has fallen significantly. Enrolment in primary schools and general secondary education institutions fell owing to the gradual decline of the school age population.

The school enrolment ratio differs depending on the age category. The highest enrolment level is for those in the age group 7-15 years (88.2% in the 2015/2016 school year), the typical age for the mandatory secondary education. However, the value of this indicator fell by 4.8 percentage points compared to the 2005/2006 school year.

On average, there were 941 students per 10 000 inhabitants in 2015/2016, compared to 1 446 students in the 2005/2006 school year. The net enrolment rate for different areas in primary education show significant disparities, with 106.2% in the urban area and 75.6% in the rural area.

In the past decade, the number of children in schools and of students has significantly decreased, due to the negative population growth rate and migration out of the country. The average enrolment rate for primary institutions is 105% in urban and 86% in rural areas, and in the upper secondary institutions 96% and 82% respectively.

Figure 10. Enrolment rate in education by age group (%)



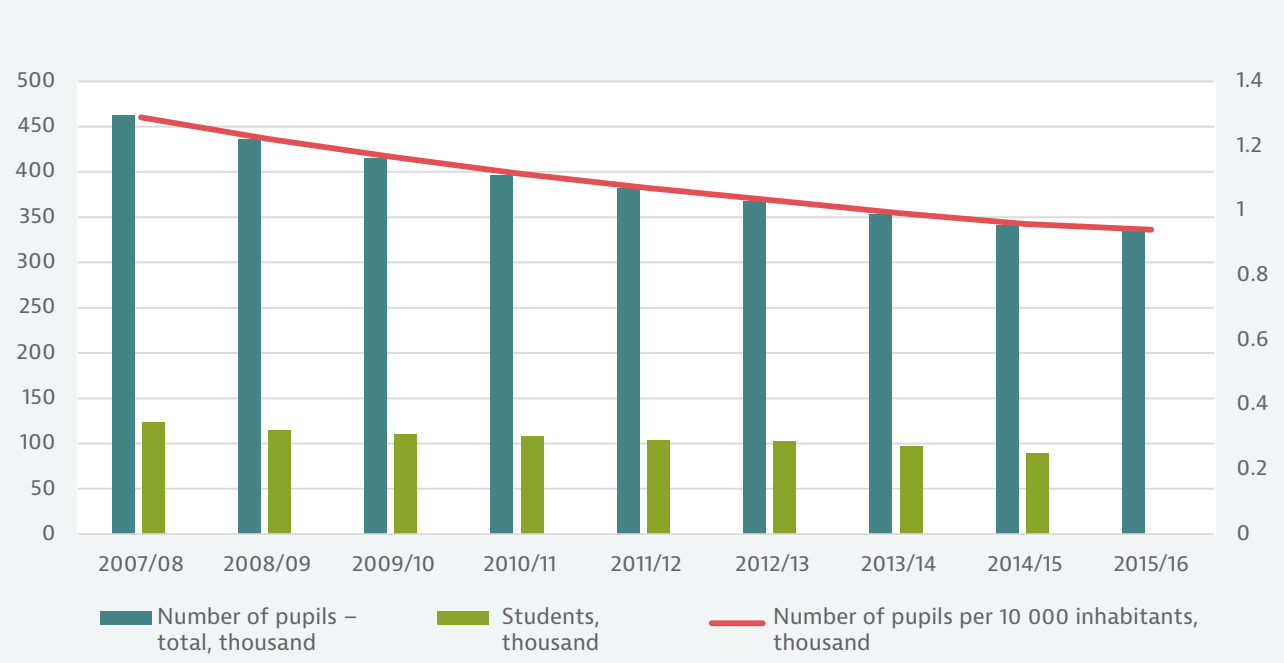
Source: NBS (2017), Statistical Yearbook, 2016; Education in the Republic of Moldova in 2015/2016.

The Strategy for the Development of Education for 2014-2020, "Education-2020" noted that the education sector has been affected by the general socio-economic situation of the country and that it considers the school network to be outdated and oversized. The proposed new formula of financing per pupil will help to give more to large schools in urban areas.

The Moldova 2020 Strategy aims to align the needs of the labour market with the education supply, with the goal of making a significant impact on economic growth, in particular green economic development. Modernising the vocational education system and improving training in the workforce will assist citizens in adapting to new labour market conditions and applying for green jobs. Partnerships between education and the job market should improve the fit between education and the quantitative, qualitative and structural needs of the labour force in the green economy.

Statistical data on the number of students who have graduated from higher education institutions by cycle and field of study demonstrate, for example, that of the 20 000 graduates from public institutions in 2014, 1 564 were in engineering and related sciences, 405 in manufacturing, 291 in agriculture, and 20 in environmental protection. The figure for economy and law was about 7 000 and for education science 2 635. Of the total number of graduates from colleges in the same year, 564 were in pedagogy, 1 226 in medicine, 861 in economics, 385 in computer science. Only 191 were in engineering and energy, 136 in agriculture and 80 in ecology. This was representative of the trends for graduates in these fields for the past 5 to 10 years.

Figure 11. Number of children in primary and general secondary education, and students



Source: NBS (2016), Statistical Yearbook, 2016.

Chapter 2.
The environmental and resource productivity of the economy

Carbon and energy productivity

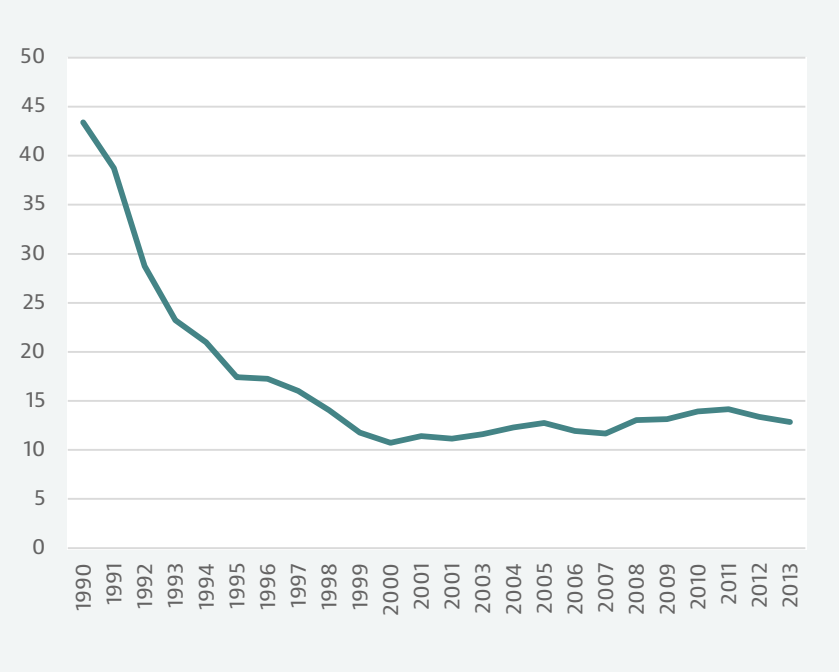
INDICATOR 2.1 **GHG EMISSIONS**

Definition:
This indicator shows aggregate greenhouse gas emissions and those by sector. Greenhouse gas emissions include six major gases (carbon dioxide, CO2; methane, CH4; nitrous oxide, N2O, and the F-gases) that are monitored by the UNFCCC.

Key message:
The Republic of Moldova experienced a dramatic drop in its level of greenhouse gas (GHG) emissions after independence. However, emissions have been increasing again since 2000 in all economic sectors except agriculture.

GHG emissions decreased by 70.4% (from 43 $MtCO_2e$ to 12.8 $MtCO_2e$) between 1990 and 2013 (Figure 12). This was largely due to changes in economic structure, the collapse of large industrial enterprises and the decline in emissions from the energy sector, which decreased by 76% between 1990 and 2013, after changes in energy supply and consumption. Natural gas replaced coal and oil for heat and electricity and now accounts for nearly half of the primary energy supply.

Figure 12. Aggregated GHG emissions (CO_2 equivalent), Mt/year



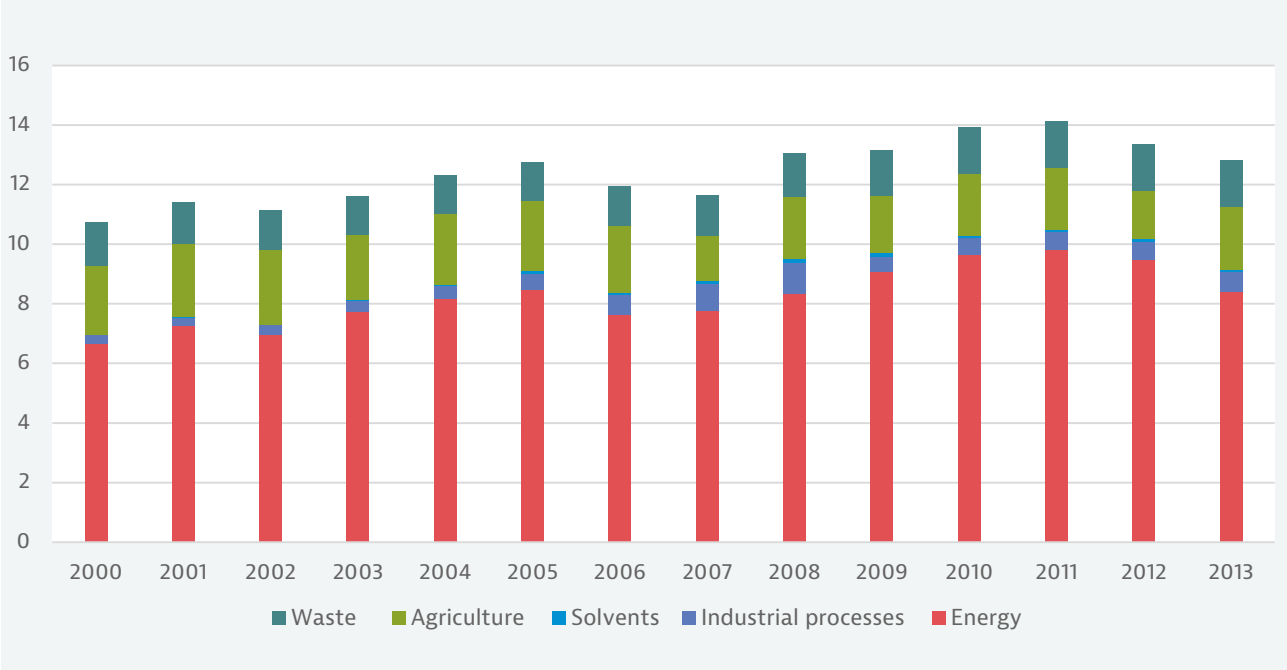
Source: Ministry of Environment, Climate Change Office (2016), "First biennial update report of the Republic of Moldova under the UNFCCC".

However, GHG emissions have risen again since 2000 in every sector but agriculture. For example, they more than doubled in the transport and industrial processes sectors between 2000 and 2013.

In 2013, the energy sector (including energy generation and transport) accounted for most GHG emissions (65.5%), followed by agriculture (16.6%) and waste (12.2%) (Figure 13). GHG emitted in the Republic of Moldova are no longer offset by carbon sequestration.

The Republic of Moldova ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1995 and the Kyoto Protocol in 2003. In December 2016, it approved the Low Emissions Development Strategy (LEDS) until 2030, establishing an unconditional target to reduce net GHG emissions by 64% to 67% by comparison with 1990 levels (or to 78% with international support) by 2030. Implementation of the LEDS represents an important contribution to addressing climate change mitigation nationally and globally.

Figure 13. Greenhouse gas emissions by sector in the Republic of Moldova (2000-2013), excluding LULUCF, $MtCO_2e$



Source: UNFCCC (2017), GHG emission profiles for non-Annex I Parties, http://di.unfccc.int/NonAnnex.aspx.

INDICATOR 2.2 CO_2 PRODUCTIVITY

Definition:
This indicator represents the ratio between the level of GDP and the level of carbon emissions (CO_2 equivalent emissions per unit of GDP). It is expressed in GDP in constant prices. This indicator is in line with the national SDG indicator on CO_2 productivity of the economy.

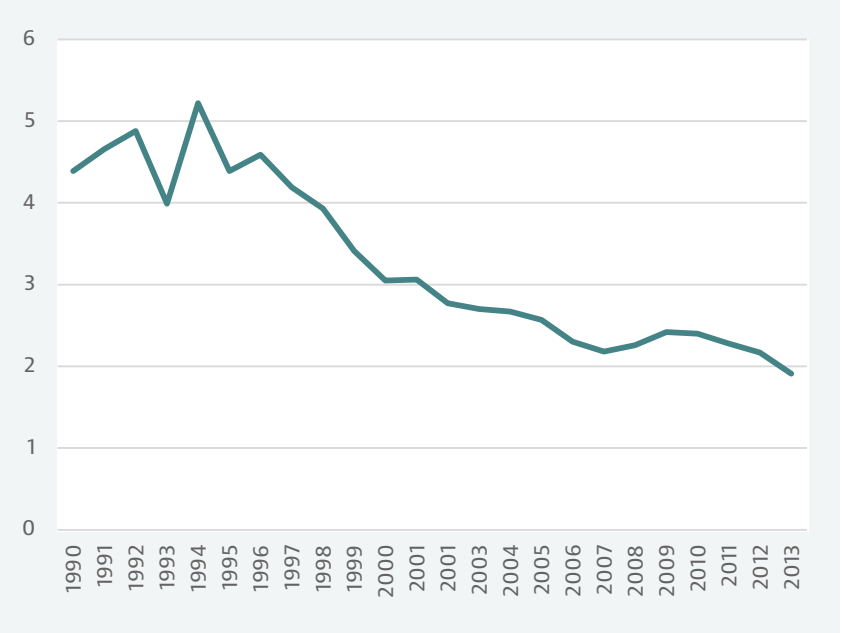
Key message:
The increase in CO_2 emissions is driven by economic activity, which has increased since 2000, but improvements in energy efficiency have made it possible to reduce the level of CO_2 intensity.

Carbon dioxide (CO_2) accounts for 65% of GHG emissions in the Republic of Moldova. Although the level of CO_2 emissions is lower than in 1990, CO_2 emissions still grew by 30.3% between 2000 and 2013.

Given the high share of GHG emissions from the energy sector, declining total GHG emissions can be explained by the shift away from emission-intensive fuels and the use of cleaner technologies. Between 1990 and 2013, GHG emissions per capita decreased by 32% compared with the base year (1990).

Emissions reached their lowest level in 2007, at 2.13 tonnes CO_2 equivalent per capita. By comparison, the average European level of this indicator in 2013 was 9.4 tonnes CO_2 equivalent per capita. GHG emissions are directly linked with economic growth, since increased economic activity increases consumption of energy and resources. In the period 1990-2013, aggregated GHG emissions per unit of GDP decreased from 4.39 tonnes CO_2 equivalent to 1.91 tonnes CO_2 equivalent, 43.5% lower than the base year.

Figure 14. CO_2 equivalent emissions per unit of GDP, t CO_2 equivalent/1 000 international dollars



Source: Ministry of the Environment (2016), "First biennial update report of the Republic of Moldova under the UNFCCC".

INDICATOR 2.3 FINAL ENERGY CONSUMPTION BY SECTOR

Due to higher energy use in transport and households, energy consumption increased by 5% between 2010 and 2015. It grew most rapidly in the transport sector. This was due to the increase in the number of transport units from 404 916 in 2004 to 757 195 in 2014, a constant average annual increase of 9%. Legislation in the period 2010-2016 permitting the import of older cars (increasing the allowable number of years from 7 to 10 years) has also increased energy consumption in the transport sector.

Households, commercial units and public services represent 55% of the total. This sector thus has the highest potential for energy savings, followed by the energy and transport sectors. The Energy Strategy of the Republic of Moldova till the year 2030 foresees a 20% reduction of use of energy in buildings, after implementing energy efficiency guidelines in new construction and public buildings.

