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**COMMITTEE ON ENVIRONMENTAL POLICY  
CONFERENCE OF EUROPEAN STATISTICIANS**

**Joint Intersectoral Task Force on Environmental Indicators**

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Item 3 of the provisional agenda

**REVIEW OF THE GUIDELINES ON THE APPLICATION OF  
ENVIRONMENTAL INDICATORS**

Informal note by the secretariat<sup>1</sup>

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<sup>1</sup> Prepared with the assistance of Mr. Vladislav Bizek and Mr. Alexander Shekhovtsov, consultants to the secretariat, with the financial support from the European Union project on the Shared Environment Information System. It has not been formally edited.

## **Introduction**

As a part of basic activities of the Joint Task Force on Environmental Indicators, the Review of the Guidelines on the Application of Environmental Indicators continues. At the 6<sup>th</sup> session the following Guidelines indicators are being reviewed:

- Ait temperature,
- Atmospheric precipitation,
- Drinking water quality,
- Final energy consumption,
- Total energy consumption,
- Average age of road motor vehicle fleet.

This report provides the analysis of replies to the questionnaire on indicators submitted by the following countries:

- Armenia,
- Azerbaijan,
- Belarus,
- Bosnia and Herzegovina,
- Former Yugoslav Republic of Macedonia,
- Georgia,
- Kazakhstan,
- Kyrgyzstan,
- Montenegro,
- Republic of Moldova,
- Russian Federation,
- Serbia,
- Tajikistan,
- Ukraine,
- Uzbekistan.

Review and basic analysis of the data reported by countries for each indicator is presented below.

## I. SUMMARY OF COUNTRY REPORTS ON THE QUESTIONNAIRE ON 6 INDICATORS FROM THE GUIDELINES

### 1. Air temperature

Country	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Armenia														
Azerbaijan														
Belarus														
Bosnia and Herzegovina														
Georgia														
Kazakhstan														
Kyrgyzstan														
Serbia														
Montenegro														
Republic of Moldova														
Russian Federation														
Tajikistan														
Former Yugoslav Republic of Macedonia														
Ukraine														
Uzbekistan														

*Note: Green colour means that the country has reported at least some data related to this indicator.*

Fifteen countries have filled the questionnaire on this indicator however with different levels of details.

All countries have available long-term time series of data on air temperature over their territories.

All reporting countries have filled tables in relation to the temperature regime in two biggest cities and Bosnia and Herzegovina – in four cities. However, this country has only reported on long-term average temperature in the country for 1961 – 1990 without reporting on annual average temperatures in 1990 – 2011 or on the regions with the highest and lowest temperatures. In addition, Bosnia and Herzegovina has added a map of average distribution of temperatures above its territory (figure 1) which increases the information value of this indicator significantly.



*Figure 1: Annual average temperature in Bosnia and Herzegovina for 1961 – 1990*

The former Yugoslav Republic of Macedonia has limited its report to the change of temperature regimes in 1990 - 2011 in two cities and two regions. At the same time, Macedonia has informed during the JTF session that average data for the whole country is not available for that period of time.

Kyrgyzstan and Uzbekistan have also not reported on long-term average temperature for 1961 – 1990 or for annual average temperature, the highest and the lowest monthly average temperature for 1990 – 2011 informing during the JTF session that such calculations are not being collected in the countries.

Tajikistan has not presented long-term average temperature for 1961 – 1990 in the country, cities and localities (districts, regions), however annual average deviations have been reported for all these cases.

Azerbaijan has not reported on the temperature regimes in the regions but has presented data for the country as a whole.

Within all reporting countries, the highest long-term average temperature for 1961 – 1990 can be seen in Azerbaijan – (+) 12.3 °C and the lowest one in the Russian Federation (–) 4.2 °C. Comparing long-term average temperatures for 1961 – 1990 with annual average temperatures in particular countries during 1990 – 2011, the following increasing trends can be seen:

- in Belarus from 5.4 °C to 7.6 °C in 1990 and to 7.5 °C in 2011 (maximum 8.0 °C in 2008); figure 2

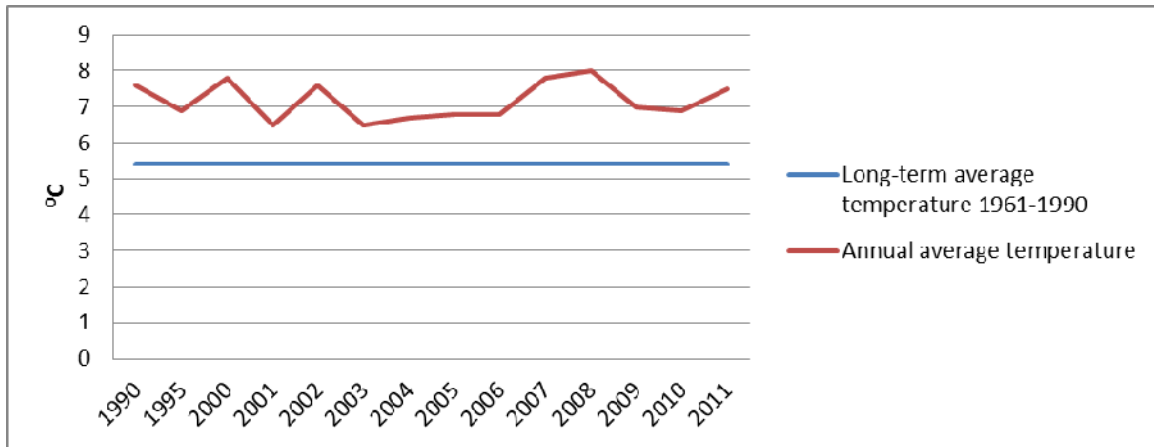


Figure 2: Belarus

- in Georgia from 10.0 °C to 10.1 °C in 1990 and to 11.2 °C in 2011 (maximum 13.6 °C in 2010); figure 3

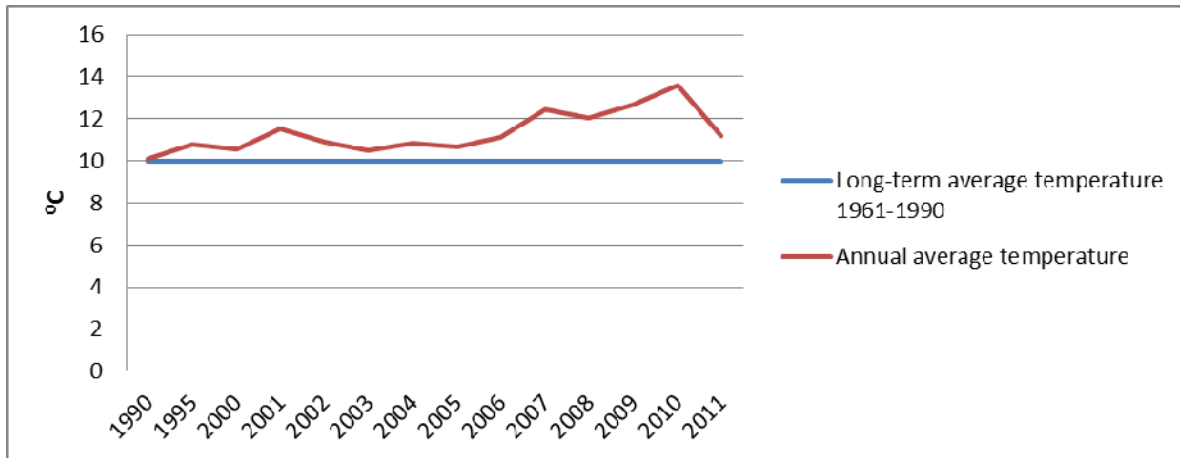


Figure 3: Georgia

- in Kazakhstan from 6.1 °C to 7.1 °C in 1990 and to 6.2 °C in 2011 (maximum 7.7 °C in 2004 and 2007); figure 4

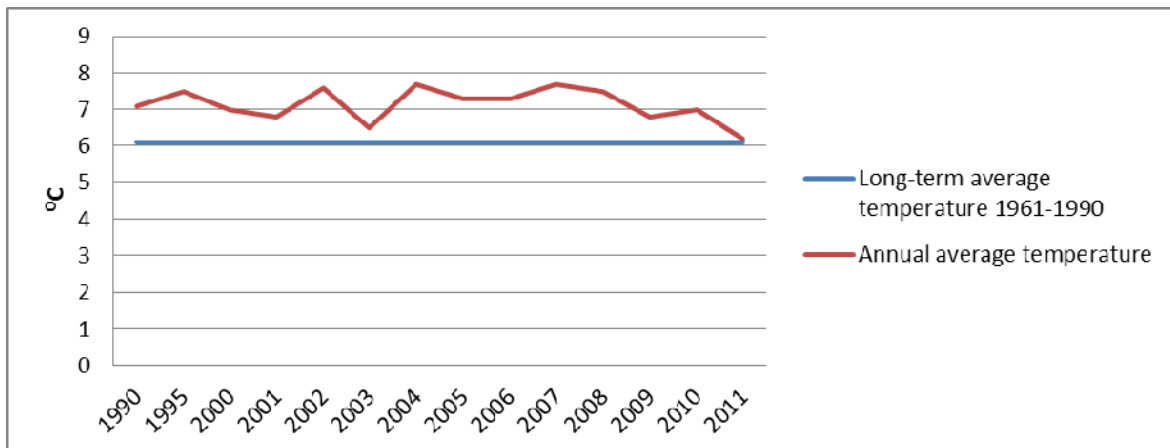


Figure 4: Kazakhstan

- in the Republic of Moldova from 9.3 °C to 10.9 °C in 1990 and to 10.1 °C in 2011 (maximum 11.6 °C in 2007); figure 5

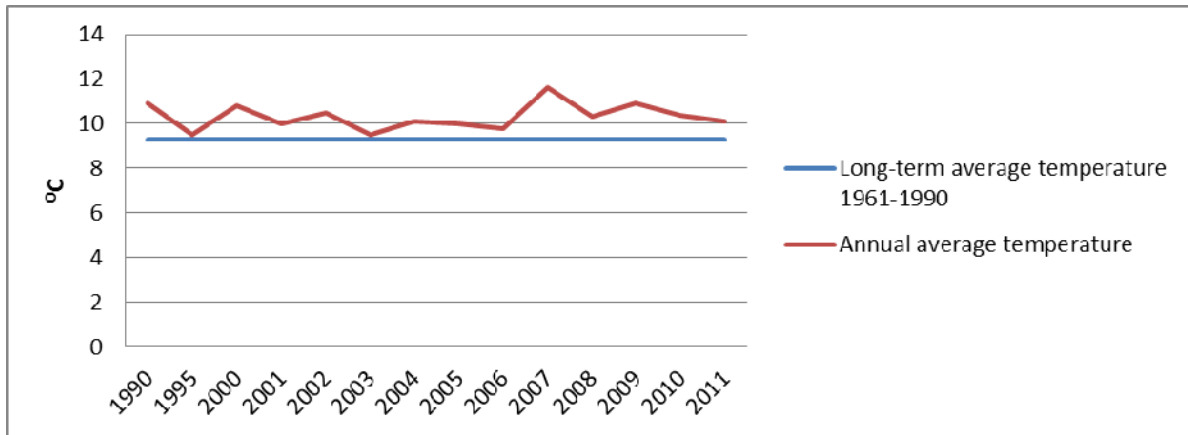


Figure 5: Republic of Moldova

- in Serbia from 10.1 °C to 11.0 °C in 1990 and to 10.8 °C in 2011 (maximum 11.9 °C in 2000); figure 6

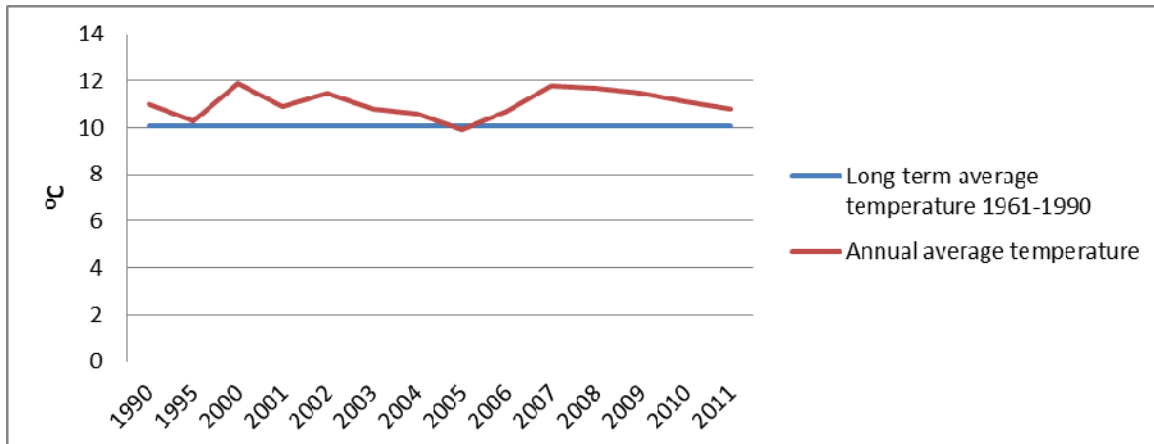


Figure 6: Serbia

- in Montenegro from 11.2 °C to 11.8 °C in 1990 and to 11.9 °C in 2011 (maximum 12.4 °C in 2007); figure 7

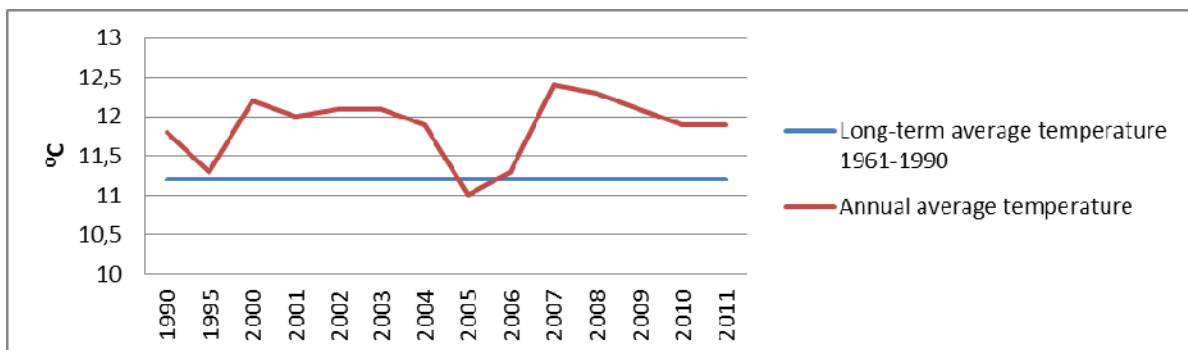


Figure 7: Montenegro

- in the Russian Federation from (-)4.2 °C to (-)2.9 °C in 1990 and to (-)2.6 °C in 2011(maximum (-)2.1 °C in 2007); figure 8

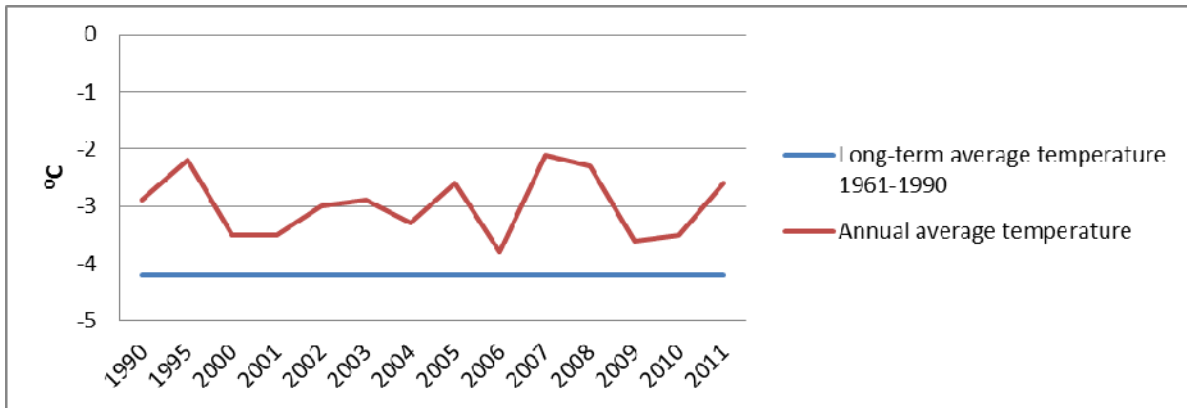


Figure 8: Russian Federation

- in Ukraine from 7.9 °C to 9.2 °C in 1990 and to 9.2 °C in 2011 (maximum 9.9 °C in 2007); figure 9

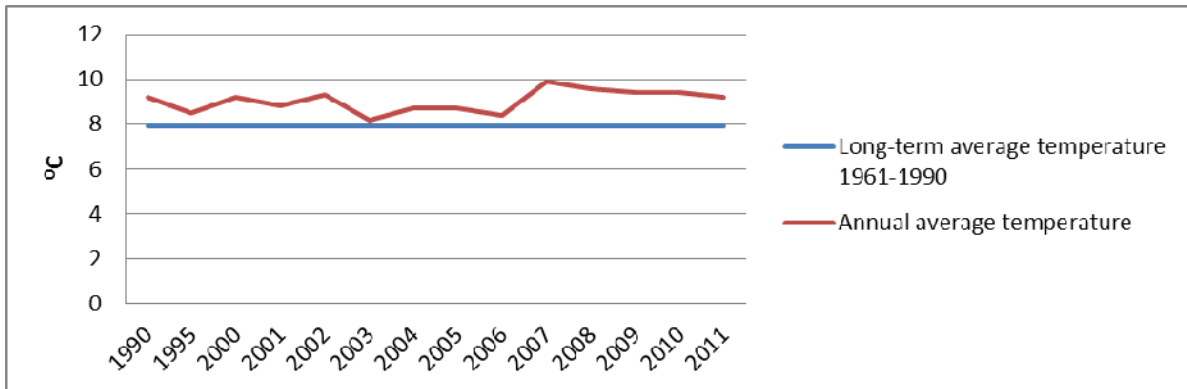


Figure 9: Ukraine

Increase of annual average temperatures against long-term annual averages has also been observed in Armenia (figure 10) and Azerbaijan (figure 11) till 2010 while 2011 was the only year with negative deviation of (-) 0,2°.