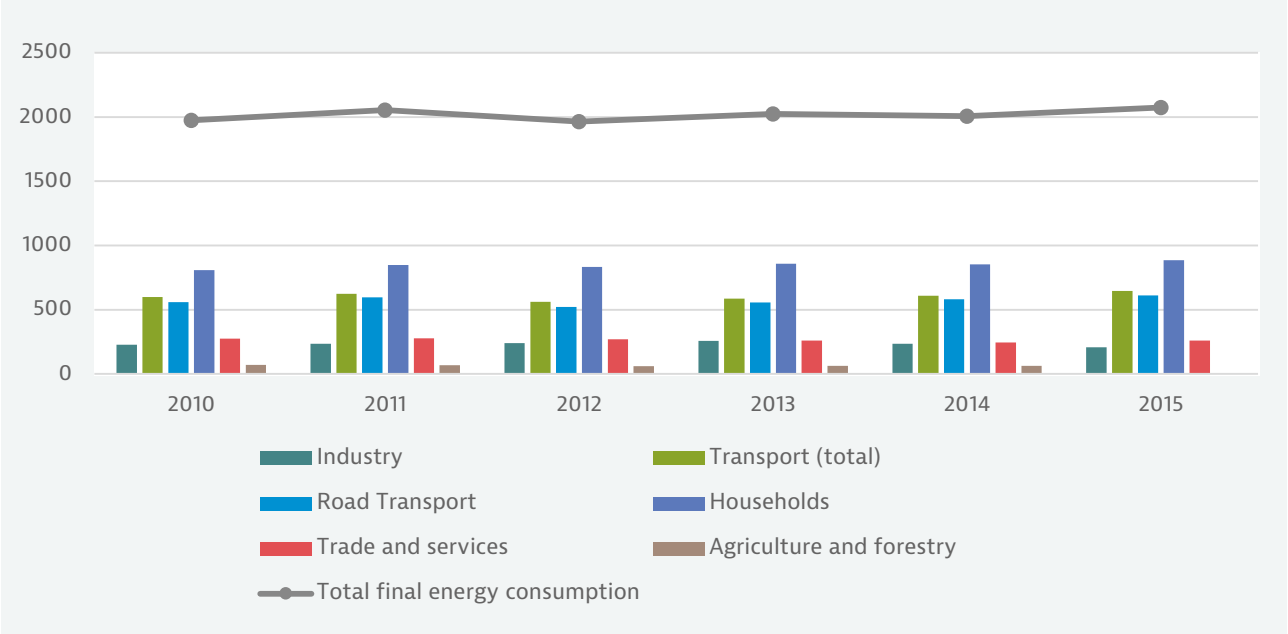
Definition:

This indicator shows energy supplied to the final consumer for all energy uses, covering industry, transport, households, services and agriculture. This indicator highlights sectoral needs in terms of final energy demand.

Key message:

Energy consumption increased by 5% between 2010 and 2015, due to increased energy use by households and transport. These sectors have the highest potential for improving the Republic of Moldova's energy efficiency.

Figure 15. Final energy consumption in the Republic of Moldova (ktoe, 2010-2015)



Source: NBS (2016), The Energy Balance of the Republic of Moldova, 2015, author's calculations.

INDICATOR 2.4 ENERGY INTENSITY

Definition:

Energy intensity as an indicator represents the energy consumed for each unit of GDP a country produces. More rational use of energy can bring down the rate. This indicator is in line with national SDG indicator on energy efficiency.

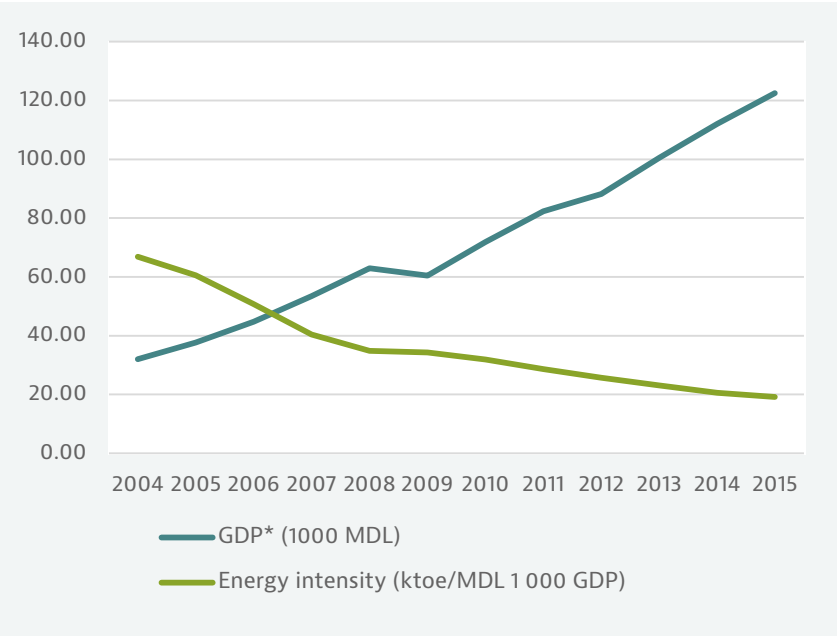
Key message:

Calculated per unit of GDP, energy intensity has improved in the past decade, and fell in 2015 to one-third of the level for 2005. However, this is still 2.7 times higher than the EU average.

The Republic of Moldova's energy consumption is trending upward. In the past decade (2005-2015), the average annual rates of growth of primary and final energy consumption were 0.5% and 1.4% respectively. The fact that primary consumption is growing more slowly than final consumption is a good sign, reflecting improved efficiency in the production-delivery process in the energy sector. In the same period, GDP growth increased from MDL 37 652 million to MDL 122 563 million.

The strategic vision of the National Development Strategy "Moldova 2020" for developing the energy sector is based on the following pillars: *i)* the country's energy security and *ii)* increasing energy efficiency (EE). In the case of energy efficiency, the goal for 2020 is to reduce energy intensity by 10%. This will be achieved by implementing EE and resource-efficient and cleaner production (RECP) principles and reducing energy consumption in buildings by 10%. These priorities were reconfirmed in the Energy Strategy 2030.

Figure 16. The evolution of GDP and energy intensity in Moldova



Source: NBS (2017), Statistical Yearbook, 2016, author's calculations. * At current prices.

INDICATOR 2.5 SHARE OF RENEWABLE ENERGY IN FINAL ENERGY CONSUMPTION

The Republic of Moldova's energy supply is dominated by imported fossil fuels. In 2014, close to 90% of the energy supply was from fossil fuels: natural gas (62%), oil (24%) and coal (2.8%). However, the amount of renewable energy used has increased by more than three times since 2000. The level from renewable energy sources rose to 9.4% of the total primary energy supply in 2014, 91% of it from biofuels and waste. Small amounts of hydropower, solar and wind power are also used. The share of renewable energy is smaller for electricity generation (6% of electricity generation), but higher in terms of final energy consumption (14%). Due to the country's energy dependence (87% of the energy supply is imported), national energy policies have been focused on increasing renewable energy sources and promoting energy efficiency to reduce demand. The latest legislation and regulatory framework for promoting renewable energy aim to increase the share of solar and wind energy.

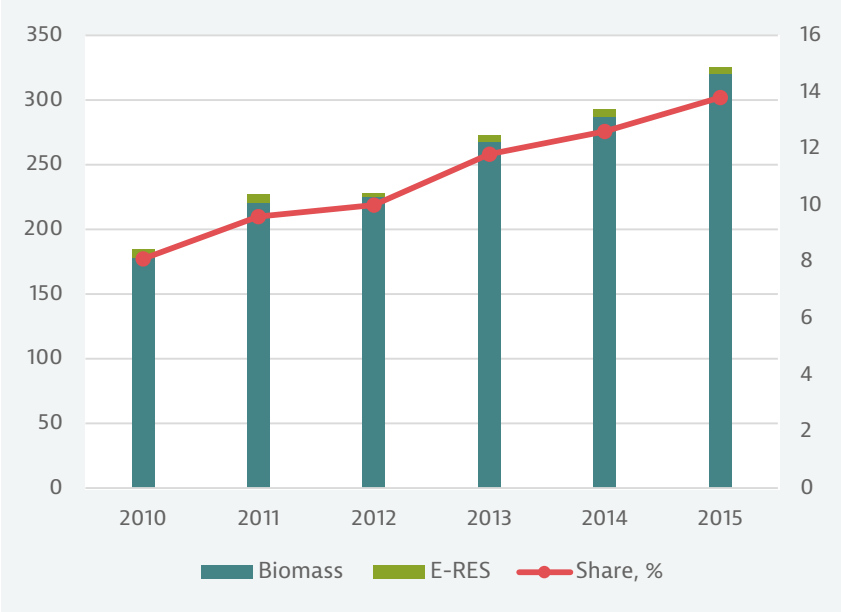
Under the national strategic policy framework for energy consumption, the Republic of Moldova committed to a goal of shifting energy consumption to the following sources for the year 2020:

- 17% of the final net consumption of energy from renewable sources;
- 10% of final electric energy consumption from renewable sources;
- 10% of the fuel in the transport sector to be covered by biofuel.

Definition:
This indicator represents the share of energy produced from renewable energy sources in final energy consumption.

Key message:
The amount of renewable energy used in the Republic of Moldova has increased by more than three times since 2000, mainly due to the use of biomass[1].

Figure 17. Share of renewable energy in Gross Final Energy Consumption



Source: NBS (2016), The Energy Balance or the Republic of Moldova, 2015, author's calculations.

[1] Biomass is composed of wood and waste wood from forestry and agriculture, agricultural plants and agricultural waste from collective or individual farms. Its affordable cost and its availability throughout the Republic of Moldova offer economic, environmental and social benefits. Its use has been facilitated by several internationally funded projects, as well as funds allocated from the energy efficiency funds.

INDICATOR 2.6 WASTE GENERATION

Definition:
Materials or products that have partially or completely lost the initial qualities necessary for their use in production or consumption. These indicators are in line with national SDG indicators on waste management and recycling.

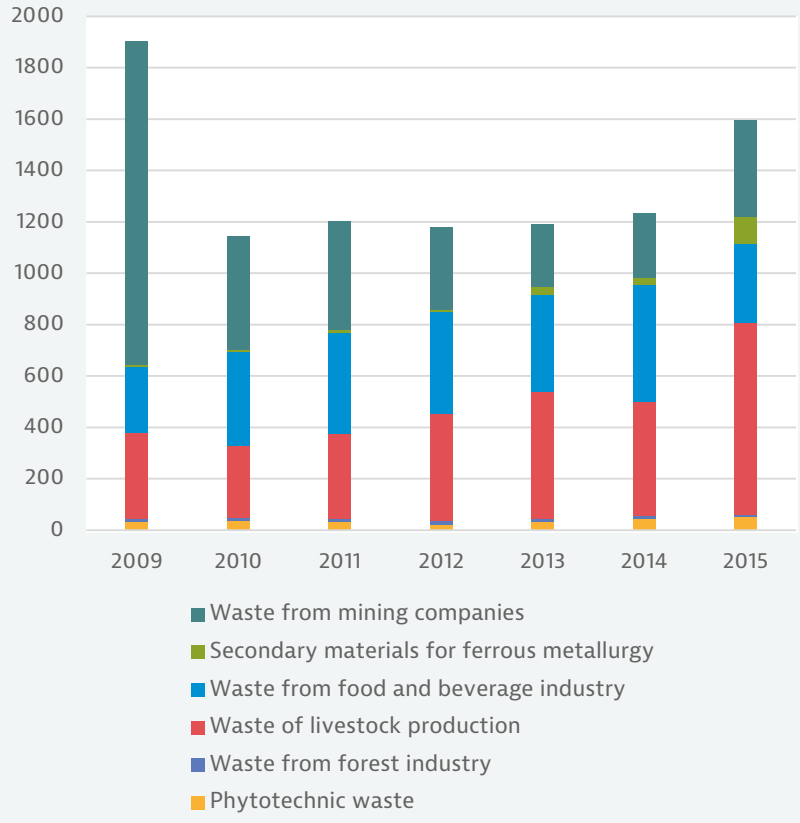
Key message:
Generation of non-hazardous waste in the Republic of Moldova increased in the past five years in every economic sector. Generation of municipal waste, both in general and per capita, has risen steadily.

No specific trends in the formation of waste in the sectors of economy are noted, since this is linked to increases or decreases in production in the respective area. National statistics do not include data on the volume of construction and demolition waste.

The Strategy for Waste Management of the Republic of the Republic of Moldova for 2013-2027 (April 2013) sets the following objectives:

- promoting selective collection systems for municipal waste in all areas in the domestic and productive sectors, as well as increasing the number of sorting, composting and recycling facilities;
- increase in reuse and recycling of packages by 20% by 2027;
- setting up a network of recycling collection at motor vehicle technical service centres, commercial centres, parking lots, etc.;
- increasing the degree of material and energy recovery of waste tiers through recycling or in cement furnaces;
- expanding the reuse and recycling of materials from end-of-life electrical and electronic equipment.

Figure 18. Amount of non-hazardous industrial waste, generated by some sectors of economy, thousand tonnes



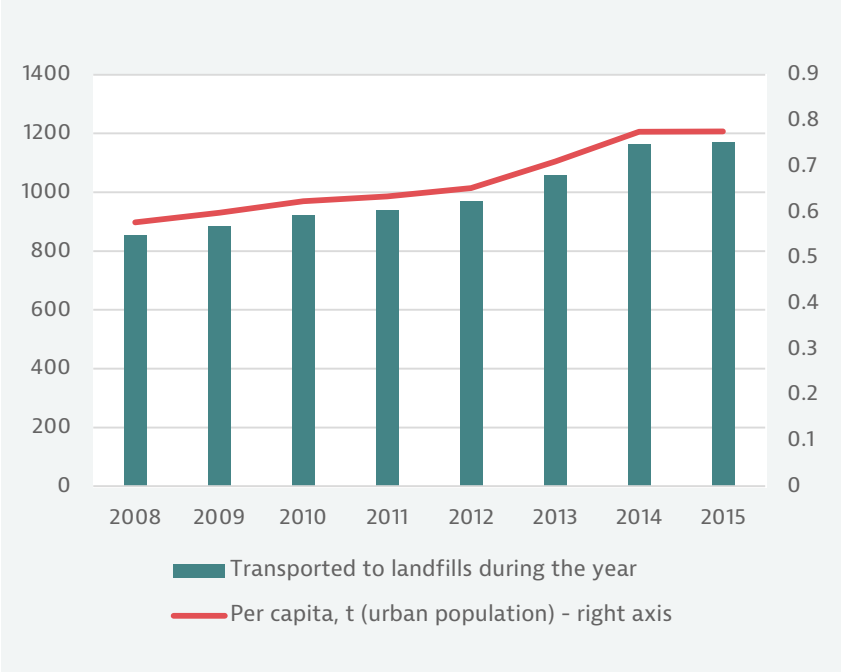
Source: NBS (2017), Statistical Yearbook, 2016.

Efficiency in the use of materials can be assessed by the level of waste generation. In 2015, the generation of municipal waste per capita was on average 0.8 tonnes, 20% higher than in 2010[2]. In the past decade, waste generation grew by 10% annually.

The Environmental Strategy provides for the creation of integrated waste and chemicals management systems that could result in a 30% reduction in the amount of landfilled waste and a 20% increase in recycling rate by 2023.

A new phase in the Republic of Moldova's waste management is expected in 2018. This is when the provisions of the new Law on Wastes, adopted in 2016, will take effect. These include the priority waste flows and new management principles, including extending producers' responsibility for waste.

Figure 19. Formation of municipal waste, thousand t



Source: NBS (2017), Statistical Yearbook, 2016, author's calculations.

[2] Figures for municipal waste are mainly drawn from data from municipal services, but self-transportation to landfills and in most rural areas is not included.

INDICATOR 2.7 **WASTE RECYCLING**

Definition:

Volume by type of waste introduced in a technological process for recycling purposes. These indicators are in line with national SDG indicators on waste management and recycling.

Key message:

No uniform trend in the collection and recycling of all types of recycling materials from waste has been ascertained, since data collection in this domain has not yet been standardised.

Data on recycled industrial wastes (by categories) are at present provided in the statistical reports from economic agents. Data from the companies that are authorised to collect waste, including recycling, are collected annually by the State Ecological Inspectorate. Given the different data flows, it is difficult to calculate the real recycling rate by type of material. The level of recycling of secondary materials from the municipal waste, as reported by the municipal services, needs to be calculated separately.

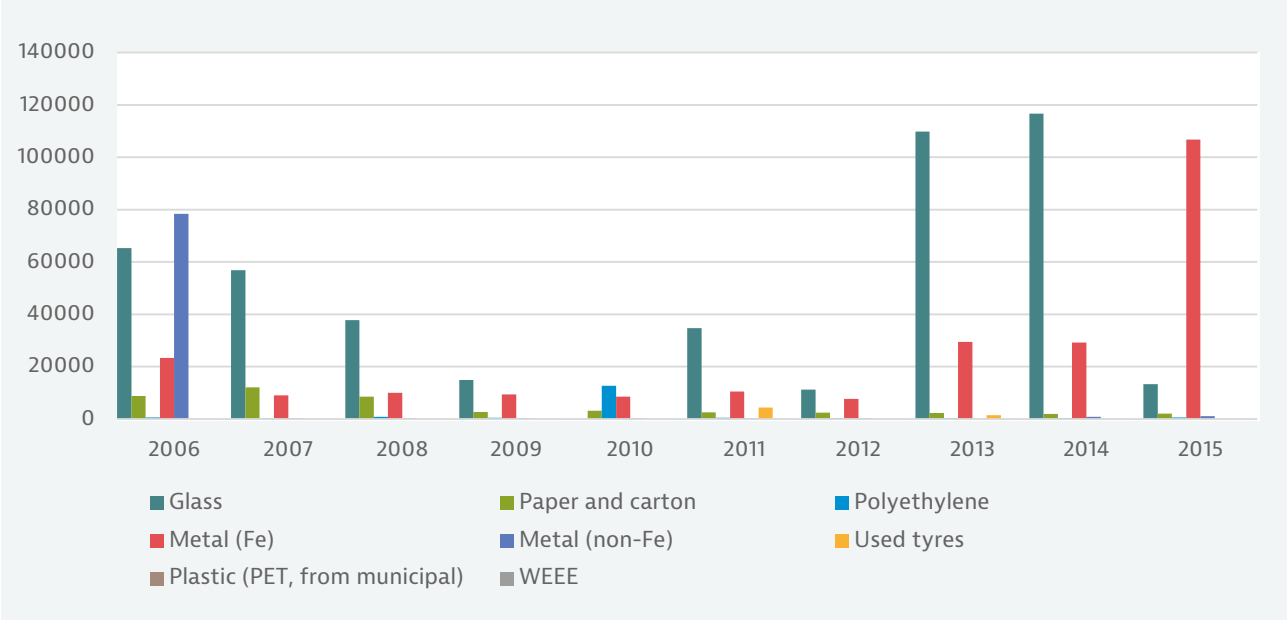
The National Waste Management Strategy for 2013-2027 foresees:

- promoting and implementing selective collection systems in all areas, both in the domestic sector and production, as well as sorting, composting and recycling facilities;
- a 20% increase in the degree of reuse and recycling of packages by 2027.

The Law on wastes, approved by the Parliament in July 2016, introduced extended producer responsibility and new targets for this sector. Article 14 of the Law provides for the following state policy provisions on reuse and recycling of waste:

- By 2018 – introduction of separate waste collection systems for paper, glass, metals and plastic;
- By 2020 – reuse and recycling of at least 30% of waste paper, glass, metals and plastic materials from households and other sources.

Figure 20. Waste, formed and collected for recycling, tonnes



Source: NBS, "Formation and use of wastes in 2015"; SEI, Annual Report of the State Ecological Inspectorate, 2010-2015.

INDICATOR 2.8 USE OF MINERAL FERTILISERS

The Republic of Moldova has not yet fully undertaken analyses of nitrogen and phosphorus balance to assess the potential environmental impact of agriculture. Statistical data are available only on the general use of fertilisers.

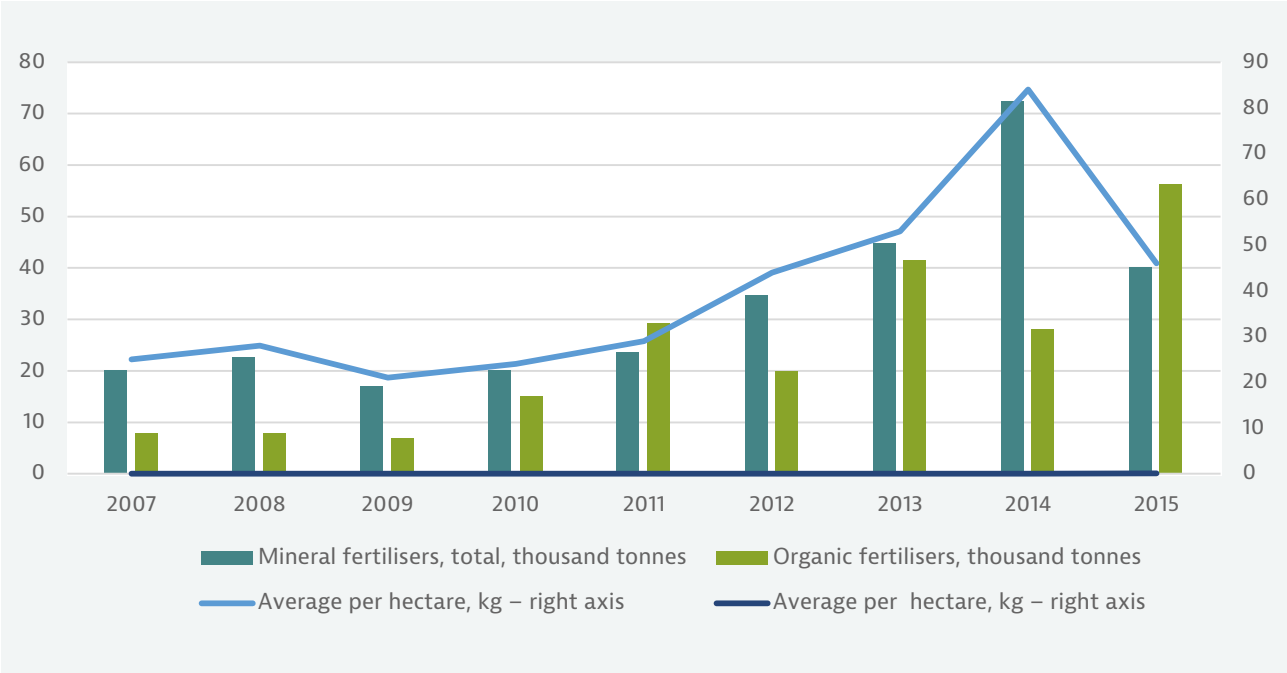
The use of mineral and organic fertilisers has been uneven over the past ten years. Increase of their use, however, did not result in a radical change in overall agricultural production. Annual agricultural production growth in the same period was only 1% on average. Although the use of organic fertilisers reached its highest level in 2015, while the use of mineral fertilisers decreased in 2014, it is not clear whether it was used for organic agricultural production (Figure 21).

The National Strategy for Agriculture and Rural Development for 2014-2020 aims to apply modern technologies in agricultural production to improve food safety and quality requirements, but does not have a specific objective on the use and application of fertilisers.

Definition:
This indicator shows the amount of fertilisers used by agricultural enterprises/ farmers on areas of more than 50 hectares.

Key message:
The use of mineral fertilisers has doubled in the past five years, and the use of organic fertilisers in 2015 was three times higher than in 2010. This did not, however, result in a radical change in overall agricultural production.

Figure 21. Mineral and organic fertilisers used in agricultural enterprises and in farms



Source: NBS (2017), Statistical Yearbook, 2016.

INDICATOR 2.9 **WATER USE BY SECTOR**

Definition:
Water consumed by different economic sectors.

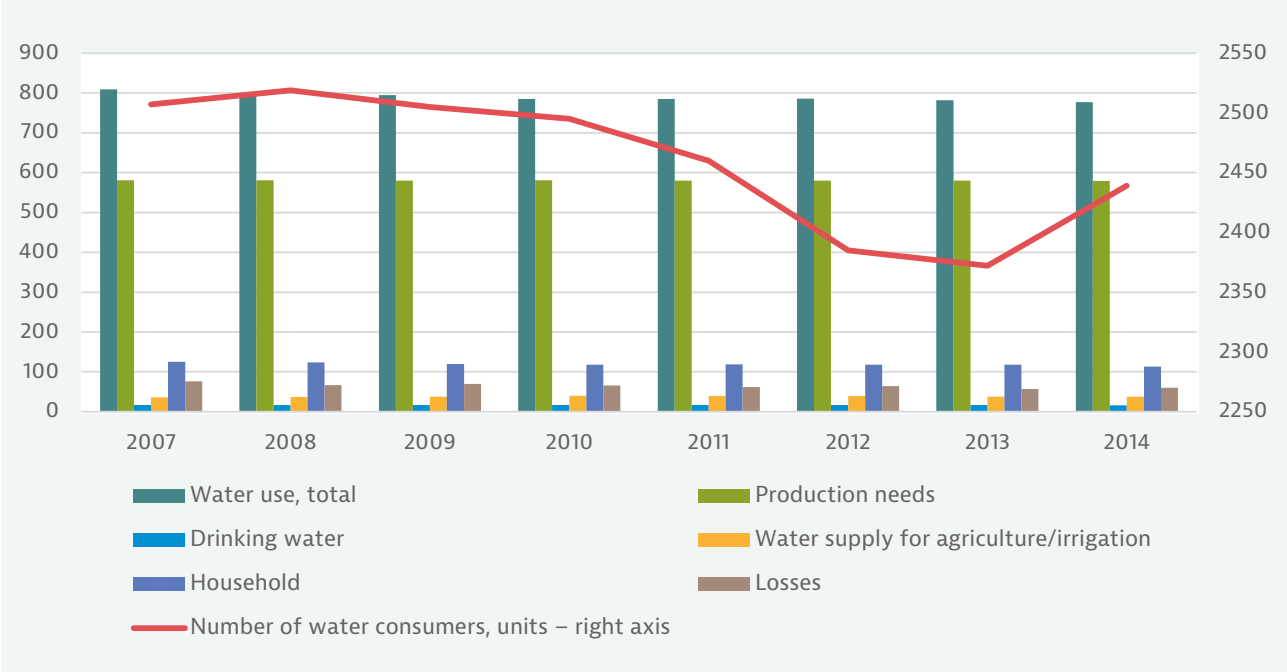
Key message:
Household water use has dropped slightly in the past decade, due to metering and higher rates, but the level of use in industry and agriculture remained the same. Water losses have been slightly reduced (about 9%).

Availability of water is essential for ensuring economic development. More efficient use of water resources by different economic sectors is vital for achieving a green economy. Water resources, as an essential element of human life and activity, are of major economic and environmental importance. This is even more true of countries such as the Republic of Moldova, where the agricultural sector plays an important economic and social role.

In general, the trend has been a slight decrease in household use, thanks to metering and an increase in water rates, while industrial and agricultural use has remained stable.

In dry years, with limited water resources, irrigation is often competing with the supply of drinking water. In 2015, for example, the Ministry of Environment halted irrigation from the Nistru River temporarily, to ensure adequate water supplies in the capital city.

Figure 22. Water use by sectors, mln m³



Source: NBS (2017), Statistical Yearbook, 2016.

Chapter 3.
The base of natural assets

Economic activity and human well-being rely on natural resources. Raw materials, energy carriers, water, air, land and soil provide the environmental and social basis for economic development. Efficient use of natural resources is essential for greening the economy, to ensure adequate supplies of resources to support economic activities and to prevent natural resource degradation and depletion. It is also important to manage the environmental impact of extracting and processing natural resources, as well as maintaining the environmental benefits they provide.

This chapter covers indicators for the state of natural resources in the Republic of Moldova. It provides information on the extent to which the natural asset base is maintained over time, both in terms of quantity and of quality.

Renewable resources

Renewable resources – freshwater

INDICATOR 3.1 **VOLUME OF WATER INTAKE**

The surface water of the Republic of Moldova comes mainly from two cross-border river basins: the basin of the Nistru River (which provides about 66% of all reserves) and the Prut River basin (34%). The flow of these rivers is very unstable, depending on hydrometeorological conditions and economic activities upstream. With an average multi-annual value of the resources of surface water of about 7.278 billion cubic metres (2010 estimate), the volume was 5.085 billion cubic metres in 2009 and 9.845 billion in 2010. An insignificant share of the surface waters comes from smaller rivers. The country also has about 3 500 artificial water reservoirs, with a total area of 300 square kilometres, and a storage capacity of 1.5 billion cubic metres of water. It also has about 50 natural lakes of an area of 60 square kilometres. Although they offer only minor water storage capacity, these lakes have an essential role in preserving biodiversity and helping maintain the wetlands.

The officially forecast and confirmed volume of underground water totals about 1.270 billion cubic metres (including about 700 billion cubic metres of drinking water), extracted from ten different complexes and aquifers. The volume of underground water is much more stable than the volume of surface water. Loss of underground water during transport and use is quite high, at about 18%-20%. The most recent data shows that the total amount of available water is approximately 11.115 billion cubic metres annually, i.e. about 2 725 cubic metres per capita, including both surface

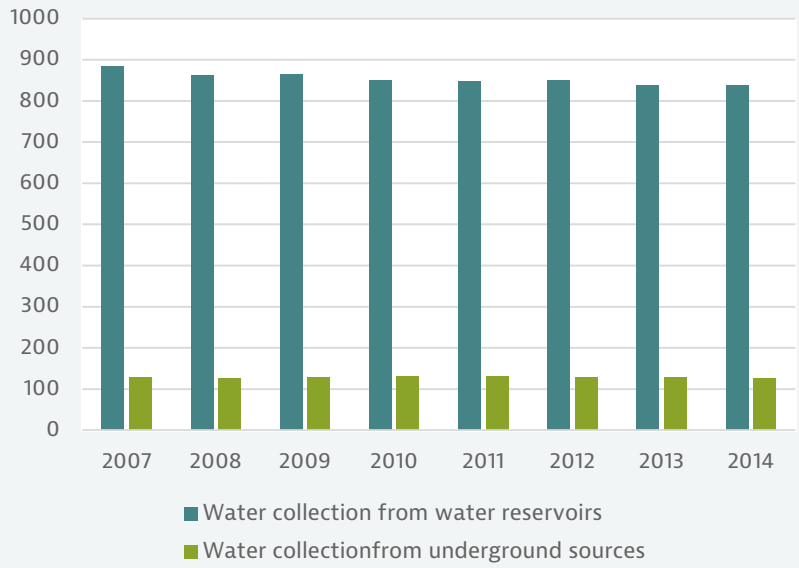
Definition:
Volume of water extracted for economic and individual (household) activity.

Key message:
The surface freshwater resources are under pressure as a result of meteorological conditions, economic activities and pollution. Water intake from both ground and underground water sources fell slightly in the past decade.

and underground water resources. Water resources in the country amount to 1 billion cubic metres, an average of about 250 cubic metres per capita, low by international standards.

Human activities are putting the country's water resources, which are already vulnerable to climatic conditions, under severe stress. The quality of water used both for human consumption and in agriculture and industry is a key issue, particularly in rural areas. Investments in improving water quality under the National Programme on the Protocol on Water and Health 2016-2025, are fully justified for economic and social reasons.

Figure 23. Water intake, million m³



Source: NBS (2017), Statistical Yearbook, 2016.