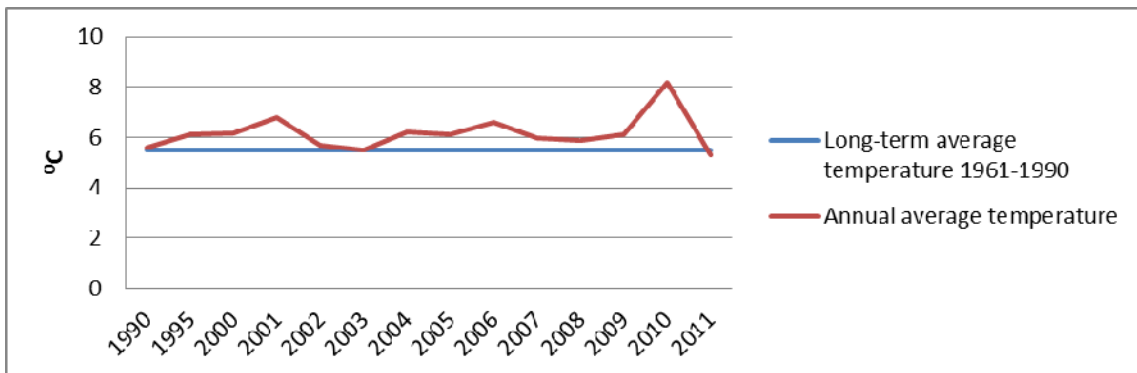


Figure 10: Armenia

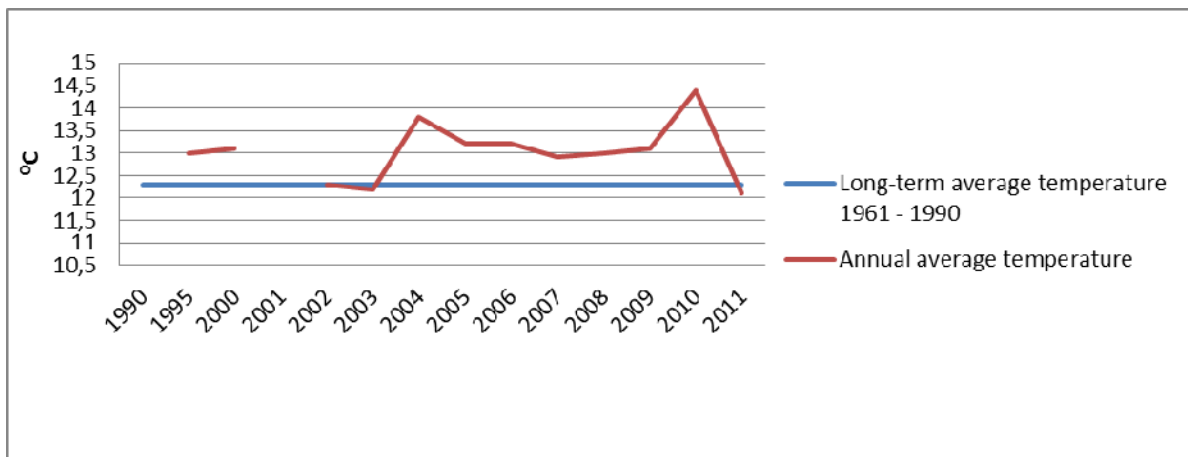


Figure 11: Azerbaijan

With the exception of Azerbaijan and Montenegro, the lowest monthly average temperatures did not exceed 0 °C and in the Russian Federation counted for (–) 20° and less.

The highest annual deviation from the long-term average was measured in Georgia in 2010 – (+)3.6 °C, in Belarus in 2008 – (+) 2.6° and in Azerbaijan in 2010 – (+) 2.1°

The highest difference between the highest and lowest monthly temperatures within one year was measured:

- in Azerbaijan in 2008 29.1 °C (summer (+) 25.4 °C, winter (-) 3.7 °C);
- in Armenia in 2008 30.0 °C (summer (+) 18.4 °C, winter (-) 11.6 °C);
- in Belarus in 2010 34.1 °C (summer (+) 22.6 °C, winter (-) 11.5 °C);
- in Georgia in 1990 42.7 °C (summer (+) 26.5 °C, winter (-) 16.5 °C);
- in Kazakhstan in 2011 62.6 °C (summer (+) 32.2 °C, winter (-) 30.4 °C);
- in the Republic of Moldova in 2010 32.8 °C (summer (+) 25.4 °C, winter (-) 7.4 °C);
- in Serbia in 2000 25.8 °C (summer (+) 23.0 °C, winter (-) 2.8 °C);
- in Montenegro in 2003 24.1 °C (summer (+) 23.6 °C, winter (-) 0.5 °C);
- in the Russian Federation in 2010 41.8 °C (summer (+) 17.0 °C, winter (-) 24.8 °C);
- in Tajikistan in 2001 60.8 °C (summer (+) 29.8 °C, winter (-) 31.0 °C);
- in Ukraine in 2010 33.6 °C (summer (+) 24.6 °C, winter (-)8.8 °C ).

From the total of reported cities, the highest long-term average temperature was measured in the Capital city of Montenegro – Podgoritsa – 15.3 °C.

In the cities of Armenia (Yerevan, Gyurmi), Azerbaijan (Gyandja), Belarus (Minsk, Gomel), Bosnia and Herzegovina (Banya Luka, Bidjeldjina, Mostar), Kazakhstan (Astana, Almaty), Kyrgyzstan (Bishkek, Osh), the Republic of Moldova (Chisinau, Belts), Serbia (Belgrade), Montenegro (Podgoritsa), Russian Federation (Moscow, St Petersburg), former Yugoslav Republic of Macedonia (Jevjelia), Ukraine (Kyiv) and Uzbekistan (Tashkent, Samarkand) annual average temperatures exceeded in 1990 – 2011 the values of long-term average temperature. Baku (Azerbaijan), Sarajevo (Bosnia and Herzegovina), Tbilisi and Kutaisi (Georgia), Novi Sad (Serbia) and Nikshich (Montenegro), Skopia, Bitola, and Lazaropolie (former Yugoslav Republic of Macedonia) and Kharkiv (Ukraine) are the only



cities in which annual temperatures were lower than the long term temperature in one or two particular years within the whole period.

The same increasing trend of positive deviation of annual temperatures from the long-term average temperature like in the biggest cities was observed in the localities (oblast, region) of Armenia (Megri region), Belarus (Brest and Vitebsk oblast), Georgia (Samtskhe-Gjabakheti region), Kazakhstan (Manghistaus oblast), Kyrgyzstan (Djalal-Abadsk oblast), the Republic of Moldova (Kagul and Brichenj regions), Montenegro (Primorie and Zablyak regions), Ukraine (Crimea, Sumskaya oblast) and Uzbekistan (Surkhandarinskaya oblast, Karakalpakia).

In parallel, annual average temperatures were lower than the long-term average in certain localities (oblast, region) of Armenia (Aragats), Georgia (Kalkheti), Kazakhstan (East-Kazakhstan oblast), Kyrgyzstan (Issik-Kul oblast), Russian Federation (Sochi, Oymyakon) and Serbia (Nis, Senitsa).

In all reporting countries, data on temperature regimes are being collected by hydro-meteorological institutions which are either independent bodies or subsidiaries of environmental authorities.

Azerbaijan, Belarus, Bosnia and Herzegovina, the Republic of Moldova and Russian Federation have introduced data quality control procedures compliant with the requirements of WMO while the other countries apply national procedures.

Uzbekistan has not reported on control procedures or on data publication at the national level.

Information on publication of the data together with the addresses of respective websites has been reported by Belarus, Bosnia and Herzegovina, Kazakhstan, the Republic of Moldova, Serbia and Montenegro. Resting countries have also reported on publication of data at the national level, however without presenting respective websites.

#### Conclusions:

1. Most countries have available data for the development of indicator „Air temperature“.
2. Kyrgyzstan and Uzbekistan have not reported on long-term average temperature for 1961 – 1990, on annual average temperature and on the highest and lowest monthly temperatures in 1990 – 2011.
3. Tajikistan has not presented long-term average temperatures in 1961 – 1990 for the country, cities and localities (districts, regions).
4. Information on annual average temperatures in 1990 – 2011 is missing in the report submitted by Bosnia and Herzegovina and the former Yugoslav Republic of Macedonia.
5. Bosnia and Herzegovina has attached a map of distribution of long-term average temperature 1961 – 1990 over its territory,
6. Almost all countries which have such information available have presented increase in annual average temperatures over the whole territories as well as in the majority of the biggest cities (22 cities from the total of 32) during the 1990 – 2011 period in comparison with the long-term averages.
7. In the majority of the biggest cities as well as in the localities with the highest and lowest temperatures, annual average temperatures were exceeding the long-term averages during 1990 – 2011.

8. Most countries publish the data on temperature; however not all of them presented respective web addresses.

Recommendations:

1. It is recommended to Armenia, Belarus, Georgia, Kazakhstan, the Republic of Moldova, Serbia, Montenegro, Russian Federation and Ukraine to use available data for the development of indicator „Air temperature“.
2. It is recommended to Bosnia and Herzegovina to fill the questionnaire as for annual average temperatures in 1990 – 2011.
3. It is recommended to the former Yugoslav Republic of Macedonia to introduce the treatment of data on temperature regimes to obtain long-term and annual temperatures in the country.
4. It is recommended to Kyrgyzstan, Tajikistan and Uzbekistan to report information on long-term average temperatures for 1961 – 1990 and on annual average temperatures and the highest and lowest monthly average temperatures for 1990 – 2011.
5. It is recommended to ask Uzbekistan to inform on data quality control procedures applied in the country as well as on publication of the data at national level.

**2. Atmospheric precipitation**

Country	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Armenia														
Azerbaijan														
Belarus														
Bosnia and Herzegovina														
Georgia														
Kazakhstan														
Kyrgyzstan														
Serbia														
Montenegro														
Republic of Moldova														
Russian Federation														
Tajikistan														
Former Yugoslav Republic of Macedonia														
Ukraine														
Uzbekistan														

*Note: Green colour means that the country has reported at least some data related to this indicator.*

Fifteen countries have filled the questionnaire on this indicator, however with different levels of details.

All countries have available long-time series of data on precipitation on their territories.

Armenia, Belarus, Georgia, Kazakhstan, the Republic of Moldova, Serbia, Montenegro, Russian Federation and Ukraine have reported data on all requested parameters on atmospheric precipitation.

All reporting countries have filled the tables on atmospheric precipitation in two biggest cities and Bosnia and Herzegovina and the former Yugoslav Republic of Macedonia – in four cities.

Bosnia and Herzegovina has reported only on long-term average precipitation for 1961 – 1990 and on annual average precipitation for 2001 – 2010 without showing annual deviations from the long-term average or the highest and lowest monthly precipitations and also without showing data on localities with maximum and minimum long-term average precipitation. For the period 2001 – 2010, equal annual precipitation of 1200 mm has been reported which leads to hesitations about accuracy of measurements.

Kyrgyzstan and Uzbekistan have not reported on long-term average precipitation for 1961 – 1990 or on annual average precipitation for 1990 – 2011.

Tajikistan has not reported on long-term average precipitation in 1961 – 1990 for the country, cities and localities (districts, regions), however annual average deviations have been reported for all these cases.

Azerbaijan has not reported on precipitation in districts or regions.

Former Yugoslav Republic of Macedonia has filled the questionnaire only on atmospheric precipitation in cities.

From all reporting countries, the highest long-term average precipitation in 1961 – 1990 can be seen in Montenegro – 1755 mm and the lowest one in Kazakhstan – 341 mm.

Comparing long-term average precipitation in particular countries in 1961 – 1990 with the respective values of annual average precipitation in 1990 – 2011, it is not possible to see any distinct increasing or decreasing trend. In all countries, the annual amount of precipitation fluctuates and may change year-by-year up to two times in Montenegro (figure 12) and the Republic of Moldova (figure 13), 1.7 times in Serbia (figure 14), 1.6 times in Armenia (figure 15) and Kazakhstan (figure 16) or 1.5 times in Ukraine (figure 17).