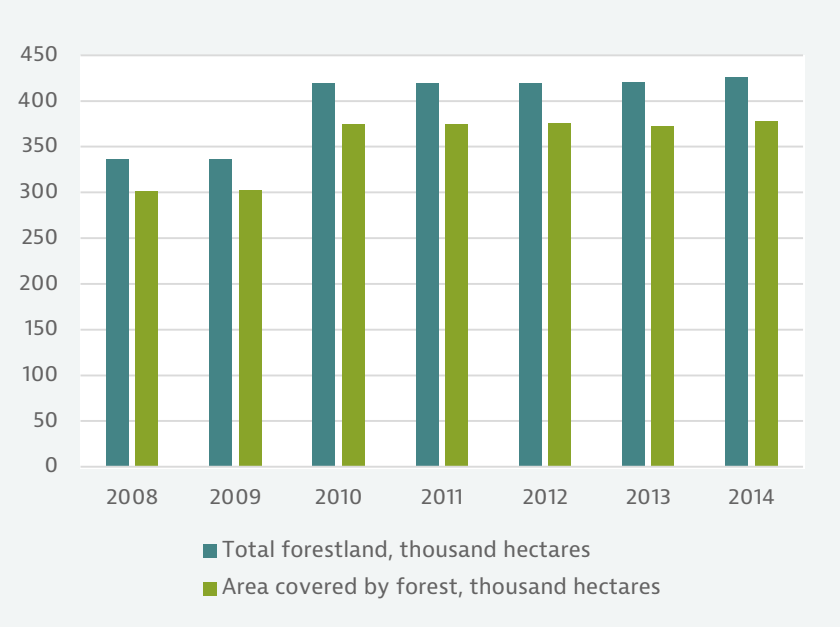
INDICATOR 3.2 FOREST AREA AND SHARE OF FOREST

Forest ecosystems in the Republic of Moldova cover 377 500 hectares (11.2% of the country). The degree of forestation was 8.9% in 2008, rose to 11.1% in 2010 and remained virtually constant till 2016, at 11.2%. Most of the forest area is dominated by hardwood species (97.8%), while coniferous species are limited (2.2%).

Independent studies estimate illegal felling at about 400 000 to 600 000 cubic metres a year, equivalent to the authorised annual felling (about 500 000 cubic metres).

The Environmental Strategy 2014-2023 aims to expand forest areas to 15% of the country by 2023 and to increase the land covered by protected natural areas to 8%. The Strategy also aims to ensure efficient and sustainable management of natural forest ecosystems. The Strategy on the Sustainable Development of the Forests Sector in the Republic of Moldova indicates that to increase ecological protection of the forest, the degree of forestation should be no less than 15% by 2020. An SDG target could be 25% by 2030.

Figure 24. Forest area



Source: NBS (2015), Natural Resources and Environment of the Republic of Moldova, 2015.

Definition:
Totality of forests, lands for forests, under forest production or administration, of lakes or river bodies in the forest fund, other lands covered by the forest planning; share of land area covered by forest as a percentage of the total land area (excluding bodies of water). These indicators are in line with national SDG indicators on forest areas.

Key message:
The total surface covered by forest is increasing. While the volume of harvestable wood is increasing, there is no evidence forest quality management has improved. Despite the increase in the total area of forestland, the degree of forestation in the Republic of Moldova has remained almost constant in the past five years.

INDICATOR 3.3 **LAND COVER**

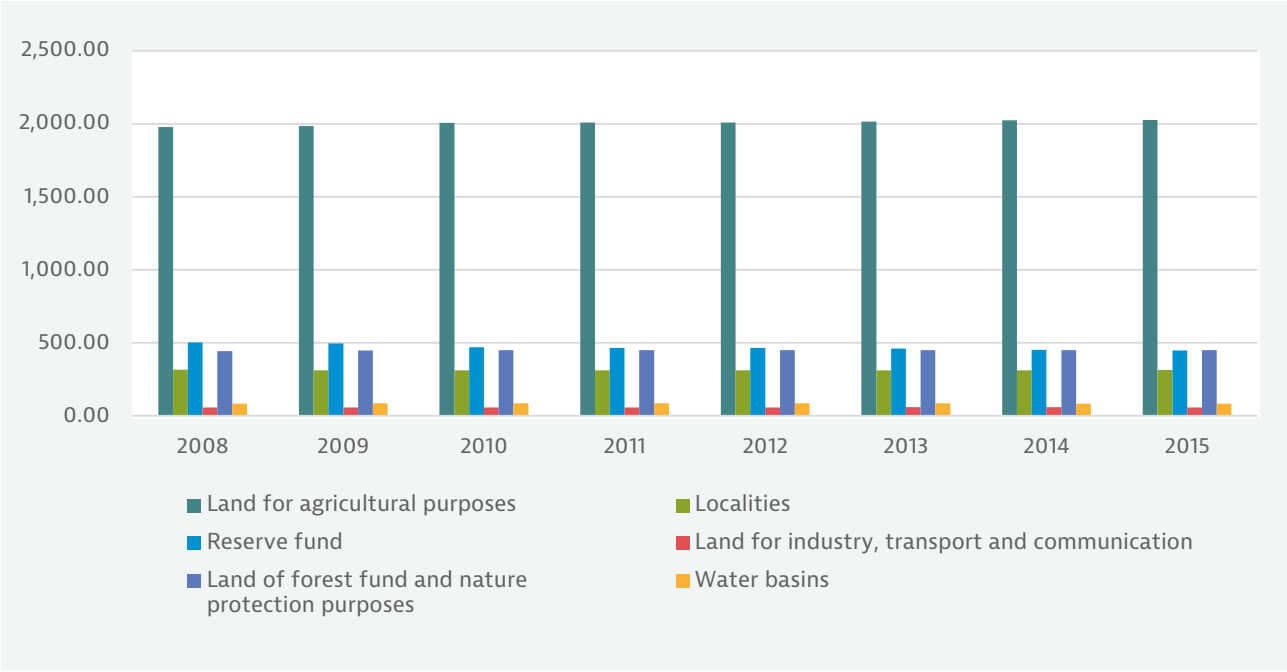
Definition:
Structure and changes in the land fund (broken down by cover type).

Key message:
The structure of the land fund of the country remained constant, with a small increase in the territory of localities.

Land resources are essential for producing food, preserving ecosystems and biological diversity. Land management determines land cover, soil quality, GHG emissions and risk of erosion, and affects water and air quality. Many economic activities rely on land as an essential factor in production, for example for agriculture, forestry and biomass, infrastructure development, energy supply (biofuels, windmills), water management and in many technological processes. Demand from the many productive sectors has put increasing pressure on land resources.

Land resources in the Republic of Moldova are subject to intensive anthropogenic use. The percentage of land used for agriculture is one of the highest in the world (60% of the territory), while the areas of natural vegetation are very limited (forest – 11.2%). Soils in Moldova, which are of higher quality and productivity, are vulnerable to various types of degradation, the most serious being erosion. The main indicators used to assess the state of land use are the changes in use that have occurred over long periods. These indicators should be used in connection with other indicators, for example assessing the extent of wetlands, the level of land erosion, the quality and productivity of land and so on.

Figure 25. Land use, thousand hectares



Source: NBS (2017), Statistical Yearbook, Geography and Environment, 2016.

INDICATOR 3.4 ORGANIC (ECOLOGICAL) AGRICULTURE

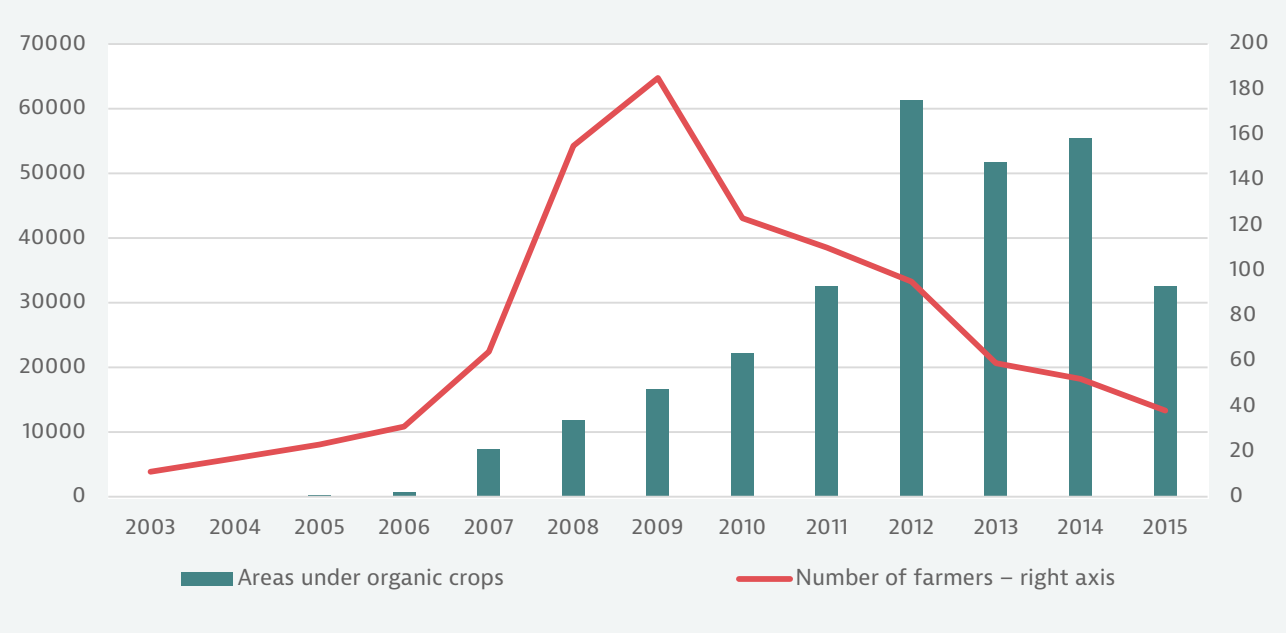
Organic agriculture recorded significant growth in the period 2008-2012, thanks to financial support from the state, but declined after support was reduced. The Republic of Moldova missed its target for expanding the amount of agricultural land farmed organically, from 1.9% of the total agricultural area in 2011 to 5% in 2015 (GoM, 2014). Comprehensive policies and support mechanisms for farmers will be needed to reach the 20% target by 2020.

The National Strategy for Agriculture and Rural Development for 2014-2020 indicates that the organic agriculture sector is underdeveloped. It is included under Objective 2 as a specific measure for the sustainable use of natural resources in agriculture. Objective 2.2, for supporting environmentally friendly production technologies and ecological products, promotes sustainable management of natural resources in agriculture, by applying ecological production technologies and increasing yields of organic products. Organic production will need to be subsidised or supported, and in particular, products that are in demand in international markets. In 2016, the Regulation on Subsidies was completed, with two new measures, "Support for the promotion and development of organic agriculture" and "Consultancy and training services", intended to relaunch support for this sector.

Definition:
Land area under organic cultivation; number of farmers in conversion, certified.

Key message:
The organic agriculture sector experienced significant growth in 2008-2011, both in area under cultivation and in the number of farmers, thanks to government subsidies. After this support ended, this growth spurt decreased, but plans to restore subsidies in 2016 were aimed at reversing the negative trend.

Figure 26. Land used for organic agriculture (ha)/number of registered organic producers and on the stage of conversion



Source: MAFI, 2016.

INDICATOR 3.5 PROTECTED AND ENDANGERED SPECIES

Definition:
Number of species of animals and plants endangered or under threat of extinction. These indicators are in line with national SDG indicators on IUCN Red List species.

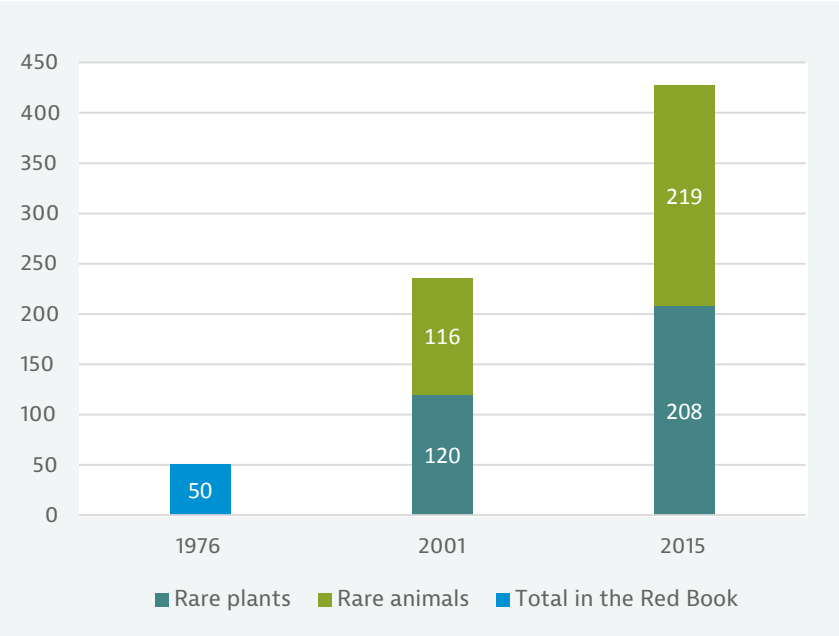
Key message:
The number of species of animals and plants in the Republic of Moldova that are endangered and under threat of extinction has doubled in the past 15 years.

The flora in the Republic of Moldova includes 5 568 species of plants. Over 30 species of ligneous plants are an important resource for the rural population. About 200 species of medicinal plants are also available, while about 700 species of plants from spontaneous flora serve as fodder for wild animals and livestock. Of 15 000 animal species in the country, 474 are vertebrate (75 species of mammals, 281 species of birds, 14 species of reptiles, 14 species of amphibians and 90 species of fish) and the others nonvertebrate (principally insects).

There have been three editions of the *Red Book of the Republic of Moldova* (in 1976, 2001 and 2015). The existing trends indicate that in 2015, there were 55% more rare and endangered species than in 2001. The third edition included 219 species of rare, vulnerable and endangered animals and 208 species of rare, vulnerable and endangered plants.

The Strategy on Biological Diversity of the Republic of Moldova for 2015-2020 provides for undertaking measures to protect rare and endangered species before 2020, include restoring five plant habitats and five animal habitats.

Figure 27. Endangered and rare species (Editions of the Red Book)



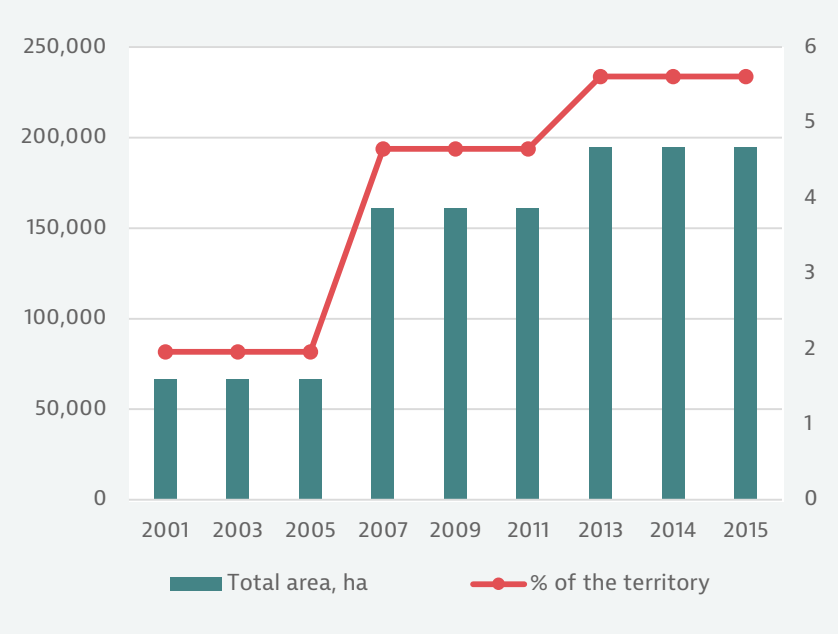
Source: Academy of Sciences of Moldova (2015), The Red Book of the Republic of Moldova, 2015.