Figure 12: Montenegro

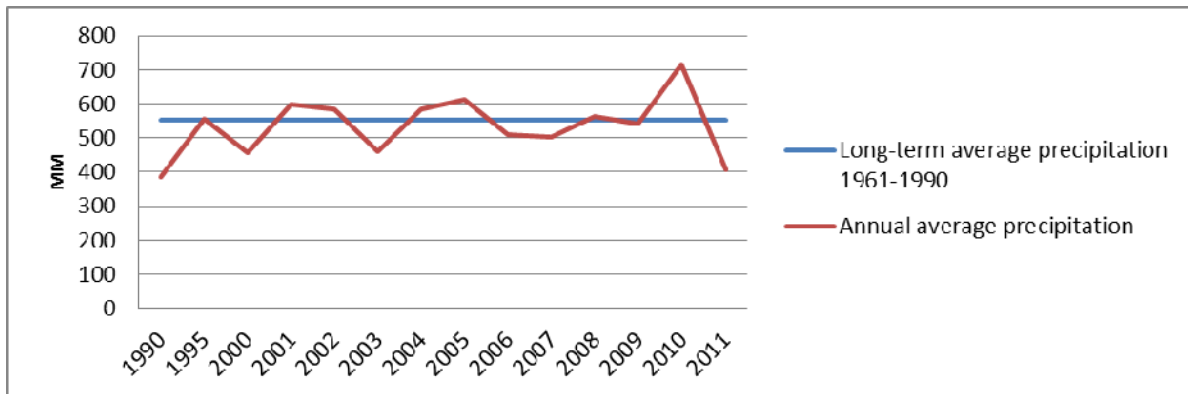


Figure 13: Republic of Moldova

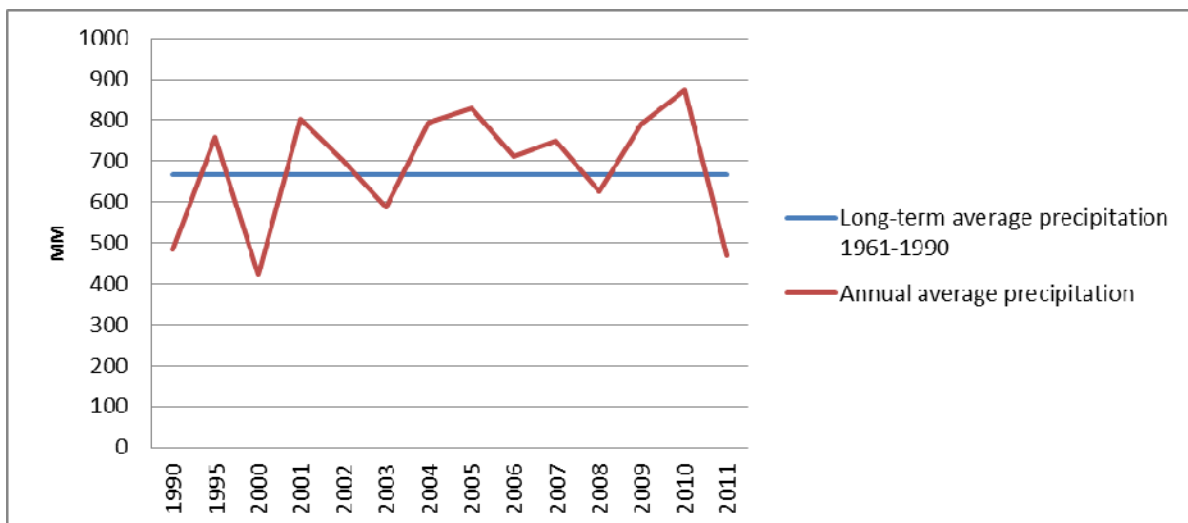


Figure 14: Serbia

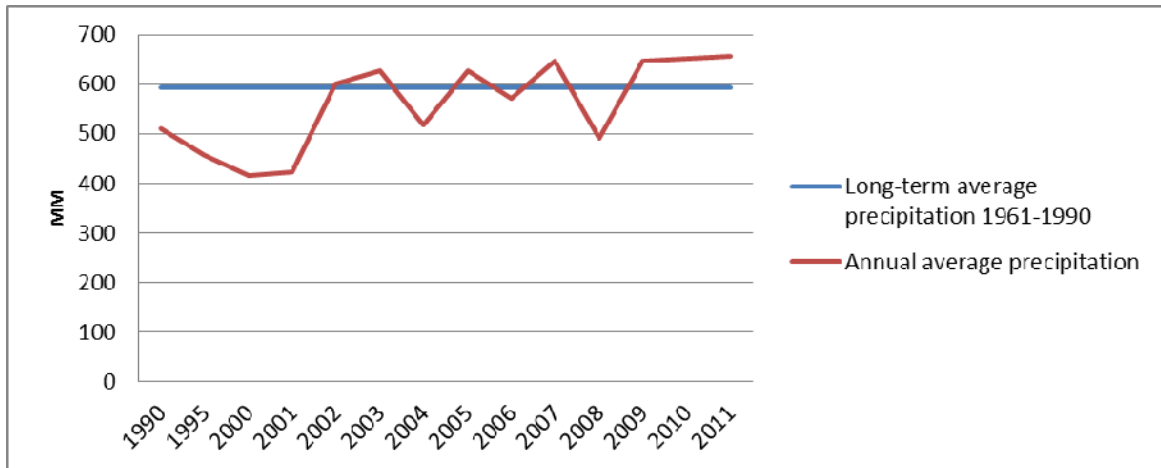


Figure 15: Armenia

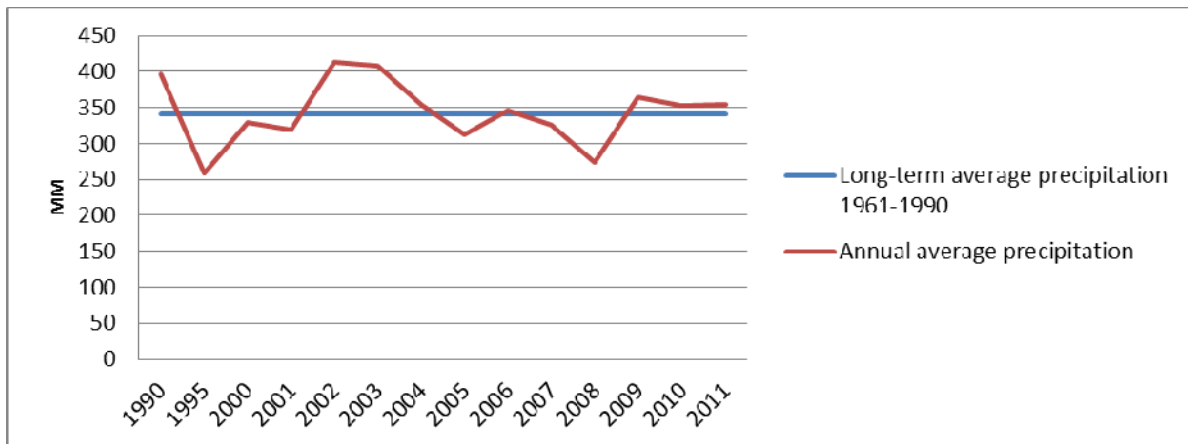


Figure 16: Kazakhstan

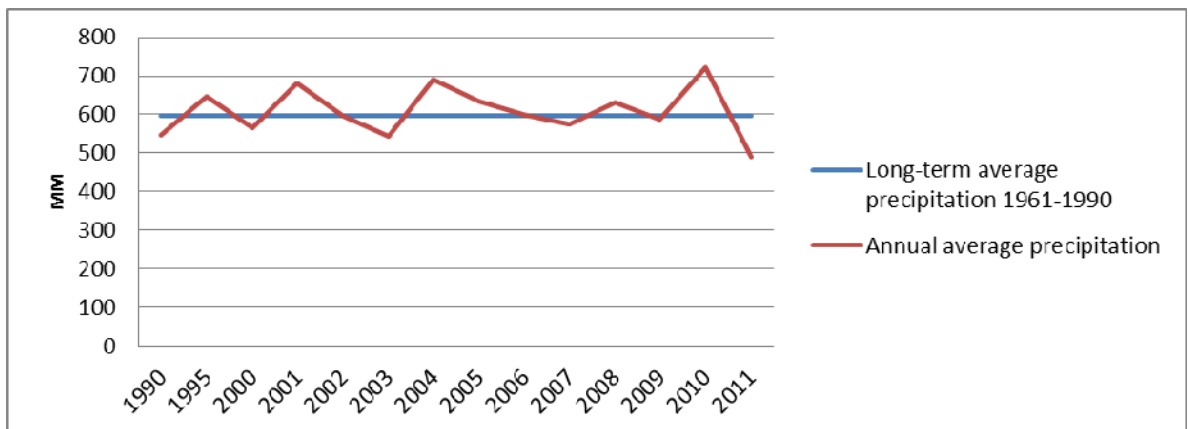


Figure 17: Ukraine

The deviation of annual average precipitation from the long-term average in the Russian Federation did not exceed 10 % up or down (figure 18).

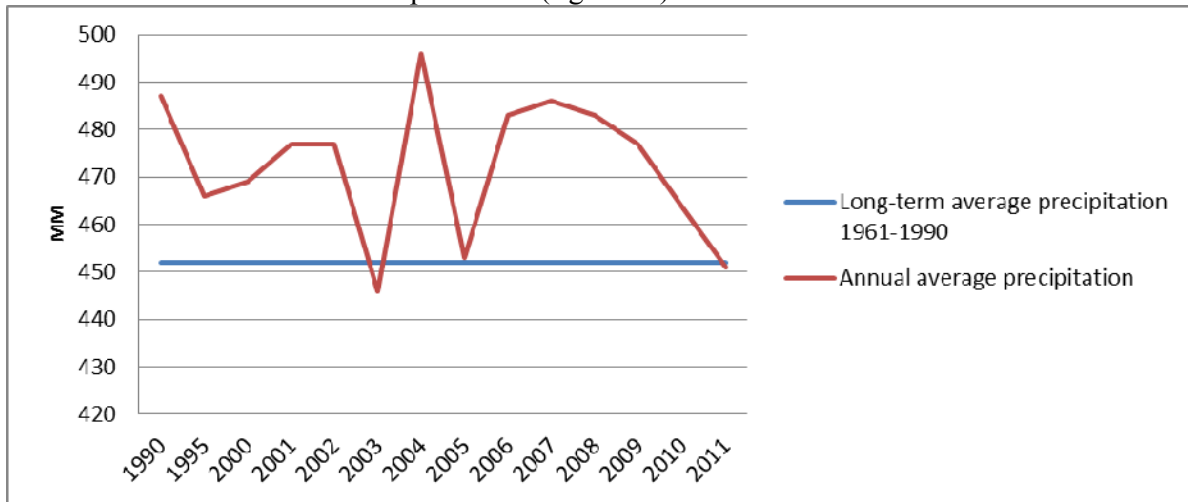


Figure 18: Russian Federation

Data on deviations of annual precipitation in 1990 – 2011 for Azerbaijan, Belarus and Georgia is presented in figures 19, 20 and 21, respectively.

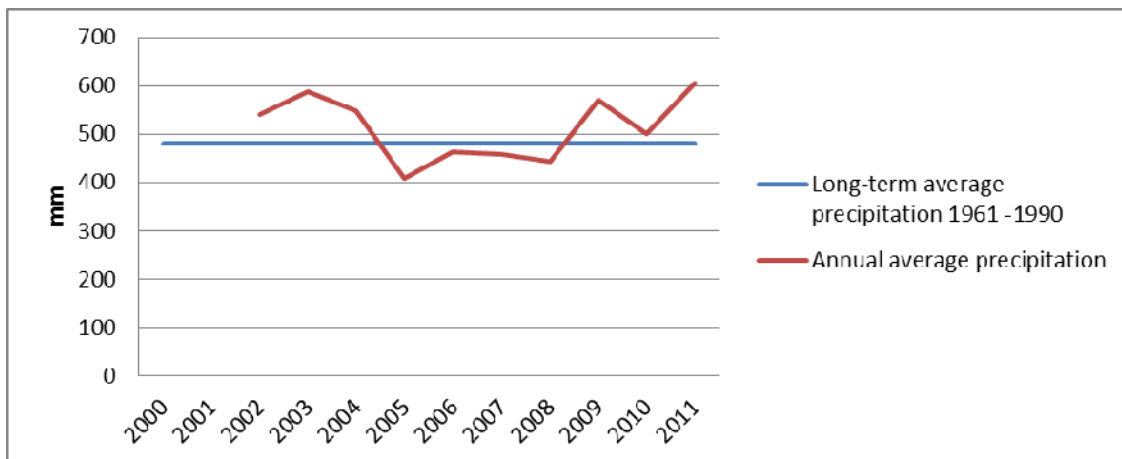


Figure 19: Azerbaijan

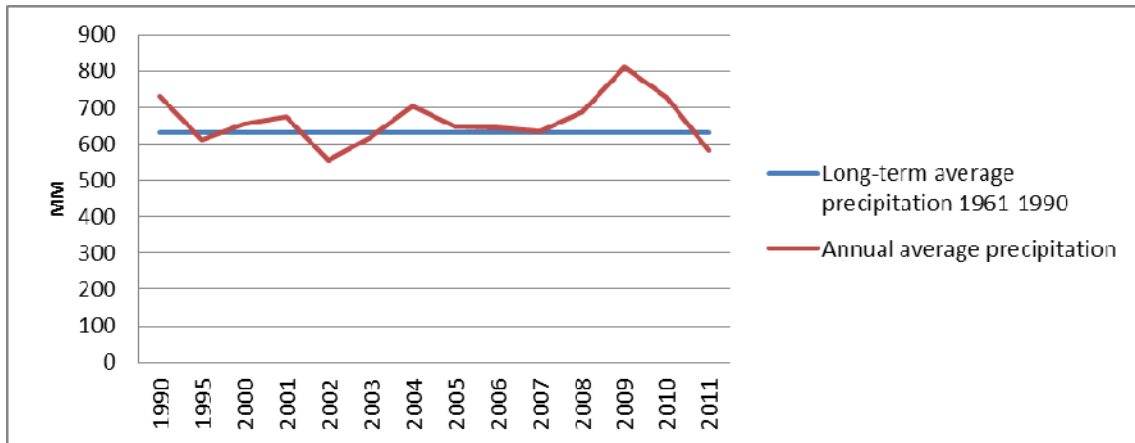


Figure 20: Belarus

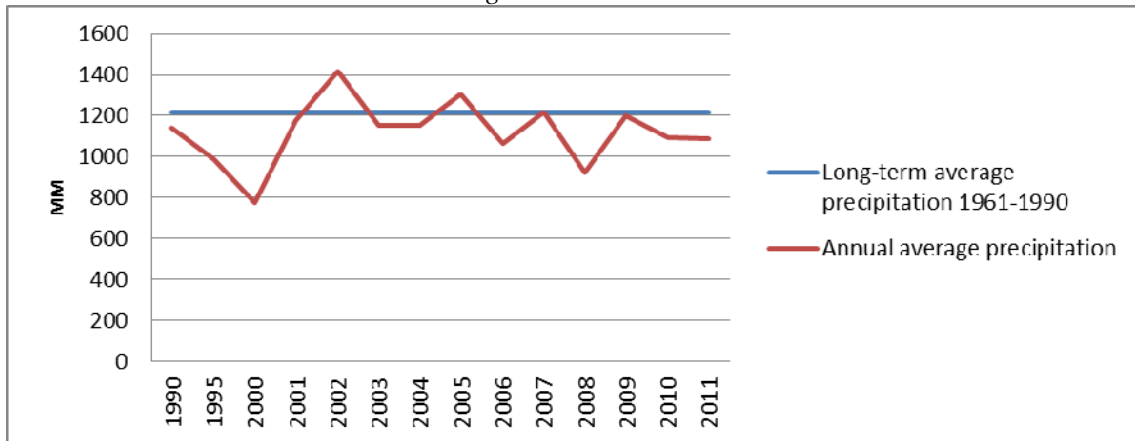


Figure 21: Georgia

Amongst all reported cities, Nikshich in Montenegro (figure 22) seems to be the most wet one with long-term average precipitation of 1896 mm while Baku in Azerbaijan (figure 23) and Astana in Kazakhstan (figure 24) are the most dry ones with the long term average precipitation of 235 mm. However, the annual average precipitation has started to exceed the long-term average in Baku since 2000 and in Astana since 1990.

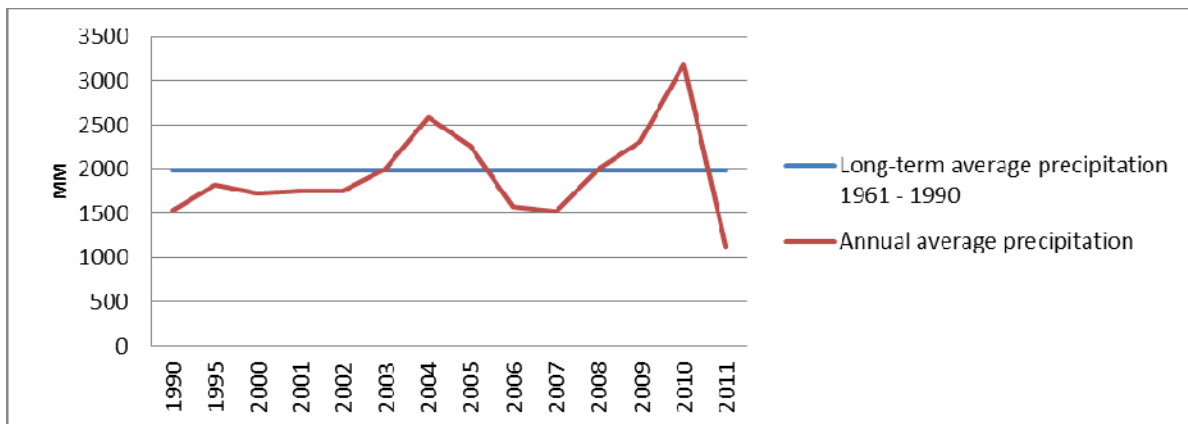


Figure 22: City of Nikshich (Montenegro)

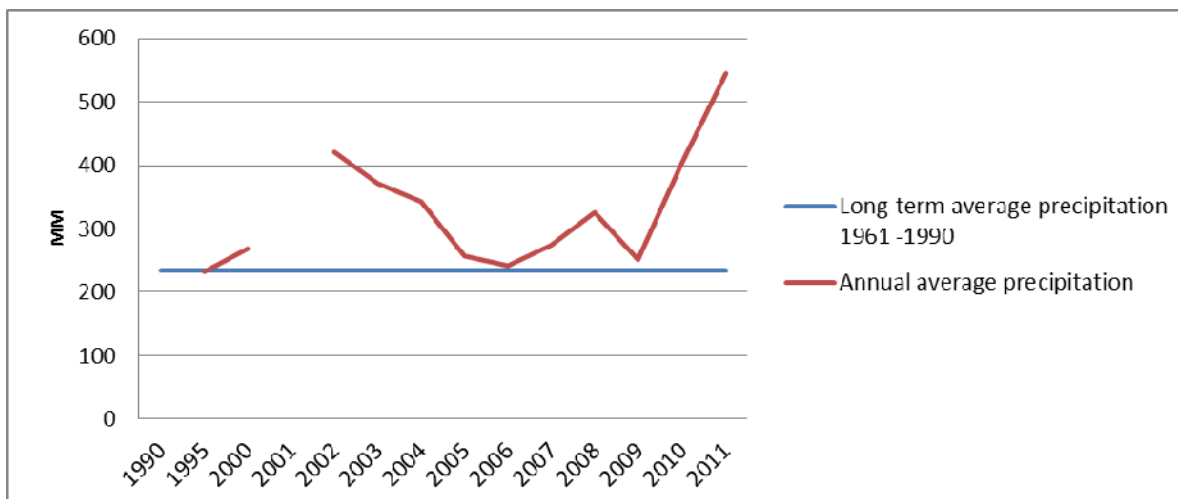


Figure 23: City of Baku (Azerbaijan)