INDICATOR 3.6 STATE-PROTECTED NATURAL AREAS

The extension of protected areas provides information on the Republic of Moldova's efforts to protect species habitats and ecosystems, but does not indicate whether or not protected areas are being effectively managed. The total area of state-protected natural areas is 189 400 hectares (5.61% of the country's territory) (Figure 28) and includes 312 objects and complexes. An important step in extending these areas was the adoption of the legal act in 2013 on the establishment of the first national park of the Republic of Moldova, Orhei National Park. Designation of three wetlands of international significance, the Lower Prut Lakes (19 152 hectares), Lower Dniester (60 000 hectares) and Unguri-Holosnita (15.553 hectares), presents an opportunity for increased species and habitat conservation measures.

The Strategy on Biological Conservation of the Republic of Moldova for 2015-2020 and the Plan of Action provide for expansion of state-protected areas to 8% of the country by 2020, with the establishment of the National Ecological Network, in association with the Pan-European Ecological Network. This could be achieved by establishing a trilateral Biosphere Reserve (Danube Delta, Lower Prut) in Romania, the Republic of Moldova and Ukraine, and the establishment of the Lower Nistru National Park. Management plans for protected areas have yet to be developed.

Figure 28. Total area and share of protected areas



Source: NBS (2015), Natural Resources and Environment of the Republic of Moldova, 2015.

Definition:
Natural space, geographically demarcated, with representative natural elements regulated and managed, with the goal of conservation and protection of all natural elements in the area. This indicator is in line with national SDG indicator on protected areas and ecosystems.

Key message:
The area of state-protected natural land in the Republic of Moldova has increased by almost three times in the past 15 years, without significantly improving biodiversity conservation, or in protection management, protection of ecosystems or reduction of endangered species of plants or animals.

Chapter 4..
Environmental quality of life

Environmental health and risks

Environmental health and risks – air quality

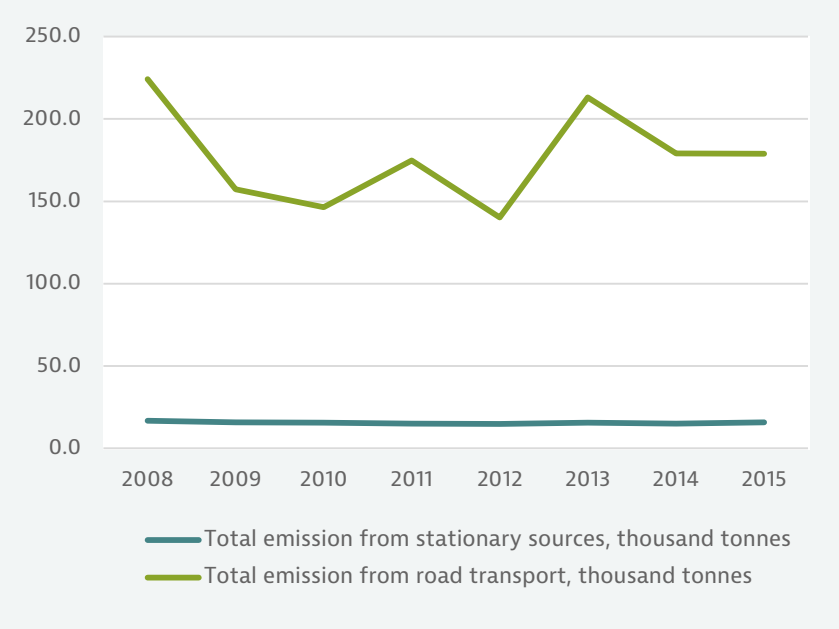
INDICATOR 4.1 **AIR POLLUTION**

Definition:
Emission of pollutants into the atmosphere from stationary sources and from transport.

Key message:
The volume of air pollutant emissions from the transport sector, primarily from automobiles and trucks, has steadily increased, due to the increasing number of vehicles, the permission to import cars of up to ten years and more frequent and longer trips. Emissions from stationary sources have remained almost constant in the past five years, but do not include emissions from all sources (not covered by general statistics, since they are only reported by authorised companies).

Atmospheric pollutants are the main cause of regional and local air pollution. Their adverse economic and social consequences include higher health costs, and reduced labour productivity and agricultural output. Enterprises report emissions of all polluting substances, based on the volumes of emissions or calculations (pollutants include particulate matter, photochemical oxidants including ozone, carbon monoxide, sulphur oxides, nitrogen oxides and lead).

Figure 29. Emissions into atmospheric air from stationary sources and transport



Source: NBS (2017), Statistical Yearbook 2016.

In the Republic of Moldova, more than 5 000 polluting entities have been recorded, including the heating plants of businesses and local public administration, whose number has been increasing annually. Summary emissions from large economic units have risen to 158 000 tonnes (2015). The figures for small and medium enterprises (SMEs) and emissions from diffuse sources and households are not reported.

About 90% of the pollutants in the atmosphere are produced by the exhaust from mobile transport sources. Emissions from the transport totalled 179 000 tonnes, primarily from automobiles, and has steadily risen, due both to the increasing number of vehicles and to more frequent and longer trips. From 2005 to 2011, the number of passenger vehicles increased by 45.7% and the volume of road transport by 49.5%. Mobile sources generate high quantities of carbon monoxide, nitrogen and sulphur monoxides, and the level of emissions depends on such factors as fuel quality, the vehicles' mechanical condition and traffic congestion.

The Environmental Strategy 2014-2023 plans to create an integrated air quality management system, and a 30% reduction of pollutant emissions into the atmosphere by 2023.

INDICATOR 4.2 **POPULATION EXPOSED TO $PM_{2.5}$**

Definition:
Estimate of the share of the population exposed to $PM_{2.5}$.

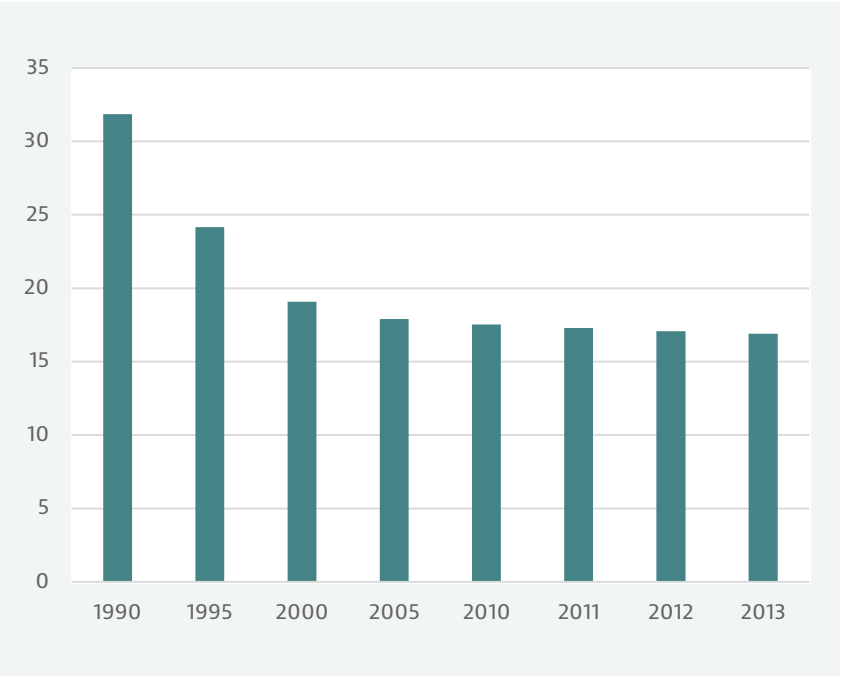
Key message:
Trends indicate a decrease in exposure of the population to $PM_{2.5}$ in the Republic of Moldova. Nevertheless, the impact on public health is high, since policy measures have not been fully implemented.

According to the World Health Organization, exposure to fine particulate matter ($PM_{2.5}$) has the most significant adverse effects on health by comparison with other pollutants. Inhaling $PM_{2.5}$ can cause respiratory and cardiovascular disease and other problems, particularly in the case of children and the elderly. This generates both social and economic costs. Exposure is particularly high in urban areas. Measuring the economic losses due to exposure to harmful levels of air pollution is a challenge for economists and economic decision makers.

The Ministry of Environment's State Hydrometeorological Service, based on monitoring in the cities, reported average $PM_{2.5}$ levels of 15 micrograms per cubic metre in 2015 and 16.7 in 2015.

In addition to this high exposure, other adverse factors include wind and water erosion in urban areas, intense economic activity, insufficient street cleaning, and low public information and awareness (e.g. young mothers with infants and young children daily walking for hours in polluted areas, along major streets with the greatest traffic congestion and pollution levels).

Figure 30. Population exposure to $PM_{2.5}$, micrograms per cubic metre



Source: OECD Stat (2017), "Exposure to $PM_{2.5}$ in countries and regions".

INDICATOR 4.3 ACCESS TO SAFELY MANAGED DRINKING WATER SERVICES

By 2015, 95% of the urban and 39.8% of the rural population was connected to centralised drinking water supply systems, an average of 67%. In addition, 96% of the urban population and 81% of the rural population have access to improved drinking water sources (Figure 31).

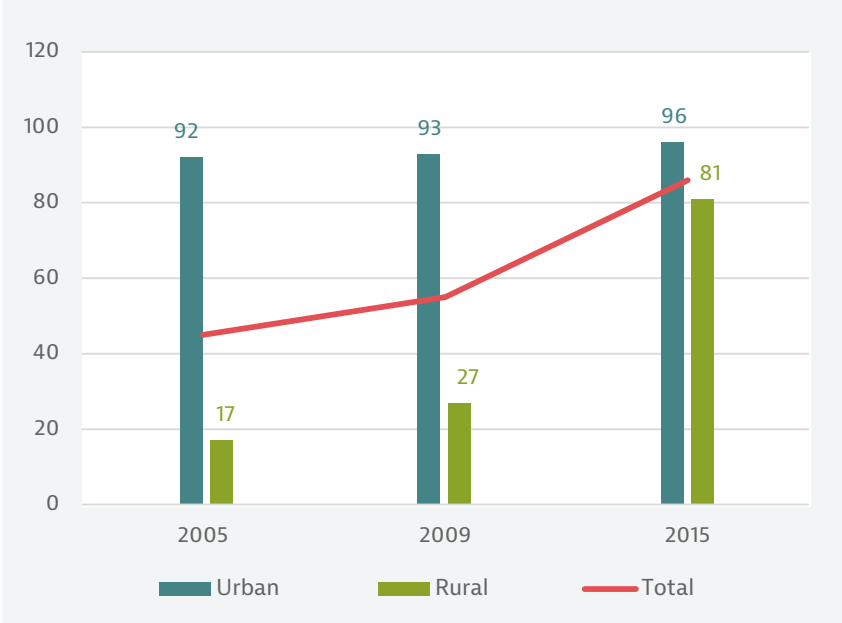
According to data from 2015, of the 742 aqueducts in the country overall, only 677 were in operation. These serve 378 localities (or 38.7% of the total in the country), of which 76.7% are cities and 36.2% rural. The number of localities equipped with water supply systems has been increasing annually, given intensified investment in the sector. In the past five years, this has amounted to around MDL 1.9 billion (32% from internal sources and 68% from external donors' investments). This has meant that more than 180 water supply systems have been brought online.

The Strategy on Water Supply and Sanitation for 2014-2028 aims to ensure the gradual access of the population to safe water sources, improving health and quality of life and contributing to economic development. Its target was to give 65% of the population access to safe drinking water sources by 2020. This target was revised by the National Programme for the Implementation of the Objectives of the Protocol on Water and Health for 2016-2025, and approved by the government in September 2016. The Programme's objective is to provide 99% of the urban and 85% of the rural population and 100% of institutions for children's access to improved drinking water supply systems by 2025.

Definition:
Share of population using safely managed drinking water services (water supply systems). This indicator is in line with national SDG indicator on access of population to safely managed drinking water services.

Key message:
Access to improved drinking water sources and sewerage systems has improved in recent years, but a significant gap between the urban and rural areas persists. An improved drinking-water source is defined as one that, by nature of its construction or through active intervention, is protected from outside contamination.

Figure 31. Access to improved drinking water sources (%)



Source: Ministry of Environment (2016), National Programme for the Implementation of the Objectives of the Protocol on Water and Health for 2016-2025.

INDICATOR 4.4 **POPULATION COVERED BY PIPED SEWERAGE**

Definition:
Share of population connected to safely managed waste water treatment services.

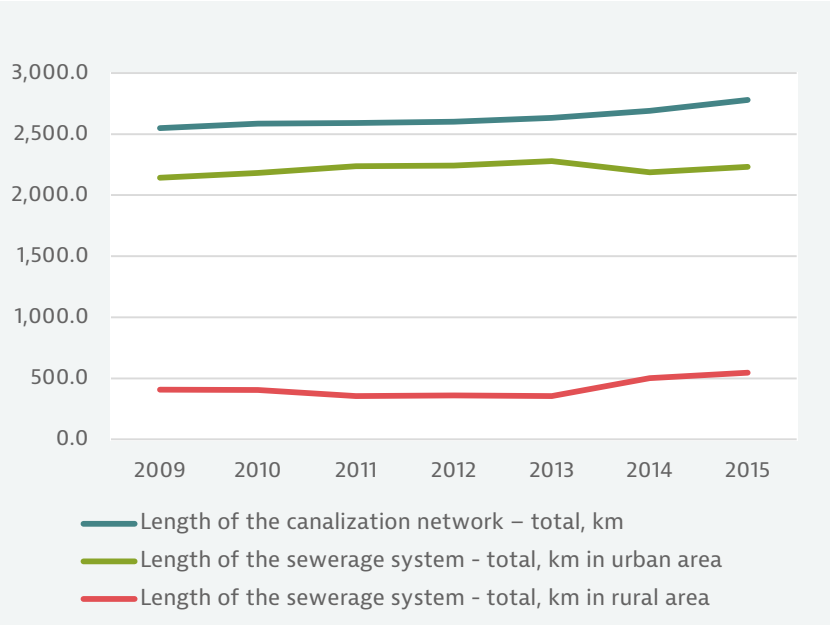
Key message:
Existing water supply systems are not supported by proper waste water treatment systems. Particularly in rural areas, sewerage systems is lacking.

The performance of water supply and sanitation sector is hampered by the fact that water supply systems are not combined with proper waste water collection and treatment systems. Of the 743 aqueducts, only 166 are equipped with canalisation systems (of which only 121 are functional). Only 101 are equipped with waste water treatment stations, (of which only 70 are functional).

Only 22.2% of the population (761 000 people) have access to canalisation, 42% of the urban and only 3% of the rural population. The total length of the canalisation network in 2015 was 2.78 million kilometres, 2.23 million in urban areas and 546 in rural areas. The total volume of treated waste water in 2015 was 67.6 million cubic metres.

The National Programme for the implementation of the objectives of the Protocol on Water and Health for 2016-2025 has the goal of ensuring the access of 85% of the urban and 25% of the rural population to canalisation networks and waste water treatment by 2025.

Figure 32. Length of the canalization network - total, km



Source: NBS (2017), Statistical Yearbook 2016.