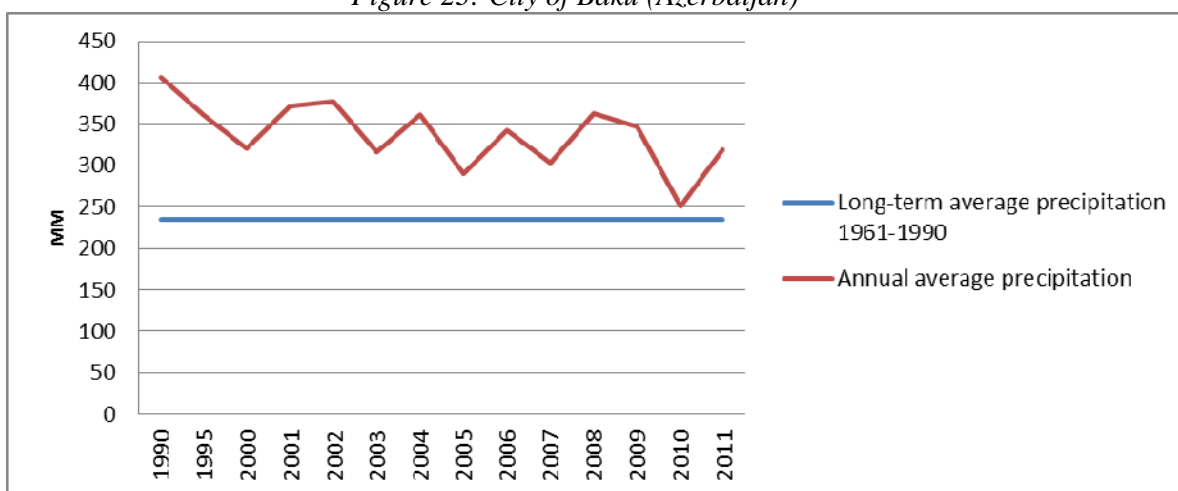


Figure 24: City of Astana (Kazakhstan)

With the exception of Baku and Astana, exceedance of annual average precipitation over the long-term average can be seen every year in only one other city – Almaty (Kazakhstan). In certain years, this exceedance was almost two times. In all other reported cities, the deviation of annual average precipitation from the long-term average was either positive or negative.

Analysis of atmospheric precipitation in localities (oblast, region) has shown that the most wet one can be found in Krkvitse in Montenegro (figure 25) where the long-term average precipitation in 1961 - 1990 represents 4261 mm. The most dry site is the Turkestan station in the South-Kazakhstan oblast (figure 26), where the long-term average precipitation represents 80 mm. However, the annual average precipitation since 1990 exceeded the long-term average value dramatically (up to five times in particular years).



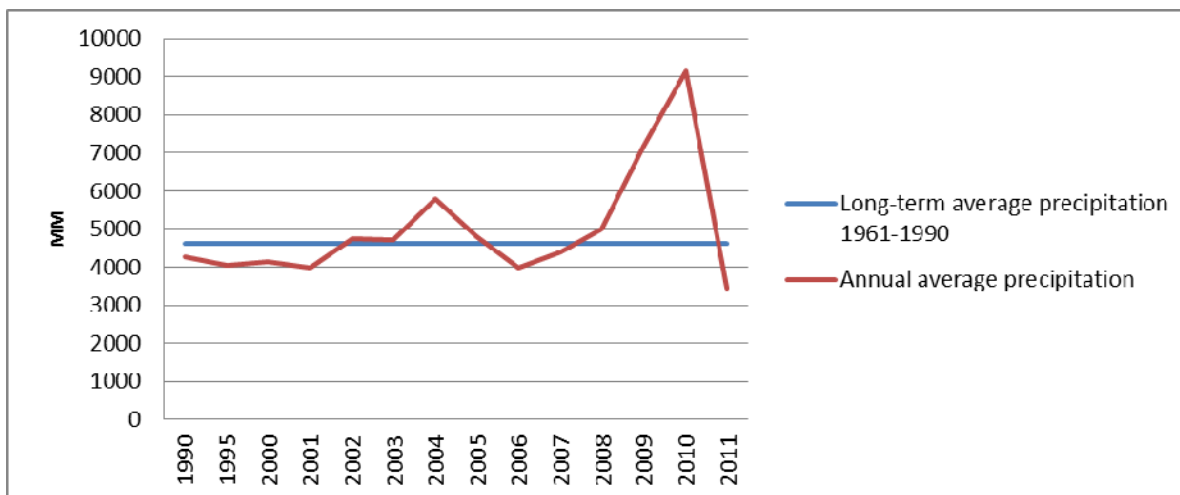


Figure 25: Krkvitse (Montenegro)

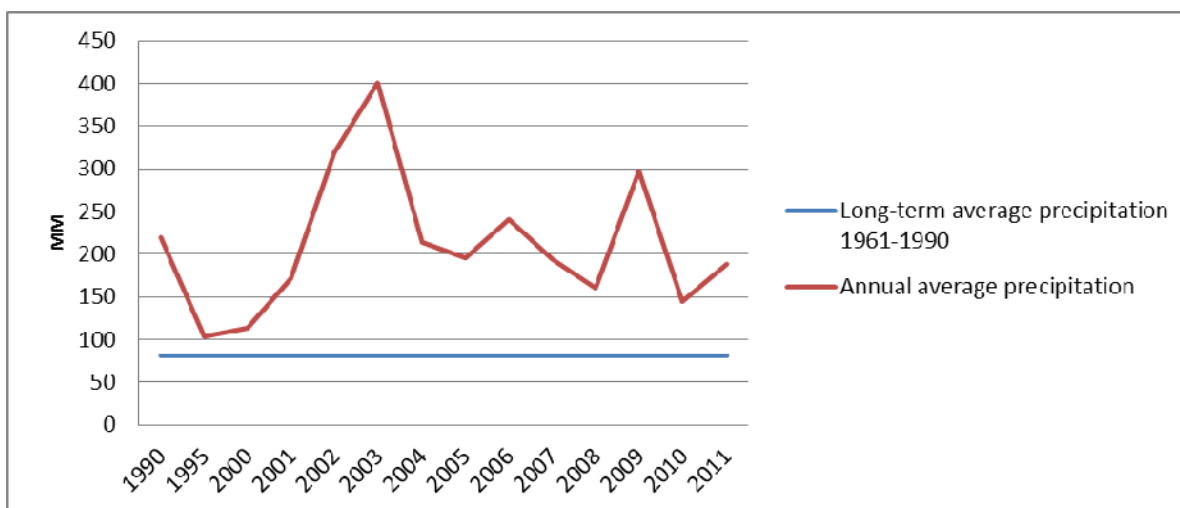


Figure 26: Turkestan Station (Kazakhstan)

Negative deviation of annual average precipitation from the long-term average can be seen every year in the Republic of Moldova, locality Chadyr-Lunga (figure 27). In all other localities in different countries, both negative and positive deviations of annual average precipitations from the long-term average were observed.

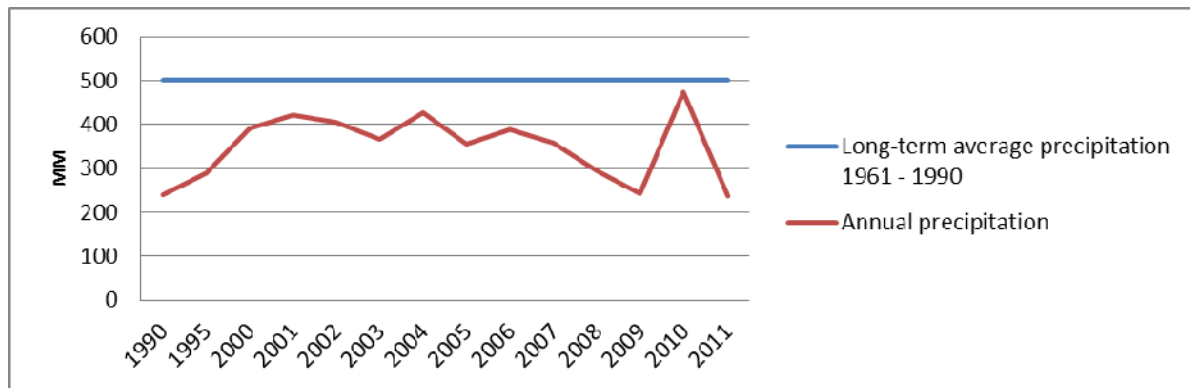


Figure 27: Chadyr-Lunga (Republic of Moldova)

Azerbaijan has presented deviations of annual average precipitations from the long-term average in mm instead of per cent.

In all countries, data on atmospheric precipitation are being collected by hydro-meteorological institutions which may be either independent or included into the structure of environmental authorities.

Azerbaijan, Belarus, Bosnia and Herzegovina, the Republic of Moldova, Russian Federation and Ukraine apply data quality control procedures in accordance with the needs of WMO while other countries apply their national procedures.

Uzbekistan has not reported on control procedures or on publication of data at the national level.

Information on publication of data on atmospheric precipitation together with respective websites has been reported by Belarus, Bosnia and Herzegovina, Kazakhstan, the Republic of Moldova, Serbia and Montenegro. The resting countries have informed on data publication at the national level, however without presenting addresses of respective websites.

#### Conclusions:

1. Most countries have available full data for the development of indicator „Atmospheric precipitation“.
2. Kyrgyzstan and Uzbekistan have not presented long-term average precipitation for 1961-1990 or annual average precipitation for 1990 – 2011.
3. Bosnia and Herzegovina has not reported on annual deviations from the long-term average, on the highest and lowest monthly precipitation or on the localities with the highest and lowest long-term average precipitation.
4. Former Yugoslav Republic of Macedonia has filled the questionnaire for the precipitation in cities only.
5. Tajikistan has not reported on long-term average precipitation in 1961 – 1990 for the country as a whole, cities and localities (districts, regions).
6. Azerbaijan has not reported on precipitations in districts or regions.
7. The highest amount of atmospheric precipitation can be found in Montenegro, both at the level of country as a whole and as for the most wet city (Nikshich) and locality (Krkvitse).

8. The most dry climate can be found in Kazakhstan - South-Kazakhstan oblast (station Turkestan) and in the cities Astana (Kazakhstan) and Baku (Azerbaijan).
9. The annual amounts of atmospheric precipitation fluctuate in all countries with considerable year-by-year changes and deviations from the long-term average may be either positive or negative. The same character can be observed in most cities (excluding Astana where the annual average precipitations was exceeding the long-term average every year) as well as in regions (with the exception of the Turkestan station and locality Chadyr-Lunga).
10. Most countries report the data on precipitation, however addresses of publications are missing in some cases.

Recommendations:

1. It is recommended to Armenia, Belarus, Georgia, Kazakhstan, the Republic of Moldova, Serbia, Montenegro, Russian Federation and Ukraine to use their available data for the development of indicator „Atmospheric precipitation“.
2. It is recommended to Bosnia and Herzegovina to fill the questionnaire as for the deviations from the long-term average precipitation in their countries and the values of the highest and lowest monthly precipitation and to present data on the regions with the highest and lowest long-term average precipitation and to check the data on annual precipitation in the country in 1990 – 2011.
3. It is recommended to ask Kyrgyzstan and Uzbekistan to present data on the long-term average precipitation in 1961 – 1990 and on annual average precipitation in 1990 – 2011.
4. It is recommended to Tajikistan to assess long-term average precipitation in 1961 – 1990 in the country as a whole, cities and localities (districts, regions).
5. It is recommended to ask the former Yugoslav Republic of Macedonia to fill the questionnaire on indicator „Atmospheric precipitation“ completely.
6. It is recommended to ask Uzbekistan to inform on applied procedures of data quality control and on the publication of data on atmospheric precipitation at the national level.
7. It is recommended to ask Azerbaijan to calculate data on precipitation in districts and regions as well as to present annual deviations from the long-term average in per cents instead of mm.

### 3. Drinking water quality

Country	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Armenia														
Azerbaijan														
Belarus														
Bosnia and Herzegovina														
Georgia														
Kazakhstan														



Based on the documents reported by particular countries, it can be concluded that the number of probes of drinking water taken from centralized water supply systems varies from millions in the case of Russian Federation through hundreds thousand (Belarus, Kazakhstan, Ukraine, Uzbekistan) to tens per year (Georgia – 39 probes in 2010). Nevertheless, tens thousand probes were being analysed in Georgia like in most other countries till 2003. However, after granting this competence to the Ministry of Agriculture, the amount of drinking water probes has decreased dramatically.

The share of drinking water probes non-compliant with standards has increased 2.5 times during last 20 years in Armenia, from 12.4 % to 31 % (figure 29). The same negative trend is characteristic for the Republic of Moldova during last 12 years (from 14.6 % to 22 %), figure 30).

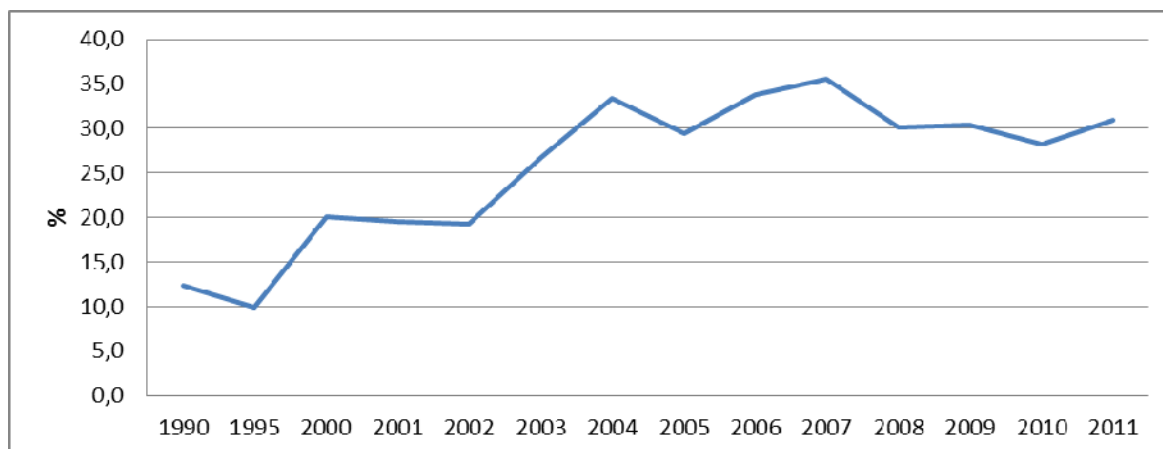


Figure 29: Armenia

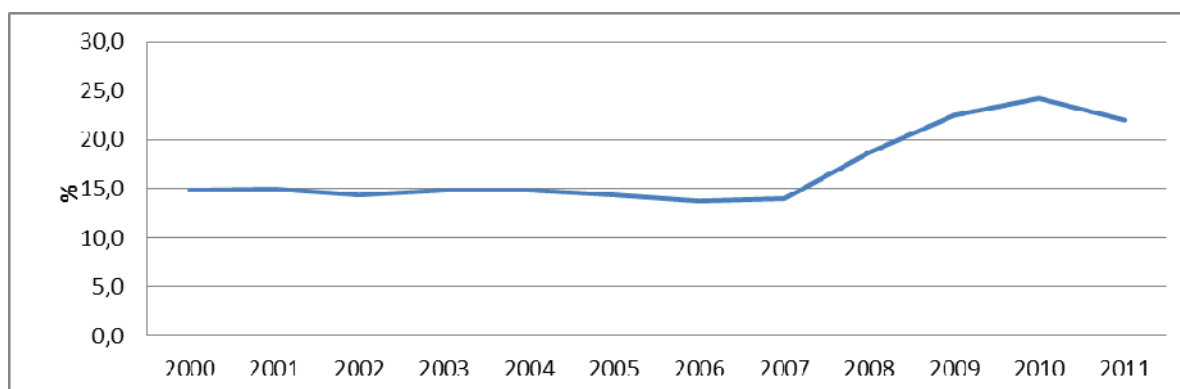


Figure 30: Republic of Moldova

Less than 10% of non-compliant probes of treated water in public supply systems is characteristic for Ukraine and Uzbekistan together with decreasing trend in the last four years and also in the former Yugoslav Republic of Macedonia. The lowest share of non-compliant

probes is stable in Kazakhstan, 1.5 % in 2011 compared to 8.8 % in 1990 (figure 31). Stable low share of non-compliant probes for more that 10 years can be seen in Kyrgyzstan (between 6.5 % and 9 % in particular years), figure 32).