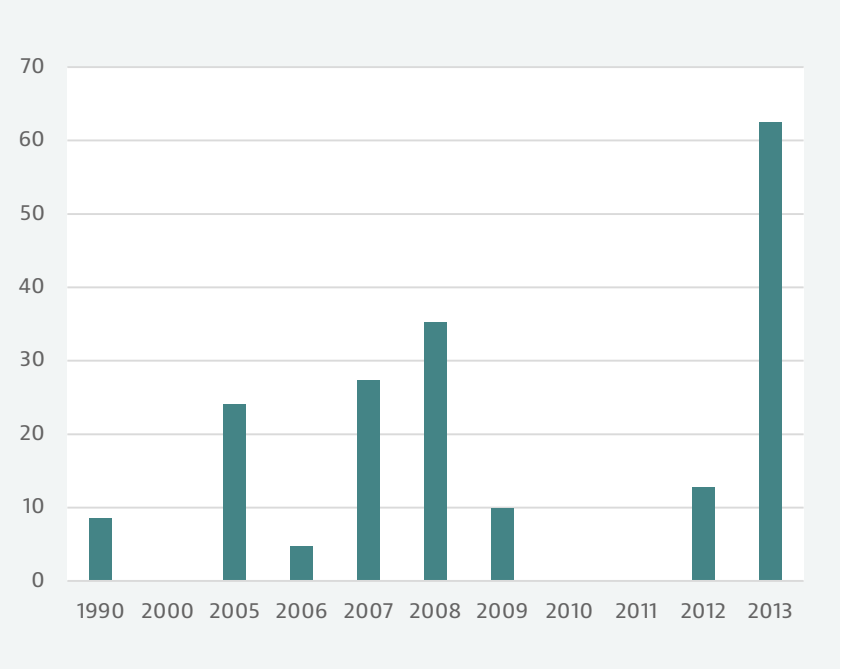
Chapter 5.
Economic opportunities and policy responses

Technology and innovation

INDICATOR 5.1 **INNOVATIONS IN THE GREEN ECONOMY/ ENVIRONMENT**

Tracking environmental innovation can help monitor its potential to reduce the negative environmental impact of economic activity at a lower cost, and to evaluate how effective policies promoting environmental innovation has been. Environmental innovation may also lead to the creation of new business opportunities and markets and accelerate the transition to green growth.

Figure 33. Development of environment-related technologies, % of all technologies



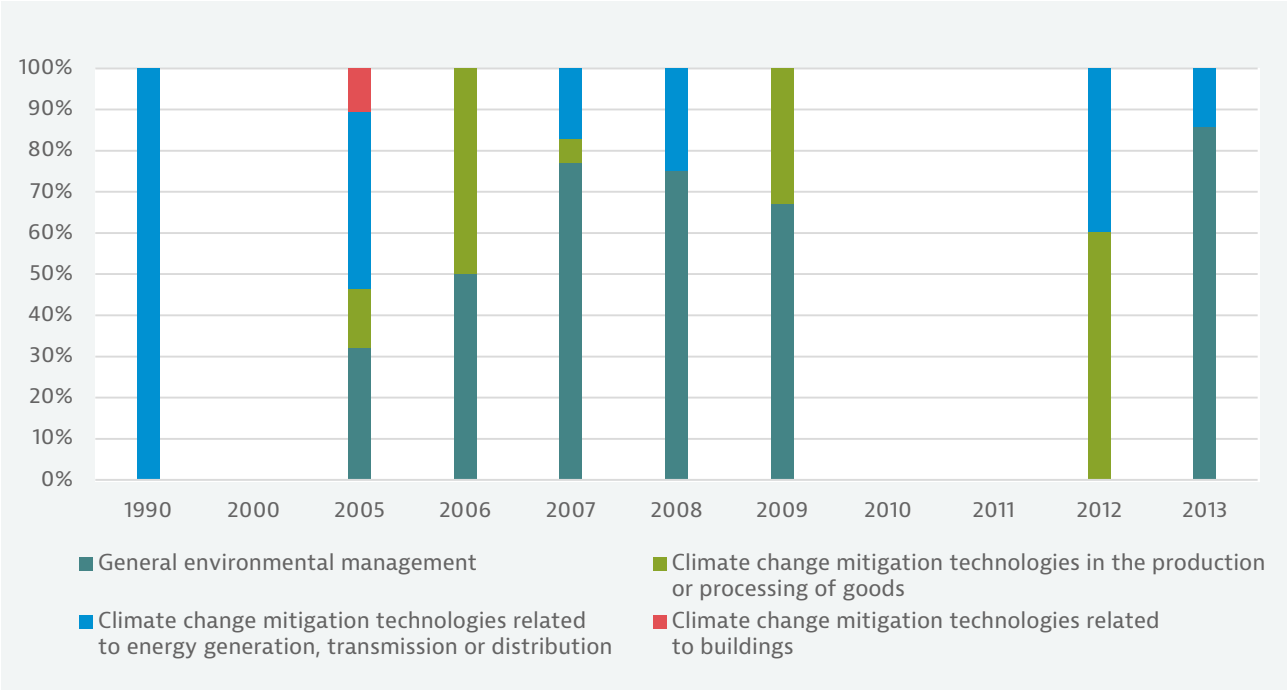
Source: OECD (2017), "Patents in environment-related technologies: Technology development by inventor country", OECD Environment Statistics (database).

Definition:
Number of environment-related inventions expressed as a percentage of all domestic inventions (in all technologies).

Key message:
Environmental innovation in the Republic of Moldova is low by comparison with EU countries. Relatively few new business opportunities and markets have emerged to accelerate the transition to green growth.

The number of environment-related inventions provides information on technological innovation in the Republic of Moldova. Changes in environmental technological innovation can then be interpreted in relation to innovation in general. The number of patents filed by the Republic of Moldova for environmental-related technologies as a percentage of all technologies reached a peak in 2013. Most of the patents applied to general environmental management technologies.

Figure 34. Environmental-related technologies by domain



Source: OECD (2017), "Patents in environment-related technologies: Technology development by inventor country", OECD Environment Statistics (database).

INDICATOR 5.2 NATIONAL ECOLOGICAL FUND

The total number of projects approved in the period 2010-2015 was 1 961, of which 987 (almost 50%) were in the fields of water supply, canalisation and waste water treatment, followed by 199 projects in enlarging green areas (including forests) and 64 in the domain of waste management. In 2015, of a total of 400 projects submitted, 350 were funded, of which 267 were for water supply, canalisation and waste water treatment. The total cost of the projects approved for financing in 2015 was MDL 426.9 million. Of the total allocation of MDL 345.2 million (formed from an accumulated MDL 233.5 million in 2015 handed out in 2014), MDL 197.6 million was allocated to projects approved in 2015 and MDL 147.7 million in previous years.

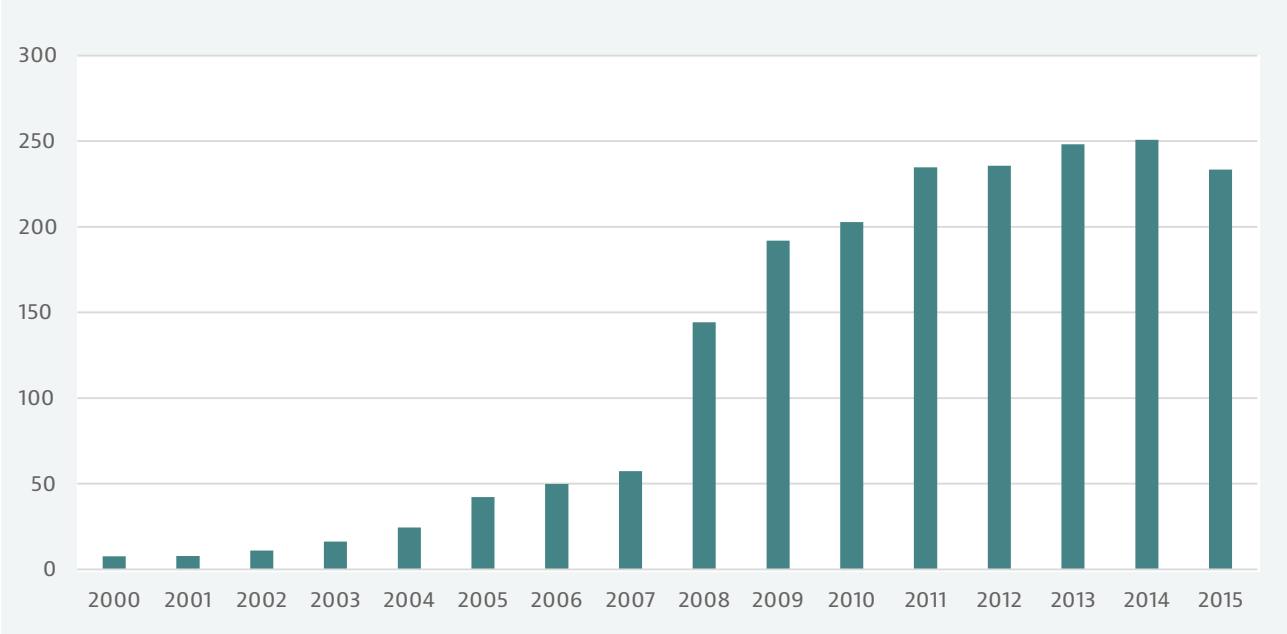
The expenditures of the National Ecological Fund (NEF) could be affected by recent legal changes that revised the collection and disbursement of funds as part of the national budget. Provisions related to the NEF in the Law on Environmental Protection No. 1515-XII of 16 June 1993 and the Law on Payment for Environmental Pollution No. 1 540-XIII of 25 February 1998, were modified as of 1 January 2017 and indicate that:

- The NEF is established within the budget to finance programmes for environmental protection and the economic entities calculate and transfer the payments to the budget;
- The national fiscal service supervises this domain.

Definition:
Environmental protection special fund: formation and expenditures. The National Ecological Fund is financed by payments for pollution and the taxes on imported goods that can have environmental consequences, including packaging materials.

Key message:
The accumulated funds and expenditures of the National Ecological Fund have increased significantly in the past decade, without a corresponding impact on environmental quality.

Figure 35. Total income of the National Ecological Fund, MDL million



Source: Ministry of Environment, Reports on the Activity of the National Ecological Fund, 2000-2015.

INDICATOR 5.3 **ENERGY SUBSIDIES**

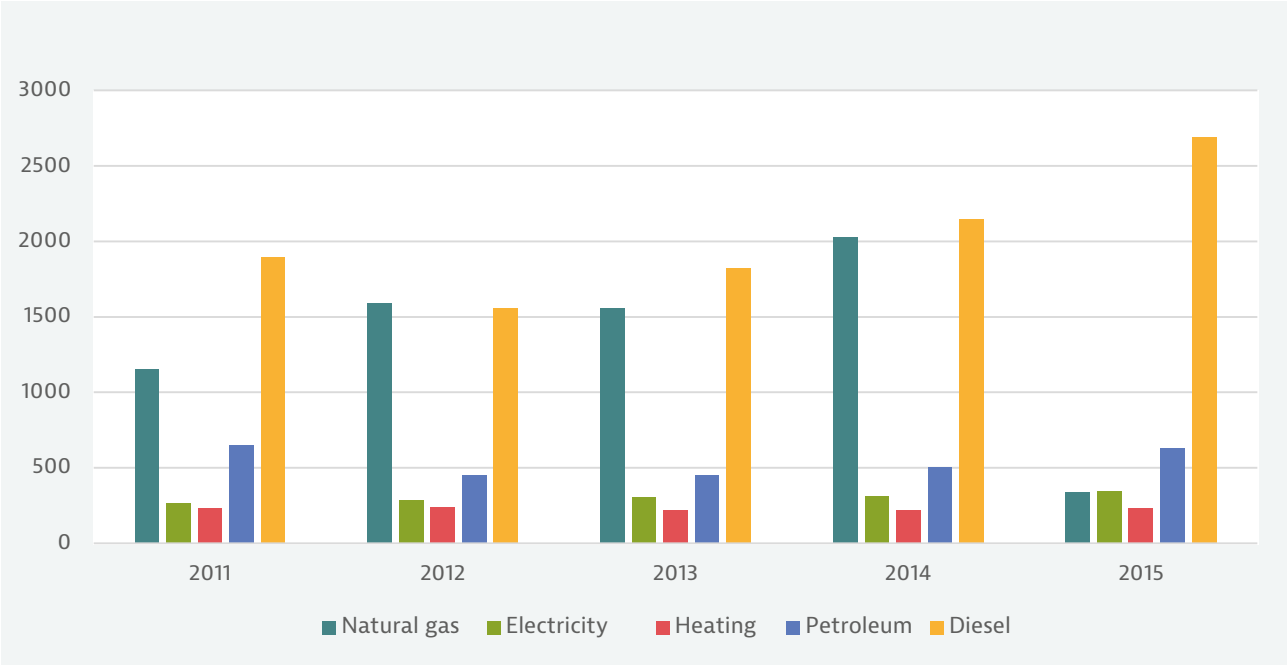
Definition:
Government support for energy consumption and production (fossil fuels, renewable energy and energy efficiency), as defined in the methodology of OECD (2017); energy subsidies in the EU Eastern Partnership Countries.

Key message:
Efforts to green the tax system should be accompanied by phasing out government support for environmentally harmful products or activities. These not only directly undermine the efforts to green the tax system by perpetuating wasteful consumption or production patterns, but are costly to society. These resources could instead be directed to more productive uses.

The Republic of Moldova has few energy resources and is totally dependent on imported energy, whose cost amounted to about 14% of GDP in 2014. As a result, most of the government support for the energy sector is destined for consumers, rather than producers. Total government support for consumption of fossil fuel subsidies in the Republic of Moldova in the period 2011-2015 was about MDL 22 billion (Figure 36). This excludes support to producers of renewable energy through the feed in tariff introduced in 2013, and targeted subsidies to low-income households in Chisinau. Government support for energy efficiency and renewable energy producers is fragmented and inconsistent. As a result, it relies on donor funds to finance investments. In the period 2010-2015, the government of the Republic of Moldova, supported by donors and international financial institutions, is estimated to have spent USD 107 million on energy efficiency and renewable energy.

During the UNFCCC COP21, held in Paris in 2015, the government of the Republic of Moldova joined the Communiqué of the Friends of Fossil Fuel Subsidy Reform, calling for accelerated action to eliminate inefficient fossil fuel subsidies in a transparent and efficient manner.

Figure 36. Estimates of consumer energy subsidies in Moldova in 2011-2015 (MDL million)



Source: OECD (2017), Energy Subsidies in the EU Eastern Partnership Countries.

International financial flows

INDICATOR 5.4 ENVIRONMENTALLY RELATED INVESTMENTS

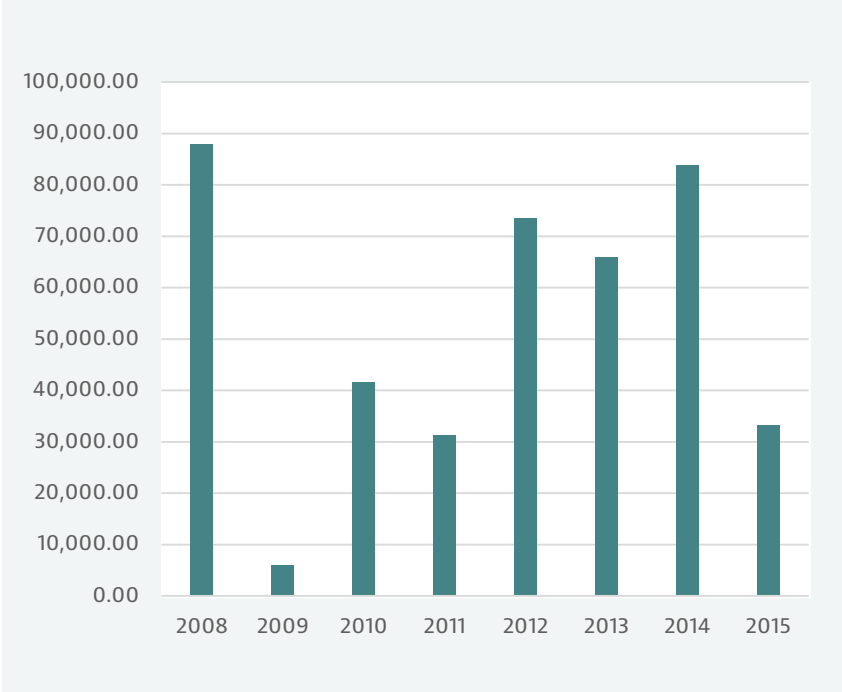
Investment in fixed capital for environmental protection by enterprises in the period 2008-2015 did not follow an observable trend. Changes in the volume of investment depended mostly on investment in water infrastructure, especially in water supply and sanitation systems. The relative and absolute investment on environmental protection and the sound use of natural resources was insignificant. Investment in fixed capital for environmental protection and the sound use of natural resources totalled MDL 33.3 million (about USD 1.5 million) in 2015, representing less than 0.5% of all investments in fixed capital. The robust increase in investment in air protection was accounted for by the investment of a single company specialising in cement production.

The level of business investment would have to increase significantly to manage the negative impact of economic activity on the environment appropriately. The flow of external investments into cleaner production or reducing pollution from existing or new industrial sites will have to be estimated.

Definition:
Environmentally related investments (internal/foreign) as a percentage of environmentally related expenditures of enterprises.

Key message:
The existing level of investment in the private sector and from external sources is not enough to manage the negative impact of the economic activities upon the environment appropriately or to improve environmental quality and infrastructure.

Figure 37. Investments for environmental protection from enterprises (MDL 1 000)



Source: NBS (2017), Statistical Yearbook, 2016.

INDICATOR 5.5 SUBSIDIES FOR ORGANIC AGRICULTURE

Definition:
Financial support from the state to promote organic agriculture.

Key message:
Established subsidies for organic agriculture were very low by comparison with other subsidies for this sector. In addition, they were unpredictable, did not initiate or maintain growth in the area of land or number of farmers involved and did not help to make this sector sustainable in the past decade.

Agricultural subsidies are generally regarded as anti-competitive tools, and their implementation is regulated quite rigidly in most countries. Regulations that limit the negative impact of state aid for agriculture have been adopted in the European Union as well as recently in the Republic of Moldova. Many countries have used agricultural subsidies for agricultural producers to promote more conservative agricultural methods and technologies. With this goal in mind, the use of agricultural subsidies for progress toward a green economy can be considered to be justified. The changes in the Regulation on Subsidies in Agriculture in the Republic of Moldova (2016) plan to establish a new system of subsidies for organic agriculture.

Support for organic agriculture can be analysed into categories that indicate the potentially environmentally harmful elements of government support to producers. The support that is considered potentially the most environmentally harmful includes market price supports, payments based on commodity output that do not impose environmental constraints on farming practices, and payments based on variable input use that do not impose environmental constraints on farming practices.

Annexes

Annex 1. Table of Indicators: A shortlist of GGIs for the Republic of Moldova

Table 1. Shortlist of GGIs for the Republic of Moldova

Domain	OECD Green Growth Indicators	GGIs for the Republic of Moldova
Socio-economic context		
Economic growth, productivity and competitiveness	Economic growth and structure GDP growth and structure	GDP GDP structure GDP growth, %
Labour market, education and income	Socio-demographic patterns Population growth, structure and density	Present population Density of population
	Life expectancy: years of healthy life at birth	Life expectancy at birth
	Labour force participation	Economically active population
	Unemployment rate	Unemployment rate
	Income inequality: Gini coefficient	Gini coefficient
	Educational attainment: level of and access to education	% of enrolment of children/students in the educational process
Environmental and resource productivity of the economy		
Carbon and energy productivity	CO2 productivity Production-based CO_2 productivity GDP per unit of energy-related CO_2 emitted	GHG emissions CO_2 emissions, emissions per sector
	Energy productivity GDP per unit of the total primary energy supply (TPES)	Final energy consumption by sector
	Energy intensity by sector (manufacturing, transport, households, services)	Energy intensity
	Share of renewable energy sources in TPES, in electricity production	Share of renewable energy in final energy consumption
Resource productivity	Waste generation intensity and recovery ratios	Waste generation (separately: municipal, industrial) Waste recycling (by type of material)
	Nutrient flows and balances (N, P) Nutrient balances in agriculture	Use of mineral fertilisers
	Water productivity Value added per unit of water consumed	Water use, by sectors
Natural asset base		
Renewable resources	Freshwater resources Available renewable natural resources (groundwater, surface water) and related abstraction rates (national, territorial)	Volume of water intake
	Forest resources Area and volume of forests; changes in available resources over time	The total surface of the forest fund Degree of forestation

Biodiversity and ecosystems	Land resources: land cover conversions and cover changes from a natural to artificial state Land use: state and changes	Land cover: structure and changes in the land fund Surface of land for organic production
	Wildlife resources Species threat status, in % species assessed or known	Number of species of animals and plants that are endangered and disappearing, from the Red Book state-protected natural areas

Environmental quality of life		
Environmental health and risks	Environmentally induced health problems and related costs Population exposure to air pollution	Emission of specific pollutants into the atmosphere from stationary sources; from transport PM
	Access to sewage treatment and drinking water Population with sustainable access to safe drinking water Population connected to sewage treatment	Share of population using safely managed drinking water services (water supply system) Share of population covered by piped sewerage

Economic opportunities and policy responses		
Technology and innovation	Patents of importance to green growth	Innovations in the field of green economy
International financial flows	International financial flows of importance to green growth Official development assistance Carbon market financing	National Ecological Fund Environmentally related investments Energy subsidies Subsidies for organic agriculture

Table 2. GGIs Indicators for the Republic of Moldova: key recommendations and international comparison

No.	Title of indicator	Data quality for constructing indicators	OECD recommendation for data improvement	Working Group recommendation for data improvement and report 2018	Data to use for international comparison
Social and economic context of growth					
1.1.	GDP growth	Good	Compile this indicator measured in USD (converted at purchasing power parity)		World Bank (WB) in USD (converted at purchasing power parity)
1.2.	GDP structure	Good	Analysis: better describe trends and drivers behind specific sectors' contribution to GDP growth/formation/decrease Data: apply the new classification of activities (CAEM-2), which specifies a larger division of economic activities by sector		WB
1.3.	Economically active population	Good	To better assess the situation in the country and link it to the potential for growth in each economic sector, this indicator could be complemented by the number of employees in each major economic sector	Identify the number/share of population involved in green economy/jobs	WB
1.4.	Unemployment rate	Good	A comparison between the annual number of jobs offered by the sector/level and the number of graduates at professional/ university level in that year could be added	.	WB
1.5.	Population	Good	No	The recent results of the for the Republic of Moldova's Population Census 2014 (of 31 March 2017) will be used for the updated version of the National GGIs report 2018. This will include a larger list of indicators and further develop a quantitative dimension to the current shortlist of GGIs.	WB
1.6.	Population density	Good	No		WB
1.7.	Life expectancy at birth	Good	Compare to EU average levels		WB
1.8.	Gini coefficient: income inequality	Good	No		WB
1.9.	Educational attainment by level	Good	No		n.a.
Environmental and resource efficiency of the economy					
2.1.	GHG emissions	Good	Use national GHG emissions and removals data reported by the Republic of Moldova to the UNFCCC		UNFCCC
2.2.	CO_2 productivity	Good	Use national GHG intensity data reported by the Republic of Moldova to the UNFCCC; or alternatively, the Key World Energy Statistics (CO_2/TPES, tCO_2/toe; CO_2/pop., tCO_2/capita; CO_2/GDP, kg CO_2/2010 USD; CO_2/GDP (PPP), kg CO_2/2010 USD) compiled annually by the International Energy Agency.		UNFCCC or IEA

No.	Title of indicator	Data quality for constructing indicators	OECD recommendation for data improvement	Working Group recommendation for data improvement and report 2018	Data to use for international comparison
2.3.	Final energy consumption by sector	Good	No		IEA
2.4.	Energy intensity	Good	Add more details to clarify international comparison with EU countries and add policy relevance/targets.		IEA
2.5.	Share of renewable energy in final energy consumption	Good	Add policy relevance/targets.		IEA
2.6.	Waste generation	Needs improvement	Data collection: total waste generation by sector This indicator needs to be further developed to show total waste generation by sector.	Introduce as an additional indicator – existing and eliminated toxic wastes (all categories) based on NBS and MoEnv/SEI data.	n.a.
2.7.	Waste recycling	Needs improvement	Data collection: total waste managed; waste recycled; waste recovery ratios of waste generated This indicator needs to be further developed to show total waste recycled, including by category, in total waste managed (thousand tonnes) and waste recovery ratios of waste generated.	Calculate the % of recycling of several categories of recycling waste (paper, glass, plastic, etc.) from municipal and industrial waste (using waste morphology and industrial wastes, SEI and NBS disaggregated reports)	n.a.
2.8.	Use of mineral fertilisers	Needs improvement	This indicator needs to be further developed to show nitrogen and phosphorus surplus intensity, expressed as the gross nitrogen and phosphorus balance per hectare of agricultural land.		n.a.
2.9.	Water use by sector	Needs improvement	This indicator needs to be developed to show water productivity (i.e. value added per unit of water consumed, measured in units of GDP per cubic metre).		WB
2.10.	Material productivity of the economy	Needs development	This indicator needs to be further developed, to show the material productivity of the economy.	Set up the process for evaluation and calculation of indicators related to the material productivity of the economy, for national baselines and international comparison.	
Natural asset base					
3.1.	Freshwater resources: volume of water intake	Needs improvement	Data collection: available renewable water resources (cubic metre) per capita, including internal flow and inflow of surface and groundwater.	Provide data on available renewable water resources (in cubic metres) per capita, including internal flow and inflow of surface and groundwater. A complementary indicator is water stress (abstraction rates of available renewable water resources: freshwater abstracted, divided by renewable freshwater resources).	WB
3.2.	Forest area (forest fund) and volume	Good	Area: in hectares and as a percentage of total land. Data collection: volume of forest shows this indicator as area of forest land as a percentage of total land area. Collect data on forest resources (volume of bark of living trees – in cubic metres or related changes). Link/describe forest area data with forest quality.		FAO

No.	Title of indicator	Data quality for constructing indicators	OECD recommendation for data improvement	Working Group recommendation for data improvement and report 2018	Data to use for international comparison
3.3.	Share of forest (degree of forestation)	Good	At the national level, use the internationally applied definition/calculation method of the indicators. This overlaps with 3.2; consider dropping or combine with indicator 3.2.		
3.4.	Land cover	Good	This indicator should be used in connection with other indicators, assessing the area of forests, wetlands, level of land degradation by erosion, quality and productivity of land, efficiency of use of land for agriculture. Show land use, by category of uses: arable and permanent crop land, pastures, forest land and other land (in square kilometres).	Land cover indicators could be developed in terms of quality and, if primary data sources allow, be disaggregated by eroded/degraded surface of agricultural, forest lands and land not used for agriculture. The area or percentage of green zones could be added.	FAO
3.5.	Organic (ecological) agriculture	Good	Continue tracking surfaces and number of farmers (add data for 2016 if available). Provide information on division of surface and farmers by cultivated cultures as an additional qualitative indicator of the sector. Integrate organic agriculture sector reporting into the official agricultural statistical data collection system.	In the next report, disaggregate all data (number of farmers, surface and subsidies) by major crops cultivated. To clarify issues not covered by ministerial/ statistical data, add the production and export of organic agricultural products certified abroad. A quality indicator in future could be export of organic products (raw and processed). Since MAFI has developed the Strategy for Organic Agriculture, this and the next report could be linked with that plan, using the same set of progress indicators, and applying GGIs and SDGs for this sector. The official statistics need to separate out organic production. The process for reporting the number of companies/ farmers and land, and production volume/ exported organic products certified by international/EU organisations, but not by the National System of Ecological Certification, need to be adjusted to supplement national data.	n.a.
3.6.	Protected and endangered species	Good	Provide policy targets for conserving specific species		International Union for Conservation of Nature Red List
3.7.	State-protected natural areas	Good	Analysis: policy relevance to be linked with the description of the state of protected areas and their management. Data: specify the strictly protected area, if available, and percentage of protected areas with management plans.		n.a.
Environmental dimensions of quality of life					
4.1.	Air pollution	Needs improvement	This indicator could be further developed to separate out major air pollutants and link to air quality, especially in urban areas.		
4.2.	Population exposed to $PM_{2.5}$	Good	Identify relevant, reliable internal data sources and proper explanation of trends, their impact on public health and on children and respiratory diseases.		OECD

No.	Title of indicator	Data quality for constructing indicators	OECD recommendation for data improvement	Working Group recommendation for data improvement and report 2018	Data to use for international comparison
4.3.	Access to safely managed drinking water services	Good	Align with SDG: apply the internationally used definition (in line with SDG 6) and review data sources and reporting process. Show share of population using improved drinking water sources. Could be complemented by: public access to basic sanitation (access to facilities that hygienically separate human excreta from human waste).	Access to safe drinking water sources – apply new definition and set up the process of data collection, linked to WHO and SDG indicators. The data could be disaggregated to identify differences between the three main development regions in the country (North, Centre and South) and clear difference between urban and rural areas (capital city, rayon centres, rural localities).	
4.4	Connection to sewerage	Needs improvement	Data collection: level of treatment of collected waste water. This indicator needs to be further developed; collecting data on share of population connected to a waste water treatment plant and to sewerage treatment, to show whether treatment of collected waste water is provided, and at which level (primary, secondary, tertiary).	Connection to sewerage needs further development, to add the share of population connected – volume of drinking water per person provided and volume of waste water per person treated (with level of treatment, if possible), separating municipal and industrial waste water. A clearer division between urban/rural areas is also needed.	
Economic opportunities and policy responses					
5.1.	Innovations in the field of green economy/ environment	Good	Develop national data on research and development and identify data sources on environmentally related innovations and their practical use/application and impact on development.	In the next report, specify more clearly how many research and development projects were applied in the country and what their economic value is.	OECD
5.2.	National Ecological Fund	Needs improvement	If available, break down the indicator according to revenue and expenditure. Link the volume of finds/ expenditures or number of funded projects with real changes in environmental quality in the country.	In subsequent reports, clearly indicate the impact on environmental quality of the use of funds and link the application/use of funds to their source of formation (specific payments, taxes) and destination (reduction of air pollution, water management, waste recycling, planting forests, etc.)	n.a.
5.3.	Energy subsidies	Develop national data	Develop national data on energy subsidies for consumption and production (fossil fuels, energy efficiency and renewable energy). Show links/ synergies of this indicator with energy efficiency and renewable energy indicators.		OECD or IEA
5.4.	Environmentally related (internal/ foreign) investments	Needs improvement	Clearly identify and separate internal and external environmental investment flows, and divide by destination (air protection, waste water treatment, waste management, etc.)	Clarify the percentage of external investments (and grants for environmental infrastructure) of total environmental expenditure, and specify sources and areas.	n.a.
5.5.	Subsidies for organic agriculture	Needs development	Data collection needed. Provide national data by type of support, as a percentage of total support estimated in the sector. Indicate link with Indicator 3.5.	Official data (with trends) to be provided by MAFI and the Agency for Intervention and Payments in Agriculture.	n.a

Annex 2. Glossary of Indicators

Indicator 1.1. GDP growth	
Definition:	GDP represents the final value of goods and services for consumption. GDP growth rate measures how fast the economy is growing. GDP growth is driven by consumption, investment and exports.
Methodology/Unit:	UN methodology. It is measured in GDP in MDL million; USD million (at PPP).
Source:	NBS (2017), Statistical Yearbook 2016; macroeconomic data, NBS, MoEc, March 2017.
Indicator 1.2. GDP structure	
Definition:	GDP by sector provides information on the contribution of the main economic activities to GDP (real GDP broken down by major economic sector).
Methodology/Unit:	Real GDP broken by major sectors of the economy. It is presented by economic activities. Real GDP measured MDL, %; CAEM2 classification.
Source:	NBS (2017), Statistical Yearbook, 2016; macroeconomic data, NBS, MoEc, March 2017.
Indicator 1.3. Economically active population	
Definition:	Persons who form the labour force available for the production of goods and services, including both employed and unemployed population.
Methodology/Unit:	Active population, composed of employed population and the unemployed. Total persons, % of total.
Source:	NBS (2017), Statistical Yearbook, 2016.
Indicator 1.4. Unemployment rate	
Definition:	Share of total unemployment of total economically active population.
Methodology/Unit:	The unemployment rate represents the share of unemployed persons in the total active population, as a percentage of the total.
Source:	NBS (2017), Statistical Yearbook, 2016.
Indicator 1.5. Population	
Definition:	Population as reported in population census.
Methodology/Unit:	Statistical work of the National Bureau of Statistics, in 1 000 persons.
Source:	NBS (2017), Statistical Yearbook, 2016.
Indicator 1.6. Population density	
Definition:	Population per square kilometre.
Methodology/Unit:	Ratio between the total number of persons and the surface of the country in square kilometres. Persons/ square kilometre.
Source:	NBS (2017), Statistical Yearbook, 2016.
Indicator 1.7. Life expectancy at birth	
Definition:	Estimation of average lifespan, assuming that mortality rates of specific age groups for a reference year remain unchanged over the lifespan.
Methodology/Unit:	Ratio between the total number of persons and ages of life from birth and the number of survivors. Years.
Source:	NBS (2017), Statistical Yearbook 2016.
Indicator 1.8. Gini coefficient: income inequality	
Definition:	degree of inequality in the distribution of family income in a country.
Methodology/Unit:	data based on primary household's survey data. Value from 0 to 1.
Source:	NBS (2017), Statistical Yearbook 2016.