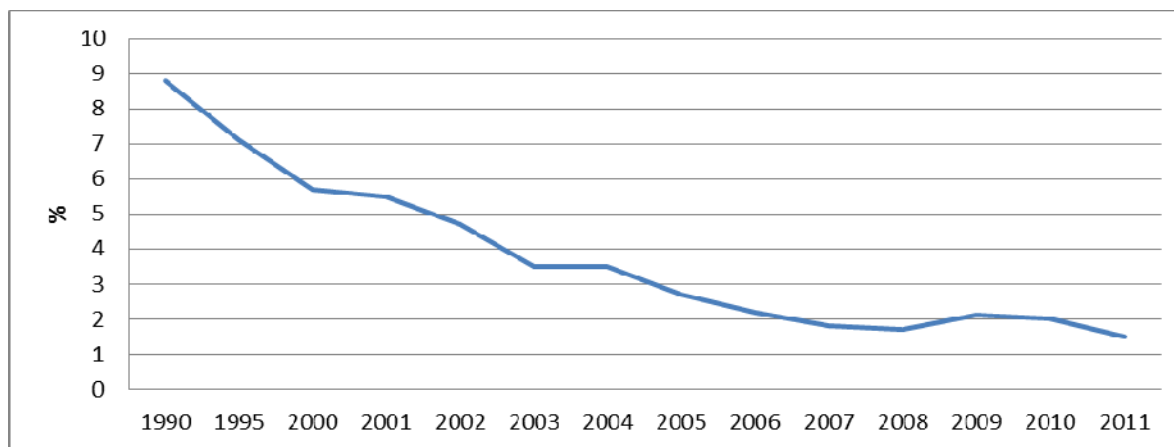


Figure 31: Kazakhstan

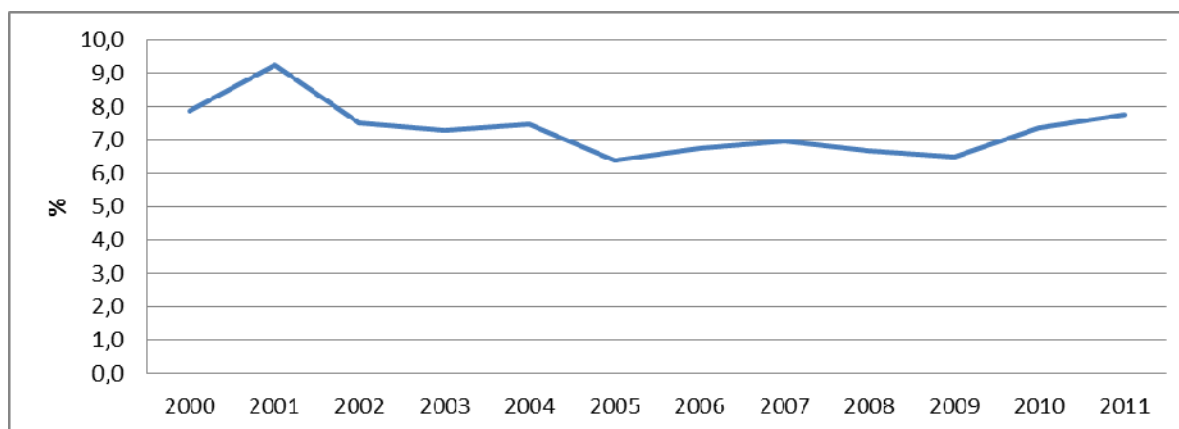


Figure 32: Kyrgyzstan

Positive decreasing trend in the number of non-compliant water probes is characteristic for Azerbaijan, Belarus, Bosnia and Herzegovina, Serbia, Montenegro and Russian Federation.

Higher number of exceedances of chemical standards comparing to microbiological standards is characteristic for Azerbaijan, Belarus and Serbia.

Higher number of exceedances of microbiological standards comparing to chemical standard can be seen in Armenia, Bosnia and Herzegovina, Kyrgyzstan, Montenegro and Uzbekistan.

In Georgia, Kazakhstan, the Republic of Moldova and Russian Federation, the ratio between exceedances of chemical standards and of microbiological standards varies from year to year.

Together with exceedances of chemical and microbiological standards, Armenia has reported additional information on non-compliance with sanitary-chemical and bacteriological standards and the Russian Federation has reported information on non-compliance with parasitological standards and on concentrations of radioactive elements in drinking water.

Exceedances of drinking water standards in the case of springs and wells (ground waters) where water is used directly as drinking water are stabilized in all countries which have such information available. At the same time the percentage of non-compliant probes is higher than that in the case of centralized water supply systems in all countries except Armenia and Azerbaijan.

The percentage of non-compliant probes in the case of centralized water supply systems and in the case of springs and wells is more or less the same in Armenia which may lead to the conclusion that the quality of treated drinking water is comparable with that of water withdrawn from springs and wells (figure 33).

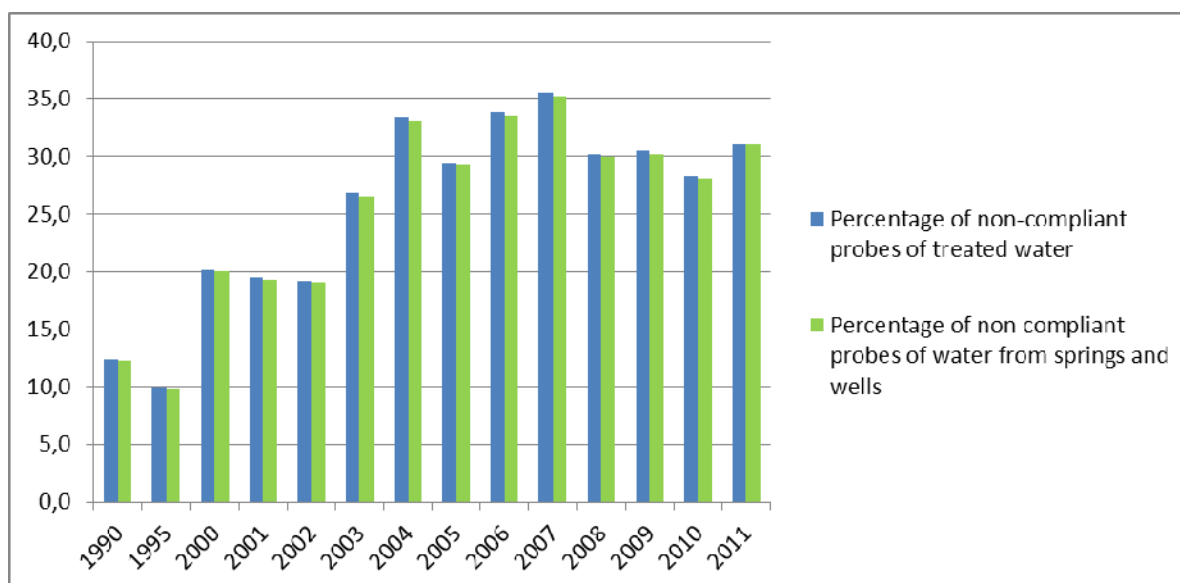


Figure 33: Armenia

Quality of ground waters used directly as drinking water was better than that of water in centralized water supply systems in Azerbaijan for 9 years from the 12 years reporting period (figure 34). Conclusion can be made in this case either on insufficient drinking water treatment or on preferable use of ground water as drinking water.

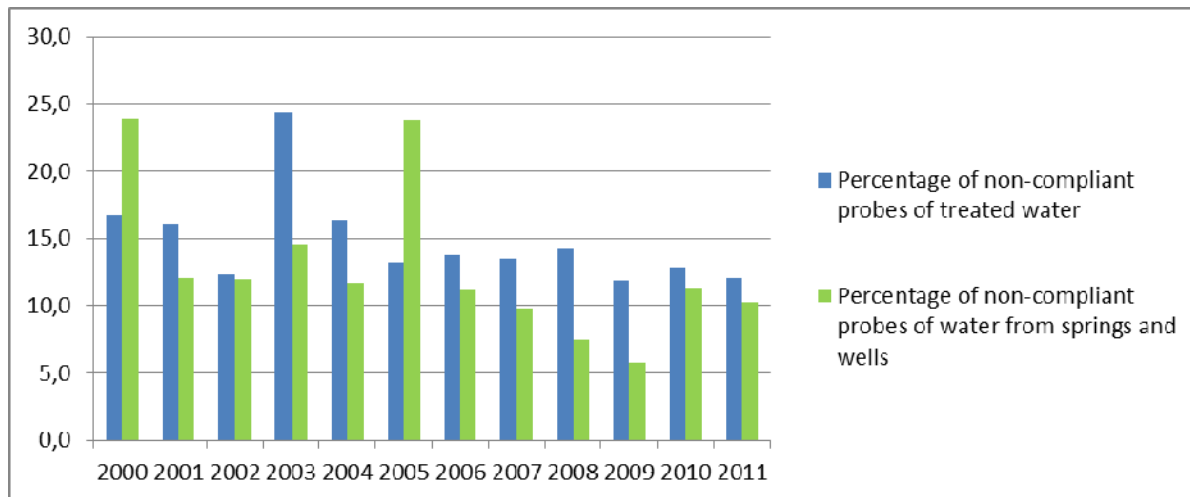


Figure 34: Azerbaijan

It should be mentioned that the number of probes of water from springs and wells is much lower than that of probes of water from centralized systems (by order of magnitude in most countries). Armenia is the only exception where the numbers of probes are more or less the same.

Sanitary-epidemiological authorities are responsible for the collection of data on this indicator in most countries while in Bosnia and Herzegovina this responsibility is given to the Agency for Food Safety and in Serbia and Montenegro to the public health institutes.

Drinking water quality standards are set at the national level in all countries.

Montenegro does not publish data on drinking water quality. Information on publication of this data has not been reported by Armenia and Uzbekistan. The resting countries publish the data on this indicator in statistical, sanitary-epidemiological and environmental publications. Kyrgyzstan, the Republic of Moldova, Russian Federation, former Yugoslav Republic of Macedonia and Ukraine have not reported addresses of websites on which data can be found.

During the JTF session, it has been decided to complement the questionnaire with the data on the number of water sources broken down by categories as well as to relate quality of drinking water to the respective shares of population supplied.

#### Conclusions:

1. Only Ukraine has reported full data for the development of this indicator as requested in the questionnaire. Other countries have not reported data on quality of water in open reservoirs from which untreated water is being used as drinking water.
2. Georgia, Serbia and Montenegro have not reported data on quality of ground waters used as drinking water.
3. Tajikistan does not have available data on drinking water quality.
4. Less than 10% of non-compliant probes of treated water in public supply systems is stabilized in Kazakhstan, Kyrgyzstan, former Yugoslav Republic of Macedonia, Ukraine and Uzbekistan.
5. Positive decreasing trend in the number of non-compliant probes is characteristic for Azerbaijan, Belarus, Bosnia and Herzegovina, Serbia, Montenegro, Russian Federation, former Yugoslav Republic of Macedonia, Ukraine and Uzbekistan.



6. Increasing trend in the number of non-compliant probes of drinking water can be seen in Armenia and the Republic of Moldova.
7. During the last years, the number of drinking water probes analysed in Georgia is not sufficient to ensure statistically reliable information for the development of this indicator.
8. In Azerbaijan, quality of ground waters used as drinking water is better than that of water in public water supply systems while in Armenia quality of water from both sources is more or less the same.

Recommendations:

1. It is recommended to Ukraine to use its available data for the development of indicator “Drinking water quality”.
2. For the purpose of further development of this indicator, it is recommended to all other countries to collect data on quality of water from open reservoirs used as drinking water without treatment.
3. It is recommended to Tajikistan to introduce analyses of quality of waters used as drinking water.
4. It is recommended to Georgia, Serbia and Montenegro to introduce analyses of ground waters used as drinking water.
5. It is recommended to Georgia to increase the number of analyses to get statistically reliable information for the development of this indicator.
6. It is recommended to Montenegro to start regular publication of the data on drinking water quality and to Armenia and Uzbekistan to provide concrete information on publications on this issue available in the countries.
7. It is recommended to revise indicator “Drinking water quality” in accordance with the comments raised during the JTF session.

**4. Final energy consumption**

Country	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Armenia														
Azerbaijan														
Belarus														
Bosnia and Herzegovina														
Georgia														
Kazakhstan														
Kyrgyzstan														
Serbia														
Montenegro														
Republic of Moldova														
Russian Federation														
Tajikistan														
Former Yugoslav														

Republic of Macedonia															
Ukraine															
Uzbekistan															

*Note: Green colour means that the country has reported at least some data related to this indicator.*

Fifteen countries have filled the questionnaire on this indicator, however with different levels of details.

The most complete data filled in accordance with the questionnaire have been reported by Belarus, Armenia, the Republic of Moldova and the former Yugoslav Republic of Macedonia – starting from 2000, Uzbekistan – starting from 2003, Serbia – starting from 2005 and Azerbaijan – starting from 2007 Bosnia and Herzegovina – starting from 2008.

Russian Federation has filled the questionnaire with the data starting from 1995, however many items have been changed (instead of residential and service sectors, construction sector and energy consumption by population are present).

Kazakhstan and Kyrgyzstan have reported data on total energy consumption only, Georgia – only certain items for one or two years and Ukraine - for the period 2009 – 2010 only. This data cannot be considered the basis for the development of this indicator.

Taking into account the data reported by the countries for the last reporting year, the final energy consumption balance represents:

- in Armenia (2011) – 99.9%. No data on non-energy use;
- in Azerbaijan (2011) – 100%. Missing data on consumption in non-specified sectors;
- in Belarus (2009) – 100%. Questionnaire filled-in completely;
- in Bosnia and Herzegovina (2010) – 100%. Questionnaire filled-in completely;
- in Georgia (2001) – 99.9%. No data on energy consumption in residential sector, commercial and public services and agriculture, forestry and fishery;
- in Serbia (2010) – 109.6%. No data on energy consumption in commercial and public services;
- in the Republic of Moldova (2011) – 100%. No non-energy use present in the country;
- In Tajikistan (2011) – 100 %. No data on energy consumption in transport and residential sectors, missing data on non-energy use;
- in the former Yugoslav Republic of Macedonia (2010) – 100 %. No data on energy consumption in non- specified sectors;
- in Ukraine (2010) – 56%. Questionnaire filled in completely;
- in Uzbekistan (2011) – 100%. No non-energy use present in the country.

Balance of final energy consumption in the Russian Federation represents 100 % as well (2010), however it includes changed items (as mentioned above) and the non-energy use of energy is not taken into account in the balance but presented separately.

Final energy consumption has increased in the majority of countries which have available information for at least five years:

- in Armenia by 42% during 12 years;

- in Azerbaijan by 13% during five years;
- in Belarus by 11% during 12 years;
- in Bosnia and Herzegovina almost 2.5 times during 16 years and by 10 % during the last three reporting years;
- in Kazakhstan by 18 % during six years;
- in Kyrgyzstan by 13% during five years; however it has decreased 2.5 times in 2009 comparing to 1990;
- in Montenegro by 8 % during 11 years;
- in Serbia 2.7 times during 8 years;
- in the Republic of Moldova by 72% during 12 years;
- in the Russian Federation by 2% during 17 years and by 9% during the last 12 years;
- in the former Yugoslav Republic of Macedonia by 14 % during 11 years;
- in Uzbekistan by 8% during 9 years.

In the last reporting year, consumption of energy in industry was the most considerable one in Tajikistan – 94.1 % of the total consumption, in the Russian Federation – 48.6 % and also in Uzbekistan – 40.1 %, Serbia – 31.3 % and Ukraine – 20 %.

The highest energy consumption in the residential sector can be seen in Azerbaijan – 43.1 %, Armenia – 31.3 %, Belarus – 30.5 % and the Republic of Moldova – 49.7 %.

In the former Yugoslav Republic of Macedonia, the highest energy consumption can be seen in industry and in the residential sector (around 29 % each).

In Bosnia and Herzegovina and Montenegro, the highest energy consumption can be seen in the transport sector – 34 % and 39.2 %, respectively.

With the exception of Uzbekistan, energy consumption in agriculture, forestry and fishery represents less than 10 % in all countries. In Uzbekistan, this share was changing from 21.7 % to 30.9 % in particular years. Tajikistan has reported negligible consumption of 0.04 % in this economic sector.

Balances of final energy consumption for the last reporting year are presented in figures 35 - 44 together with the change of energy consumption in time.

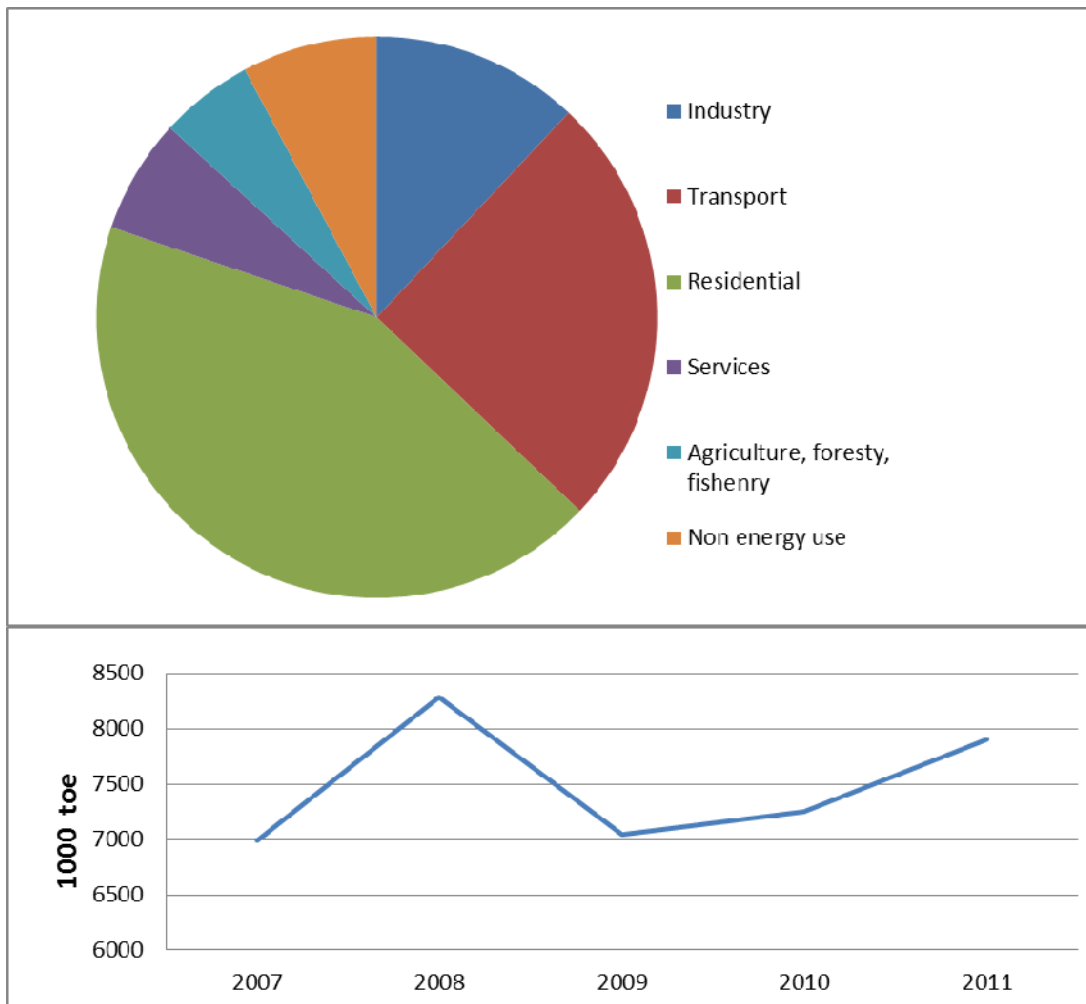


Figure 35: Azerbaijan

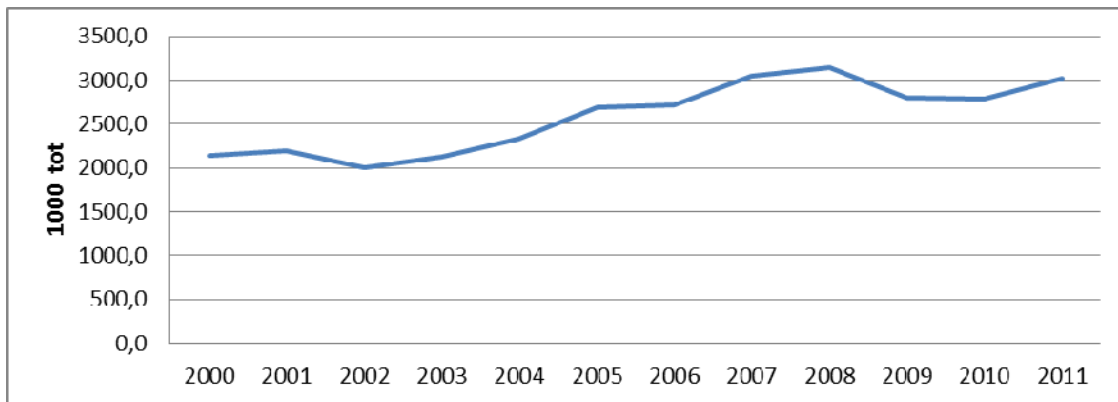
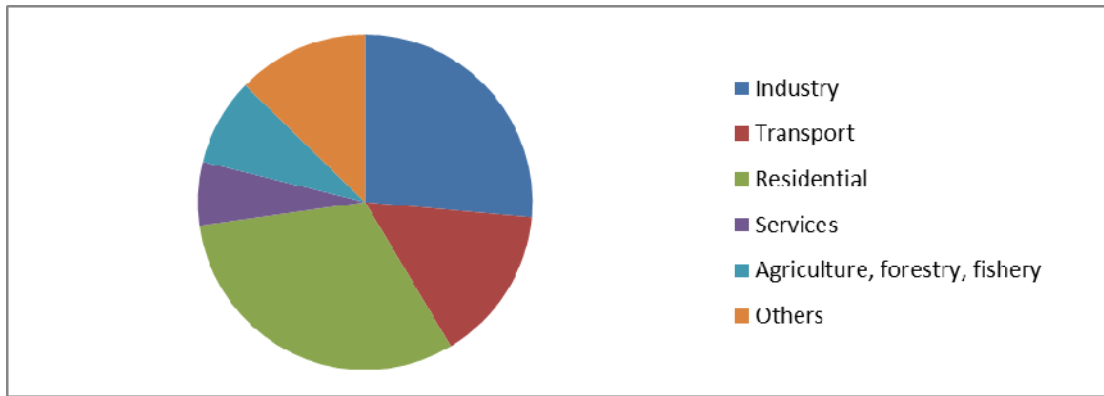


Figure 36: Armenia

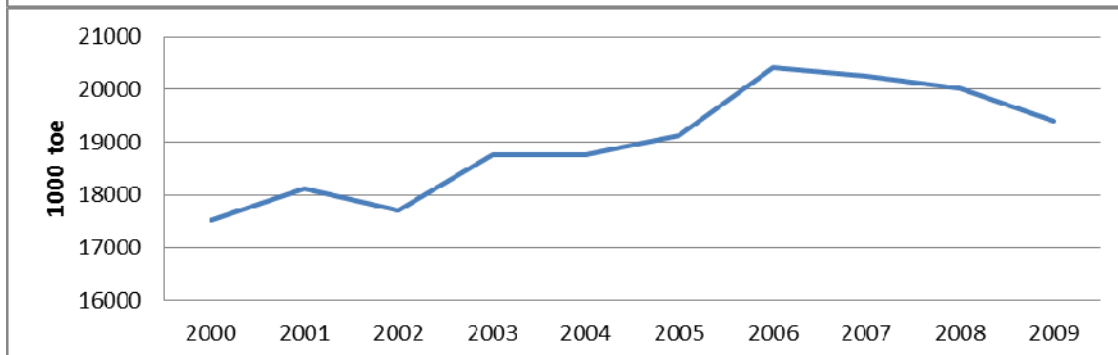
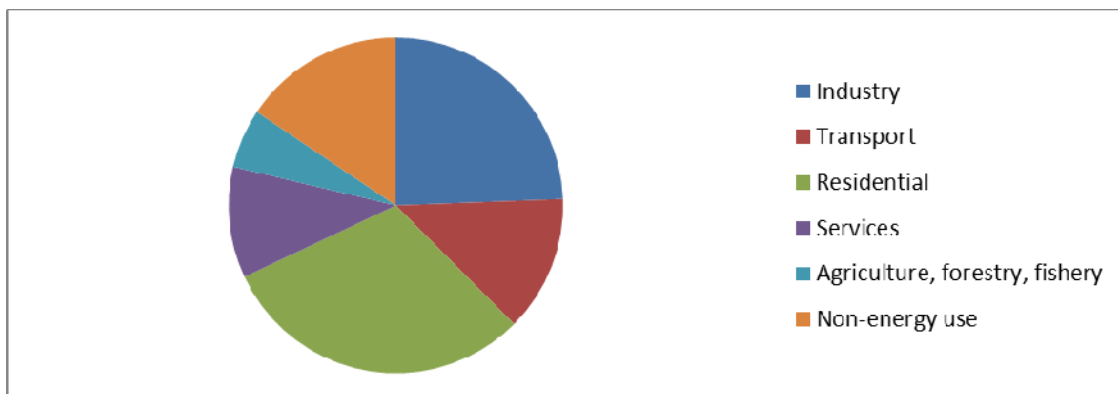


Figure 37: Belarus

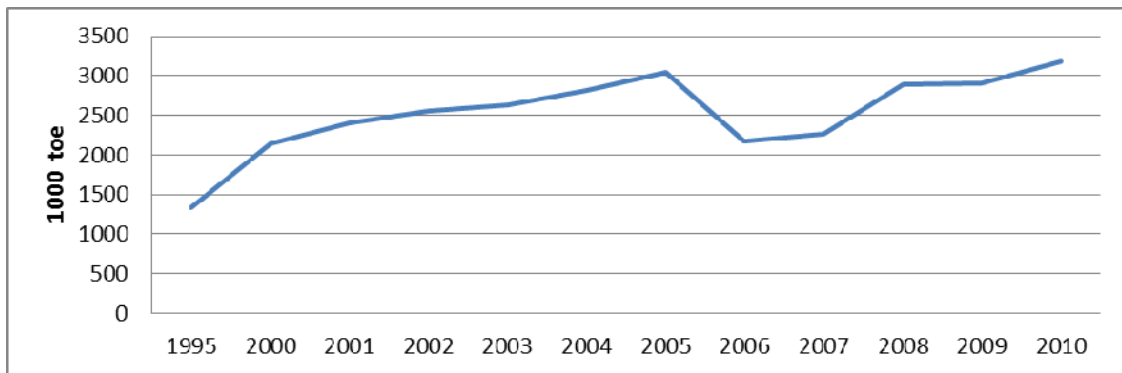
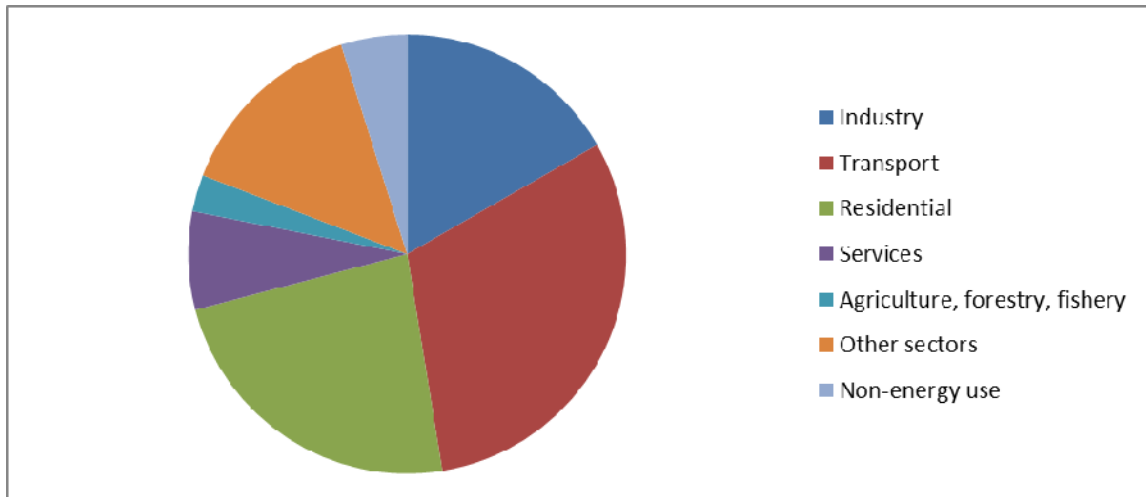


Figure 38: Bosnia and Herzegovina

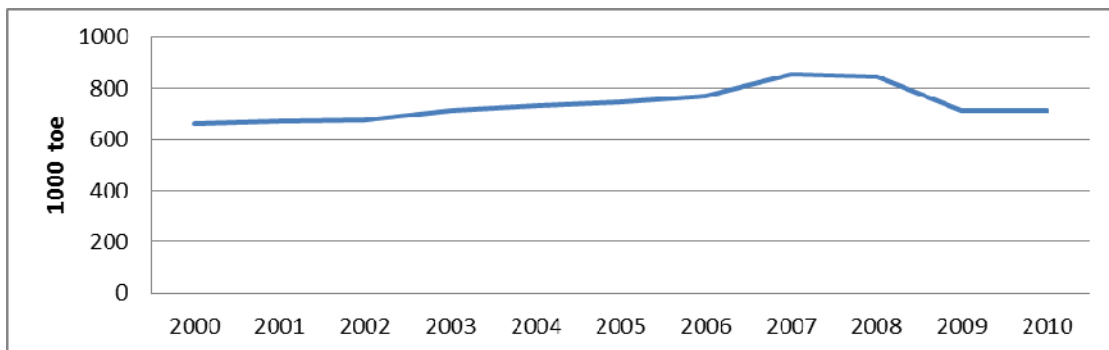
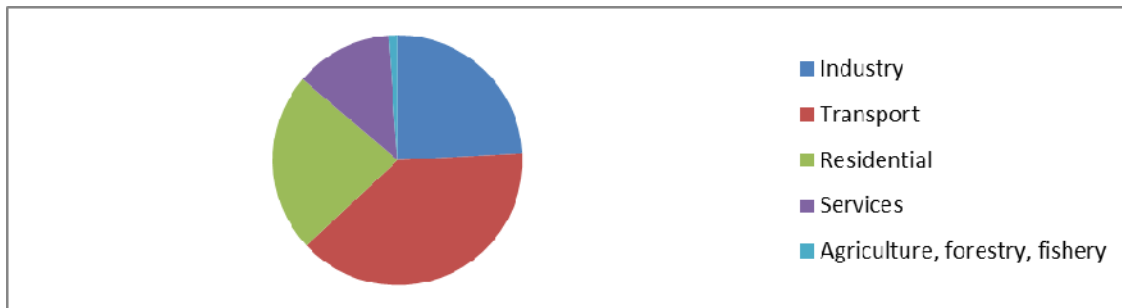