Indicator 1.9. Educational attainment by level	
Definition:	% of enrolment of children/students in the educational process; represents the number/rate of children/students involved at a given level of education, of the official age group corresponding to this level of education.
Methodology/Unit:	Statistical works, total number, %.
Source:	NBS (2017), Statistical Yearbook 2016 and Education in the Republic of Moldova in 2015/2016.
Indicator 2.1. GHG emissions	
Definition:	GHG emissions from all sectors of economy. This indicator shows aggregate greenhouse gas emissions by sector. Greenhouse gas emissions include six major gases: carbon dioxide, (CO_2); methane (CH_4); nitrous oxide (N_2O) and the F-gases, which are monitored by the UNFCCC.
Methodology/Unit:	Reports/National communications to UNFCCC, MtCO_2 equivalent. Calculations made based on the energy balance for the whole country.
Source:	First biennial update report of the Republic of Moldova under the UNFCCC, March 2016.
Indicator 2.2. CO_2 productivity	
Definition:	CO_2 emissions per unit of GDP. This indicator represents the ratio between the level of GDP and the level of carbon emissions (CO_2 equivalent emissions per unit of GDP). It is expressed in GDP in constant prices.
Methodology/Unit:	IPCC Guidelines for National Greenhouse Gas Inventories. Tonnes of CO_2/1 000 international dollars.
Source:	First biennial update report of the Republic of Moldova under the UNFCCC, March 2016.
Indicator 2.3. Final energy consumption by sector	
Definition:	Final energy consumption is determined by aggregating the quantities of energy carriers used by final consumers in economic activity carried out during the reference period
Methodology/Unit:	Statistical works and reports, ktoe.
Source:	NBS (2016), Energy Balance of the Republic of Moldova, 2015.
Indicator 2.4. Energy intensity	
Definition:	quantity of energy necessary for the production of one unit of GDP.
Methodology/Unit:	Statistical works and reports, ktoe/MDL 1 000 GDP.
Source:	NBS (2017), Statistical Yearbook, 2016.
Indicator 2.5. Share of renewable energy in final energy consumption	
Definition:	share of energy from renewable energy sources in final energy consumption.
Methodology/Unit:	Statistical works and reports, ktoe, %.
Source:	NBS (2016), Energy Balance of the Republic of Moldova, 2015.
Indicator 2.6. Waste generation	
Definition:	Production and consumption wastes – materials or products that have partially or completely lost the initial qualities necessary for their use in production or consumption.
Methodology/Unit:	According to the methodological indications of the statistical forms. Thousand tonnes (total, per capita).
Source:	NBS (2017), Statistical Yearbook of Moldova, 2016.
Indicator 2.7. Waste recycling	
Definition:	Volume by type of waste introduced in a technological process for recycling purposes.
Methodology/Unit:	According to the methodological indications of the statistical forms and calculation. Thousand tonnes, (% from total wastes, tonnes per capita).
Source:	NBS (2017), Statistical Yearbook of Moldova, 2016.

Indicator 2.8. Use of mineral fertilisers	
Definition:	Fertilisers used by agricultural enterprises/farmers, on areas of more than 50 hectares.
Methodology/Unit:	Statistical reporting forms, thousand tonnes.
Source:	NBS (2017), Statistical Yearbook of Moldova, 2016.
Indicator 2.9. Water use, by sector	
Definition:	Water intake from natural water bodies.
Methodology/Unit:	million cubic metres.
Source:	NBS (2017), Statistical Yearbook of Moldova, 2016.
Indicator 3.1. Volume of water intake	
Definition:	Volume of water extracted for the economic and individual (households) activities.
Methodology/Unit:	million cubic metres a year.
Source:	Agency Apele Moldovei, NBS (2017), Statistical Yearbook of Moldova, 2016.
Indicator 3.2. Forest area and share of forest	
Definition:	Totality of forests, lands for forests, under forest production or administration, of lakes or river bodies in the forest fund, other lands covered by the forest planning and share of surface of land covered by forest per total surface of land (without water bodies).
Methodology/Unit:	1 000 hectares, %.
Source:	NBS (2016), Natural resources and environment, 2015.
Indicator 3.3. Land cover	
Definition:	Structure and changes in land use (broken down by cover type).
Methodology/Unit:	1 000 hectares.
Source:	NBS (2016), Natural resources and environment, 2015.
Indicator 3.4. Organic (ecological) agriculture	
Definition:	Area of land under organic cultivation; number of farmers in conversion, certified.
Methodology/Unit:	hectare, number.
Source:	MAFI, 2016.
Indicator 3.5. Protected and endangered species	
Definition:	Number of endangered and disappearing species of animals and plants.
Methodology/Unit:	total number.
Source:	Ministry of Environment, Academy of Sciences of Moldova (2015), Red Book, III Edition, 2015.
Indicator 3.6. State-protected natural areas	
Definition:	Natural space, geographically demarcated, with representative natural elements regulated and managed with the goal of conservation and protection of all natural elements in the area
Methodology/Unit:	Share of specially protected areas of nature in the overall country territory is calculated as the relation of total area of reserves, national parks and closed territories broken down by IUCN protection category to overall country territory: number, 1 000 hectares, %.
Source:	Law on Fund of State Protected Areas, 1998.
Indicator 4.1. Air pollution	
Definition:	Emission of pollutants into the atmosphere from stationary sources; from transport.
Methodology/Unit:	Statistical forms, thousand tonnes.
Source:	NBS (2017), Statistical Yearbook, 2016.

Indicator 4.2. Population exposed to $PM_{2.5}$	
Definition:	Population exposure to $PM_{2.5}$ – particles that pass through a size-selective inlet with a 50% efficiency cut-off at 2,5 µm aerodynamic diameter. $PM_{2.5}$ corresponds to the "high-risk respirable convention" as defined in ISO 7708:1995, 7.1.
Methodology/Unit:	micrograms per cubic metre.
Source:	OECD Stat, "Exposure to $PM_{2.5}$ in countries and regions".
Indicator 4.3. Access to safely managed drinking water services	
Definition:	Share of population using safely managed drinking water services (water supply system).
Methodology/Unit:	total number or %.
Source:	National Centre for Public Health, Ministry of Health, 2016.
Indicator 4.4. Population covered by piped sewerage	
Definition:	Share of population connected to safely managed waste water treatment services.
Methodology/Unit:	share of population, length in kilometres of sewerage system.
Source:	NBS (2017), Statistical Yearbook, 2016.
Indicator 5.1. Innovations in the field of green economy/environment	
Definition:	Patents of importance to green growth: Environmentally related patents.
Methodology/Unit:	number, %.
Source:	OECD database; OECD (2016), Green Growth Indicators, OECD Environment Statistics (database).
Indicator 5.2. Use of the National Ecological Fund	
Definition:	Environmental protection expenditures special fund. Total income of the National Ecological Fund, formed from the payments for pollution and taxes on imported goods, which during their use could cause an impact for environment, including packaging materials.
Methodology/Unit:	per MDL 1 000.
Source:	Ministry of Environment, Reports on the activities of the National Ecological Fund 2000-2015.
Indicator 5.3. Energy subsidies	
Definition:	Environmentally related subsidies: energy sector.
Methodology/Unit:	MDL/EURO/USD.
Source:	OECD (2017), "Inventory of energy subsidies in the EU's Eastern Partnership Countries".
Indicator 5.4. Environmentally related investments	
Definition:	Environmentally related foreign investments/environmentally related expenditures of enterprises.
Methodology/Unit:	Statistical forms, per USD/MDL 1 000.
Source:	NBS (2017), Statistical Yearbook, 2016.
Indicator 5.5. Subsidies for organic (ecological) agriculture	
Definition:	Financial support from the state for the promotion of organic agriculture.
Methodology/Unit:	MDL 1 000.
Source:	MAFI, Agency for Payments and Interventions in Agriculture.

References

Academy of Sciences of Moldova (2015), The Red Book of the Republic of Moldova, 2015.

Czech Statistical Office (2013), Green Growth in the Czech Republic: Selected Indicators
https://www.czso.cz/documents/10180/20568923/28001914.pdf/8999fc02-192c-47b5-aa1e-c97114bdfc3e?version=1.0.

Eurostat, "Gini coefficient, 2016"
http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tessi190&plugin=1

Expert-Grup Independent Think-Tank (2016), State of the country report 2016
http://www.expert-grup.org/media/k2/attachments/State_of_the_Country_Report_2016.pdf.

Government of Moldova, UNDP (2016), National Report: Data Revolution Ecosystem Mapping in the Republic of Moldova
www.md.undp.org/content/moldova/en/home/presscenter/pressreleases/2016/06/15/revolu-ia-datelor-iat-cum-va-realiza-republica-moldova-agenda-de-dezvoltare-2030.html.

Government of Moldova (2014), Third Communication of the Republic of Moldova to UNFCCC, 2014
http://unfccc.int/resource/docs/natc/mdanc3.pdf.

Policy Measures to Promote RECP in Moldova (2013)
http://www.ncpp.md/docs/Policy_Measures_En.pdf.

Government of the Republic of Moldova (2015), Strategy on Biological Diversity of the Republic of Moldova for 2015-2020 and the Action Plan for Enforcing It
https://www.cbd.int/nbsap/about/latest/default.shtml#md.

Government of the Republic of Moldova (2014), Water Supply and Sanitation Strategy of the Republic of Moldova 2014-2027
http://lex.justice.md/md/352311/.

Federal Statistical Office of Germany (2013), "Test of OECD Set of Green Growth Indicators in Germany"
www.destatis.de/EN/Publications/Specialized/EnvironmentalEconomicAccounting/Sustainability/TestOECDGreenGrowth5850016129004.pdf?__blob=publicationFile.

Ministry of Economy (2016), "Note of the Ministry of Economy on poverty in Moldova in 2016"
http://www.mec.gov.md/ro/content/analiza-indicatorilor-saraciei.

Ministry of Economy (2014), Report on Poverty in the Republic of Moldova
http://www.mec.gov.md/sites/default/files/raport_privind_saracia_in_republica_moldova_2014.pdf.

Ministry of Environment, Ministry of Economy, Draft Road Map on the Green Economy promotion in the Republic of Moldova (approved by the Working Group on the Green Economy on 3 February 2017). Ministry of Environment (2016), State of Environment Report
http://www.mediu.gov.md/index.php/starea-mediului/rapoarte.

Ministry of Environment (2014), Environmental Strategy for the Years 2014-2023: Annex No. 1 to Government Decision No. 301 of 24, April
http://lex.justice.md/UserFiles/File/2014/mo104-109md/anexa_1_301.doc.

Ministry of Environment (2013), National Waste Management Strategy of the Republic of Moldova 2013-2027
http://serviciilocale.md/public/files/deseuri/2013_01_24_NATIONAL_WASTE_MANAGEMENT_STRATEGY_2013-27_ENG.pdf.

Ministry of Environment, Reports on the Activity of the National Ecological Fund, 2000-2015

Ministry of Environment, Climate Change Office (2016), "First biennial update report of the Republic of Moldova under the UNFCCC"
http://www.clima.md/doc.php?l=ro&idc=82&id=3910.

National Agency for Labour Force (2015), Labour Force Forecast
www.anofm.md/files/elfinder/PROGNOZA%20%202015.pdf.

NBS (2017), Statistical Yearbook of the Republic of Moldova 2016
http://www.statistica.md/pageview.php?l=en&idc=263&id=2193.

NBS (2016), Education in the Republic of Moldova, 2015/2016
www.statistica.md/public/files/publicatii_electronice/Educatia/Educatia_RM_2016.pdf.

NBS (2016), The Energy Balance of the Republic of Moldova, 2015.

NBS (2016), Natural Resources and Environment of the Republic of Moldova, 2015
www.statistica.md/public/files/publicatii_electronice/Mediu/Resurse_naturale_2015.pdf.

NBS (2016), Statistical Yearbook of the Republic of Moldova 2016, Chisinau. NBS (2015), The Energy Balance of the Republic of Moldova, 2014
www.statistica.md/public/files/publicatii_electronice/balanta_energetica/BE_2015_eng.pdf.

OECD, Expert-Grup Independent Think-Tank (Moldova) (2014), Pilot report "Measuring the Green Growth in the Republic of Moldova". OECD (2016), Guide for EU Eastern Partnership Countries: Measuring the Green Transformation of the Economy.
www.green-economies-eap.org/resources/EaP%20GREEN_GGI%20Guide_clean_ENG_FINAL.pdf .

OECD (2011), Towards Green Growth: Monitoring Progress, OECD Indicators
www.oecd.org/greengrowth/48224574.pdf.

OECD Environment Statistics (database), "Patents in environment-related technologies: Technology development by inventor country", doi:
http://dx.doi.org/10.1787/data-00760-en.

OECD Stat (2017), "Exposure to PM2.5 in countries and regions". Parliament of the Republic of Moldova, Law on Wastes No. 209 of 29 July 2016
http://lex.justice.md/md/368030/.

State Ecological Inspectorate (2015), Annual Reports for 2014, 2015, Chisinau.

State Public Procurement Agency (2015), National Sustainable Public Procurement Action Plan, 2015, Chisinau
www.green-economies-eap.org/resources/Action%20Plan%20Report_Moldova_Eng_final.pdf.

UNDP (2013), Third National Report on Millennium Development Goals (MDGs), Government of Moldova
www.md.undp.org/content/moldova/en/home/presscenter/pressreleases/2013/09/24/third-national-report-on-millennium-development-goals-in-moldova-progress-achieved-remaining-issues-and-future-options.html.

UNECE (2014), Environmental Performance Review of the Republic of Moldova, Third Review
http://www.unece.org/fileadmin/DAM/env/epr/epr_studies/ECE_CEP_171_En.pdf.

UNEP (2015), Green Economy Scoping Study, Republic of Moldova
www.mediu.gov.md/images/Moldova_lores.pdf.

MEASURING THE PERFORMANCE OF GREEN ECONOMIC DEVELOPMENT IN THE REPUBLIC OF MOLDOVA

National Report based on the OECD set of Green Growth Indicators

Measuring the performance of the green economic development is a vital part of sustainable economic and environmental governance in the Republic of Moldova. This report supports these activities by providing background and establishing a national framework for monitoring and implementing Green Growth Indicators, as well as for the Road Map on Green Economy promotion. The indicators presented in this report aim to help monitor the progress achieved as the green economy is adopted in each economic sector. They should also serve as an important tool for public information, motivating firms and the general public to support and contribute to the green transformation of the country, in line with sustainable development goals.

The development of this report was co-ordinated by the Inter-ministerial Working Group on Sustainable Development and Green Economy, co-chaired by the Ministry of Economy and the Ministry of Environment, and included the active participation of the National Bureau of Statistics.

The report was prepared in the framework of the project “Greening Economies in the European Union’s Eastern Neighbourhood” (EaP GREEN), which is funded by the European Union.

For more information:
http://www.green-economies-eap.org/