Figure 39: Montenegro

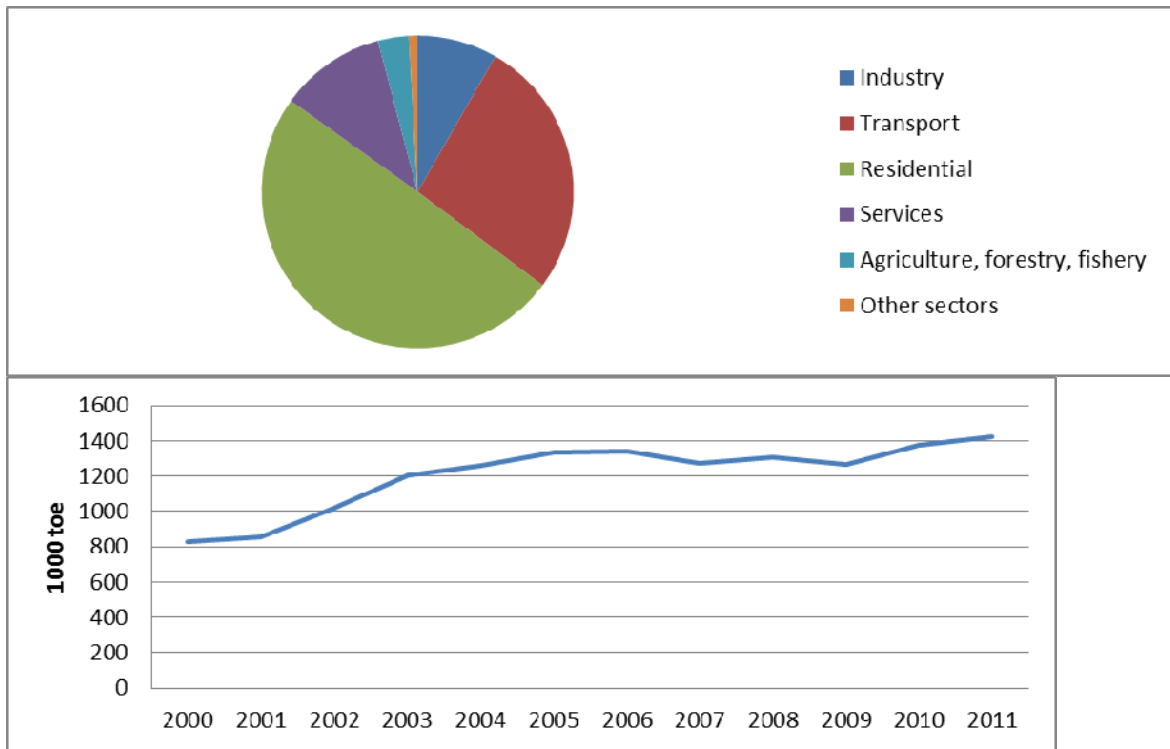


Figure 40: Republic of Moldova

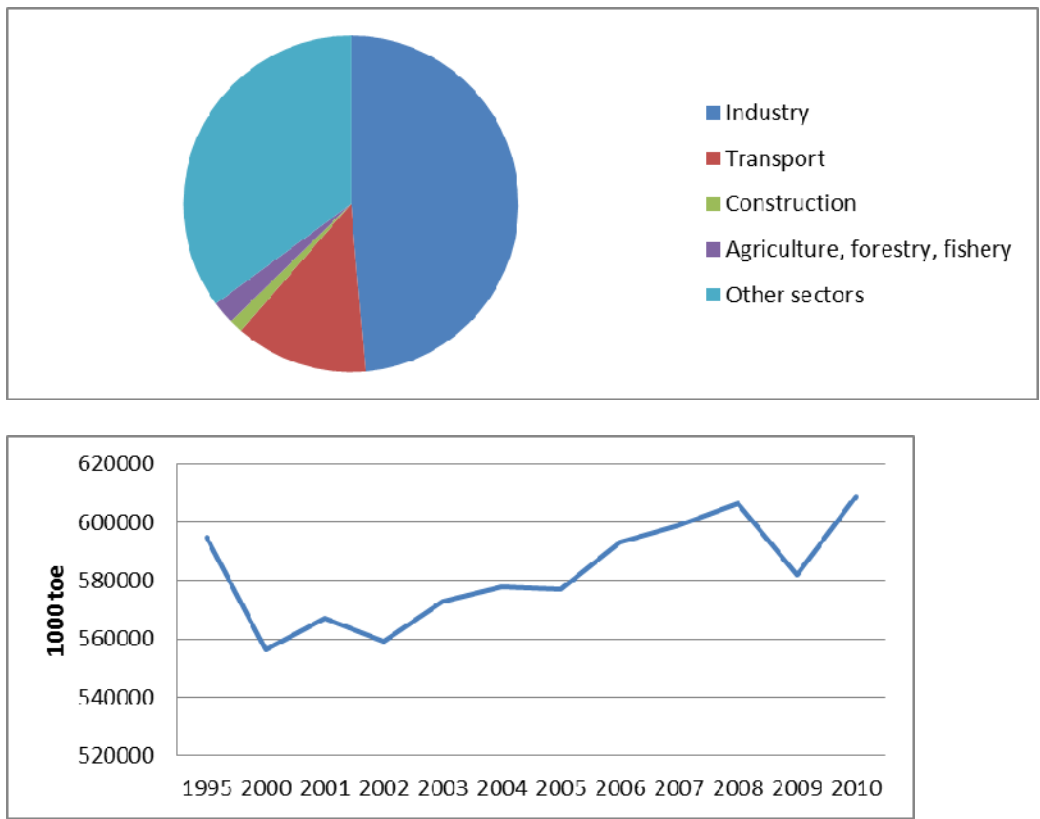


Figure 41: Russian Federation

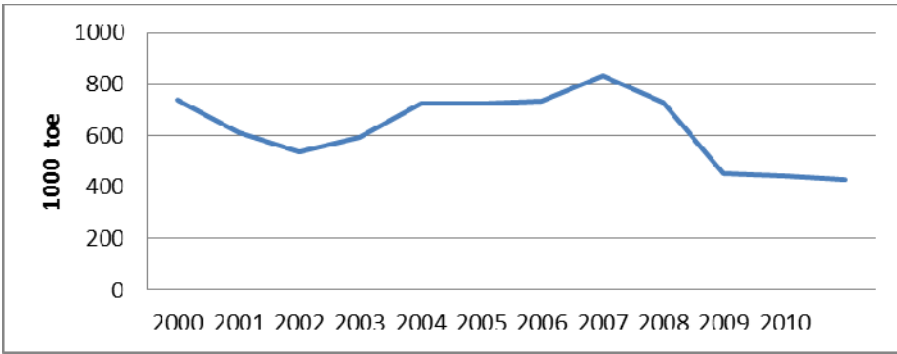
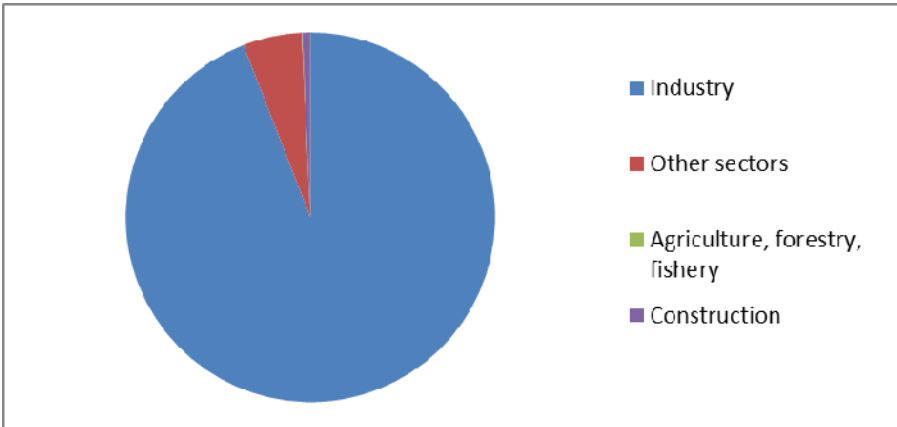
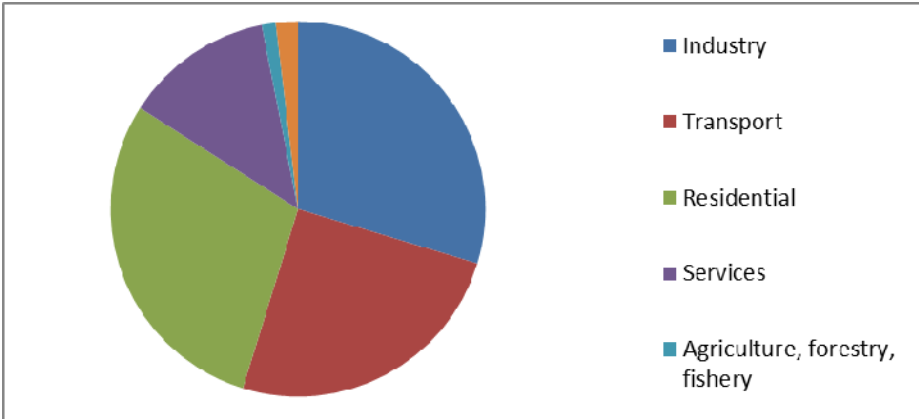


Figure 42: Tajikistan





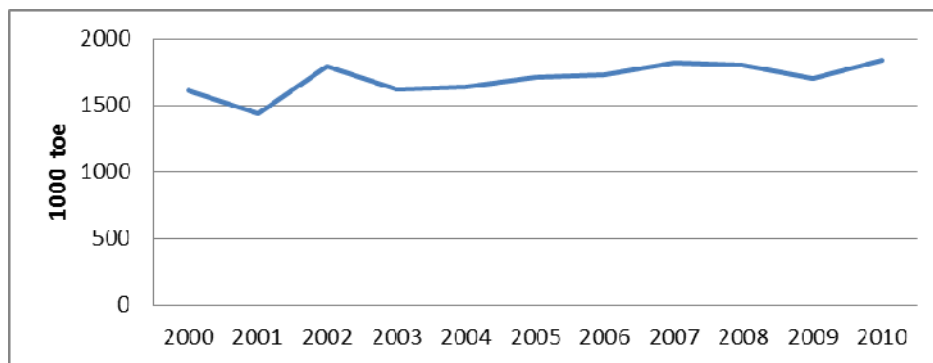


Figure 43: Former Yugoslav Republic of Macedonia

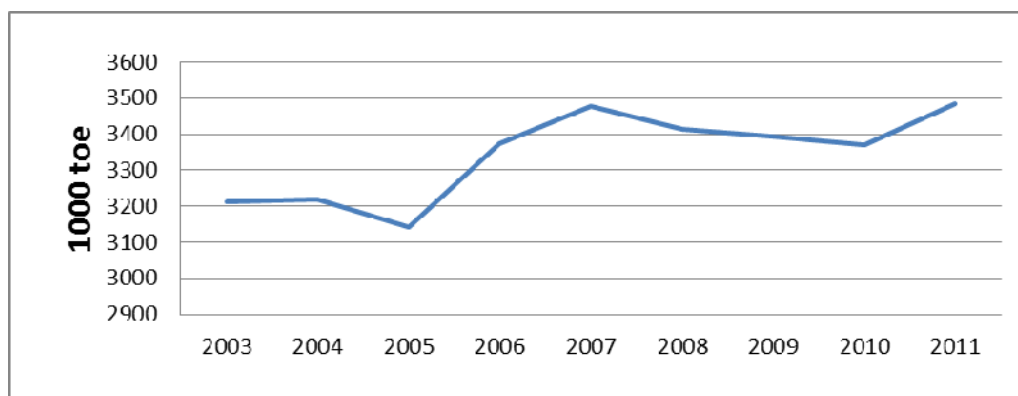
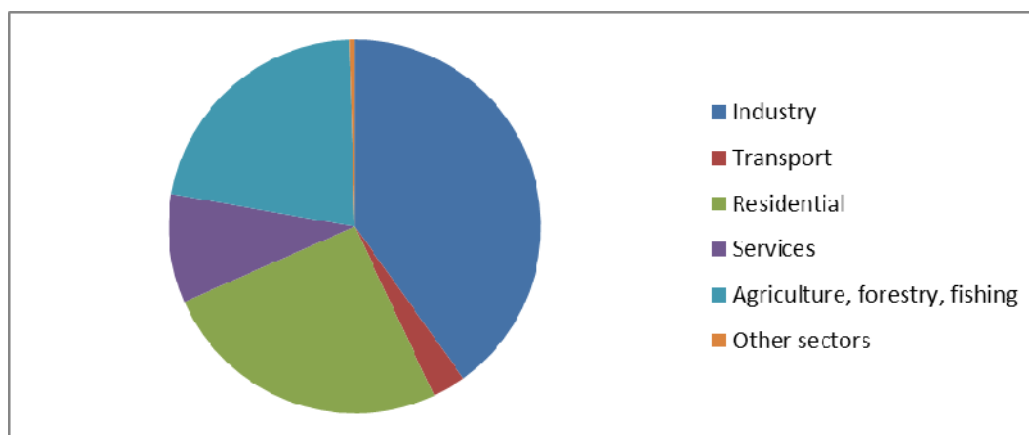


Figure 44: Uzbekistan

Azerbaijan, Bosnia and Herzegovina, the Republic of Moldova and the former Yugoslav Republic of Macedonia collect the data in accordance with the international methodology for energy statistics and Belarus carried out energy statistics data quality control in 2012 using methodology and questionnaire developed on the basis of the questionnaire of the European Statistical System DESAP.

In Armenia, the development of energy balance is at the beginning and the reported data are therefore calculated. Ukraine carried out retroactive recalculation of energy balance in 2009.

Statistical authorities are responsible for the data collection in almost all countries. In Montenegro the data is being collected by the ministry of economy, in Ukraine by statistical and customs authorities and in Uzbekistan by the state joint stock company „Uzbekenergo“.

Tajikistan does not publish information on final energy consumption. Armenia and Uzbekistan have not reported on publication of the data. In the resting countries the data are being published, however Belarus, Kyrgyzstan, Russian Federation and the former Yugoslav Republic of Macedonia have not reported on respective websites.

It has been decided by the JTF session to complement indicator “Final energy consumption” with respect to non-energy use of energy which is not taken into account in the Guidelines on environmental indicators.

#### Conclusions:

1. Dynamics of change in final energy consumption characterizes the progress achieved in the reduction of energy consumption and of negative environmental impacts.
2. The most complete data for the development of this indicator (time series for at least five years) has been reported by Armenia (calculated data), Azerbaijan, Belarus, the Republic of Moldova, Serbia, Montenegro, the former Yugoslav Republic of Macedonia and Uzbekistan.
3. Bosnia and Herzegovina and Ukraine have full data available, however for the short periods of time only (three and two years, respectively).
4. Georgia, Kazakhstan, Kyrgyzstan and Tajikistan have reported data which are not sufficient for the development of this indicator.
5. Russian Federation has filled the questionnaire as well but certain items were changed.
6. Balance of final energy consumption exceeds 100 % in Serbia and represents only 56 % in Ukraine. These data require check and clarification.
7. Both final energy consumption and consumption in sectors increases in most countries. In Tajikistan, Russian Federation, Serbia, Ukraine and Uzbekistan, the industry sector is the biggest consumer of energy, in Azerbaijan, Armenia, Belarus and the Republic of Moldova – it is residential sector and in Bosnia and Herzegovina and Montenegro – transport sector.
8. With the exception of Uzbekistan, energy consumption in agriculture, forestry and fishery represents the lowest share among economic sectors in all countries.
9. Azerbaijan, Belarus, Bosnia and Herzegovina, the Republic of Moldova and the former Yugoslav Republic of Macedonia apply international methodologies of energy statistics for the collection and quality control of the data on final energy consumption.

#### Recommendations:

1. It is recommended to Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Montenegro, the Republic of Moldova, the former Yugoslav Republic of Macedonia and Uzbekistan to use their available data for the development of indicator „Final energy consumption“.
2. It is recommended to ask the Russian Federation to apply categories of economic activity recommended in the questionnaire for the assessment of energy consumption.
3. It is recommended to ask Georgia, Kazakhstan and Kyrgyzstan to start regular collection of data for the development of this indicator.
4. It is recommended to ask Serbia and Ukraine to clarify balances of final energy consumption in their countries.

5. It is recommended to Armenia, Tajikistan and Uzbekistan to start publication of data on this indicator and to Belarus, Kyrgyzstan, Russian Federation and the former Yugoslav Republic of Macedonia to present addresses of websites where information on final energy consumption is being published.
6. It is recommended to all countries which do not do it yet to apply international methodologies of energy statistics to assure data quality for this indicator.
7. It is recommended to JTF to complement indicator “Final energy consumption” with respect to non-energy use of energy.

## 5. Total energy consumption

Country	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Armenia														
Azerbaijan														
Belarus														
Bosnia and Herzegovina														
Georgia														
Kazakhstan														
Kyrgyzstan														
Serbia														
Montenegro														
Republic of Moldova														
Russian Federation														
Tajikistan														
Former Yugoslav Republic of Macedonia														
Ukraine														
Uzbekistan														

*Note: Green colour means that the country has reported at least some data related to this indicator.*

Fifteen countries have filled the questionnaire on this indicator however with different levels of details.

The most complete data on this indicator for at least seven years have been presented by Armenia, Azerbaijan, Belarus, the Republic of Moldova, Russian Federation, Tajikistan, Serbia, Montenegro and the former Yugoslav Republic of Macedonia.

Bosnia and Herzegovina has reported data on this indicator for three years and Ukraine for two years. At the same time, Ukraine has carried out retroactive recalculation of its energy balance for 2009.

Georgia has reported energy consumption for gaseous fuels and hydro. At the same time, total energy consumption is lower than the sum of consumption from these two sources.

Kazakhstan and Kyrgyzstan have only reported on energy production, including export and import, and on total energy consumption. In Kyrgyzstan the amount of energy produced by hydro power station is higher than total energy consumption. Uzbekistan has only reported on energy production. Such data cannot be used for the development of this indicator.

According to reporting by Montenegro, energy is not being produced in the country which covers its consumption by import. At the JTF session, it has been presented by the Montenegro delegation that energy is being generated in the country and the data will be submitted. However, such data have not been sent.

According to the report by Tajikistan, the amount of energy generated in hydro power stations is negligible.

Based on the analysis of data for the last reporting year, it can be concluded that the Republic of Moldova imported 94 % of energy needed, Armenia – 75 %, former Yugoslav Republic of Macedonia – 56 %, Bosnia and Herzegovina – around 50 %, Tajikistan – 48.5 % and Serbia – 38 %. . Belarus imported 90 % of energy as well, however around half of the imported energy was re-exported as energy products (e.g. oil processing products).

The biggest exporters of energy are Azerbaijan (78 % of energy generated in the country exported), Kazakhstan (58 %) and Russian Federation (30 %).

Azerbaijan, Bosnia and Herzegovina and Ukraine, are the only countries which have reported data on fuel in bins.

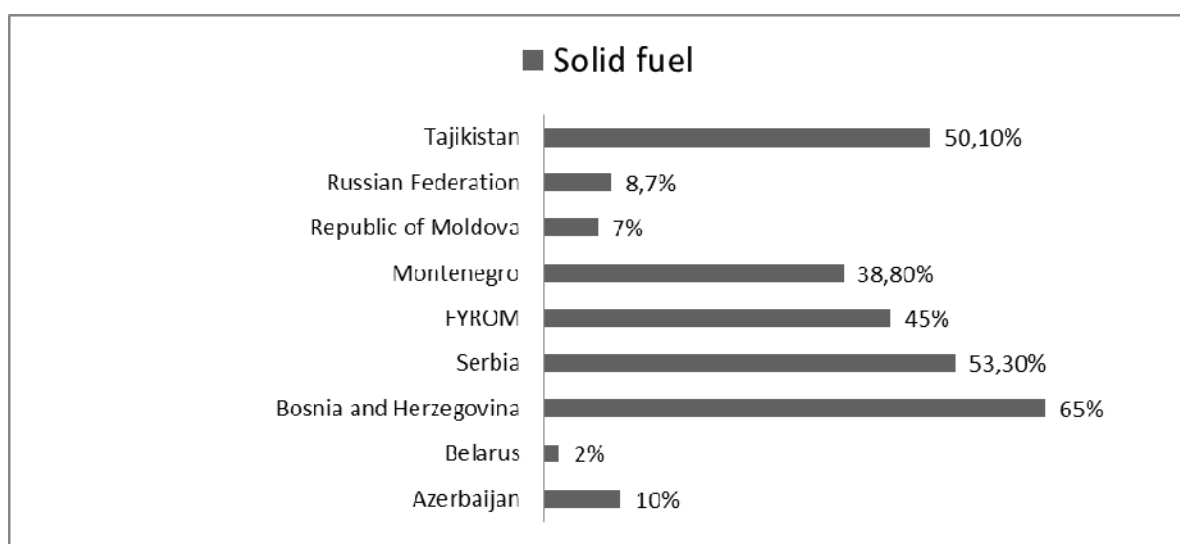
Based on the analysis of the data, it can be concluded that the energy balance gives 100 % only in the case of Armenia, Bosnia and Herzegovina, the Republic of Moldova, Serbia and Tajikistan. Russian Federation has reported 100 % balance as well, however added consumption of heat and electricity. In the resting countries the following results of energy balances can be seen:

- Montenegro – 73.5%;
- former Yugoslav Republic of Macedonia – 96%;
- Azerbaijan – 98.4%
- Belarus – 98.5%;
- Ukraine – 124%;
- Georgia – 144.5%.

The development of energy balance is in progress in Armenia and the data filled in the questionnaire are therefore calculated.

Georgia, which has informed that data quality control is missing in the country, has reported that the sum of energy from liquid fuels and from hydro power stations is higher than the total energy consumption.

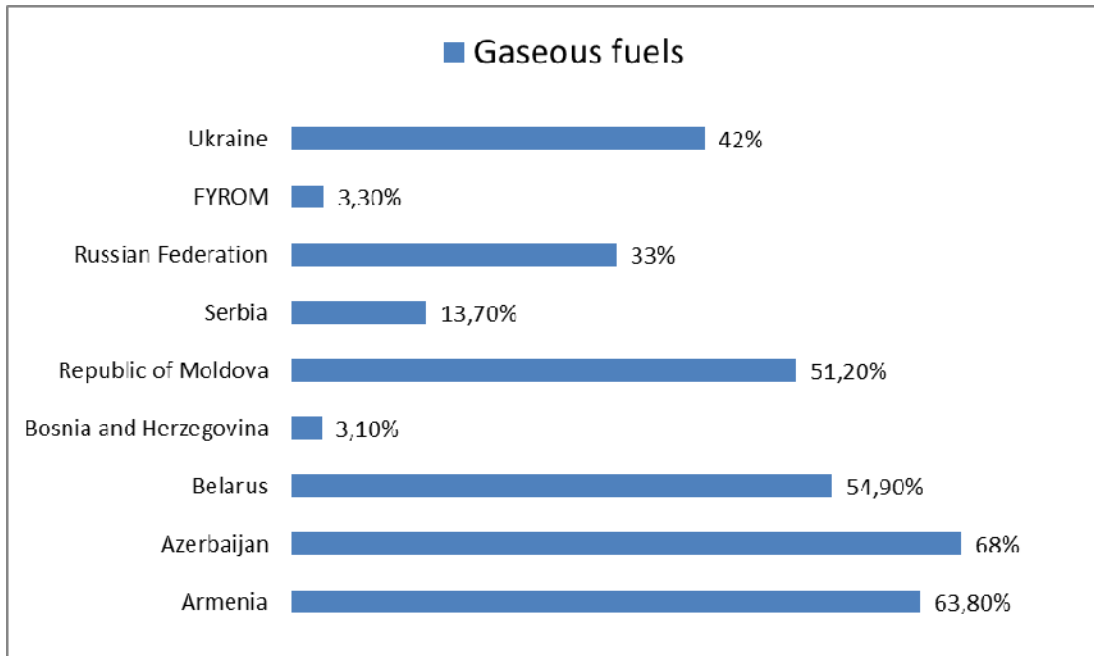
Solid fuel, which is the less environment friendly energy medium, dominates in the energy balances of Bosnia and Herzegovina (62.9 %), Serbia (57.5 %), Tajikistan (50.1 %) former Yugoslav Republic of Macedonia (45 %) and Montenegro (38.8 %). At the same time, the share of solid fuels is decreasing in former Yugoslav Republic of Macedonia and Serbia and increasing in Montenegro and especially in Tajikistan (8.5 times in terms of ktoe during 12 years). Share of solid fuels in energy balances of particular countries is presented in figure 45.



*Figure 45: Share of solid fuels in national energy balances*

Armenia and Georgia do not use solid fuels. In Azerbaijan, the share of solid fuels does not exceed 10 % (with increasing trend), in Belarus 2 % (with decreasing trend), in the Republic of Moldova 7 % (with increasing trend) and in the Russian Federation 9 % (with decreasing trend).

Energy from gaseous fuels which is considered the most environment friendly fuel dominates in Armenia, Azerbaijan, Belarus, the Republic of Moldova, Russian Federation and Ukraine. Share of gaseous fuels in energy balances of particular countries is presented in figure 46.



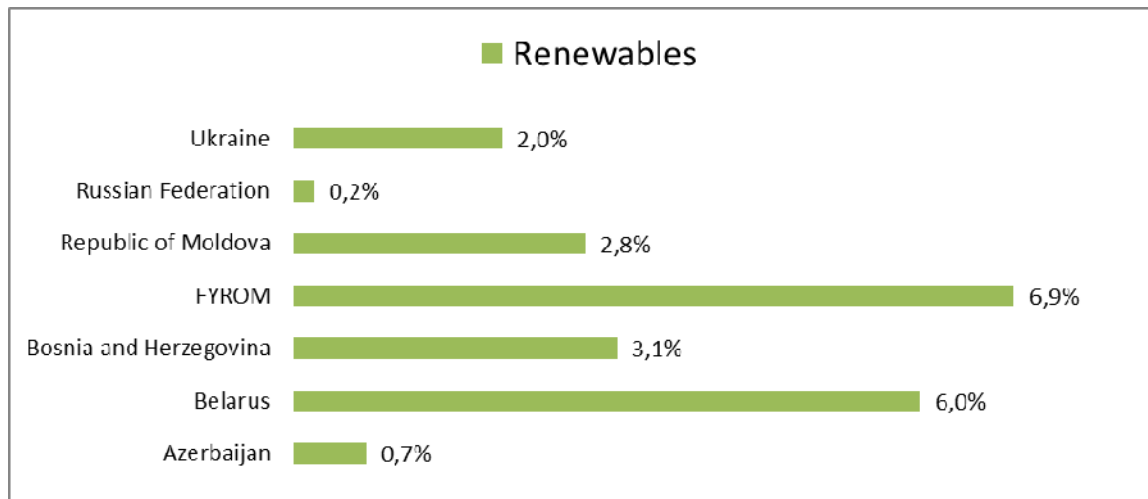
*Figure 46: Share of gaseous fuels in national energy balances*

Generation of energy in hydro power stations is characteristic for Georgia.

Armenia and Ukraine operate nuclear power stations.

Russian Federation has reported consumption of nuclear energy before the JTF session as well. However, this information has been omitted from the questionnaire after the session which has decided upon the update and specification of data. As a result, the country has limited its report to energy generated from solid, liquid and gaseous fuels and energy from biofuels and waste. Data on energy generation in hydro power stations were omitted as well.

Renewable energy generation is mostly based on biomass, biofuels and waste and represents 0.7 % in Azerbaijan, 6 % in Belarus, 2.9 % in Bosnia and Herzegovina, 6.9 % in the former Yugoslav Republic of Macedonia, 2.8 % in the Republic of Moldova, 0.3 % in the Russian Federation and 2 % in Ukraine. Share of renewable energy in energy balances of particular countries is presented in figure 47.



*Figure 47: Share of renewables in national energy balances*

Georgia does not publish data on this indicator. Armenia and Uzbekistan have not reported on data publication. Former Yugoslav Republic of Macedonia expects data publication starting from 2012. The resting countries publish the data, however Belarus, Kyrgyzstan, Russian Federation and Ukraine have not presented addresses of relevant websites.

#### Conclusions:

1. The most complete data on this indicator are available in Armenia, Azerbaijan, Belarus, the Republic of Moldova, Serbia, Montenegro and the former Yugoslav Republic of Macedonia.
2. Kazakhstan and Kyrgyzstan have only reported data on total energy consumption and Uzbekistan on energy generation. These data are not sufficient for the development of this indicator.
3. Analysis of energy balances shows that such balances give 100 % only in the case of Armenia, Bosnia and Herzegovina, the Republic of Moldova, Serbia and Tajikistan.
4. Energy balances are dominated by solid fuel in the case of Bosnia and Herzegovina, Serbia, former Yugoslav Republic of Macedonia, Montenegro and Tajikistan.
5. Energy balances are dominated by gaseous fuel which is considered the most environment friendly in the case of Armenia, Azerbaijan, Belarus, the Republic of Moldova, Russian Federation and Ukraine.
6. Renewable energy is not in place in all countries and its share in energy balances is rather low.
7. Russian Federation has omitted nuclear and hydro energy from its questionnaire.
8. Azerbaijan, Belarus, Bosnia and Herzegovina and the Republic of Moldova apply international methodologies of energy statistics in the collection and quality control of the data total energy consumption.
9. Data quality control is not in place in Georgia.

#### Recommendations:

1. It is recommended to Armenia, Azerbaijan, Belarus, the Republic of Moldova, Serbia, Montenegro and the former Yugoslav Republic of Macedonia to use available data for the development of indicator „Total energy consumption“.

2. It is recommended to Kazakhstan, Kyrgyzstan and Uzbekistan to fill the data necessary for the development of this indicator to the questionnaire.
3. It is recommended to ask Azerbaijan, Belarus, Georgia, Montenegro and former Yugoslav Republic of Macedonia to precise energy balances in their countries.
4. It is recommended to Armenia, Georgia and Uzbekistan to start publication of the data for the development of this indicator and to Belarus, Kyrgyzstan, Russian Federation and Ukraine to present the addresses of websites where information on final energy consumption can be found.
5. It is recommended to those countries which do not do it yet to apply international standards of energy statistics for the data quality control.

## 6. Average age of road motor vehicle fleet

Country	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Armenia														
Azerbaijan														
Belarus														
Bosnia and Herzegovina														
Georgia														
Kazakhstan														
Kyrgyzstan														
Serbia														
Montenegro														
Republic of Moldova														
Russian Federation														
Tajikistan														
Former Yugoslav Republic of Macedonia														
Ukraine														
Uzbekistan														

*Note: Green colour means that the country has reported at least some data related to this indicator.*

Twelve countries have filled the questionnaire on this indicator, however with different levels of details; nevertheless the data cannot be used for the development of this indicator in most cases.

The questionnaire has not been filled by Armenia, which has explained that the data on vehicle fleet and related indicators are not being published in the country, and also by Tajikistan and Uzbekistan without any explanation.



Kyrgyzstan has only reported on the total number of passenger cars together with explanation that the data on other vehicle categories in the country are secret and therefore not being published.

The most complete information on all categories of vehicles and respective age groups is available in the Republic of Moldova starting from 2002 (in the case of buses and trolleys starting from 2007) and in Ukraine starting from 2003. Shares of age groups of freight transport vehicles in per cents in the Republic of Moldova together with its change in time are presented in figure 48. Shares of age groups of buses in per cents in Ukraine together with its change in time is presented in figure 49.

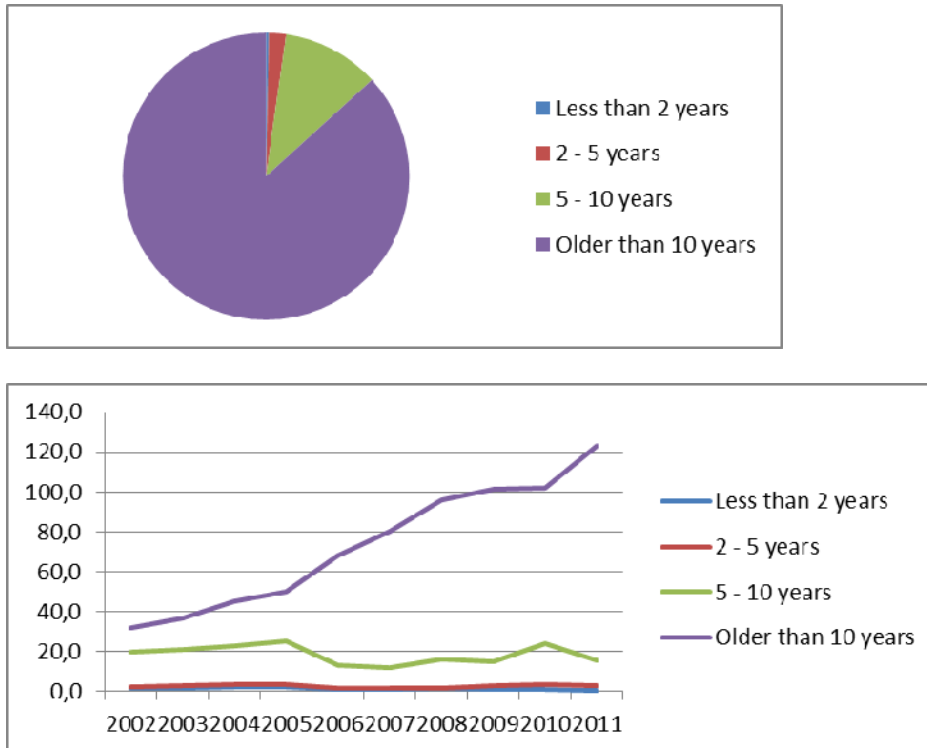
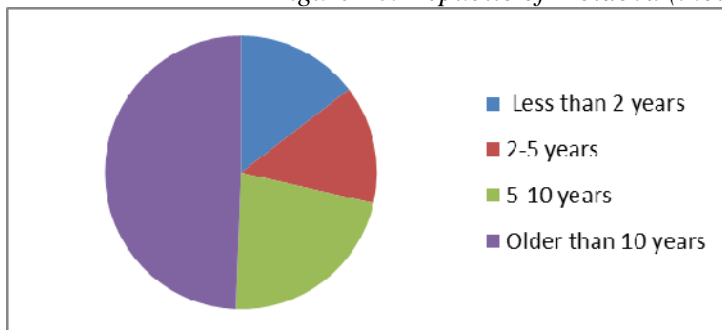


Figure 48: Republic of Moldova (thousands of vehicles)



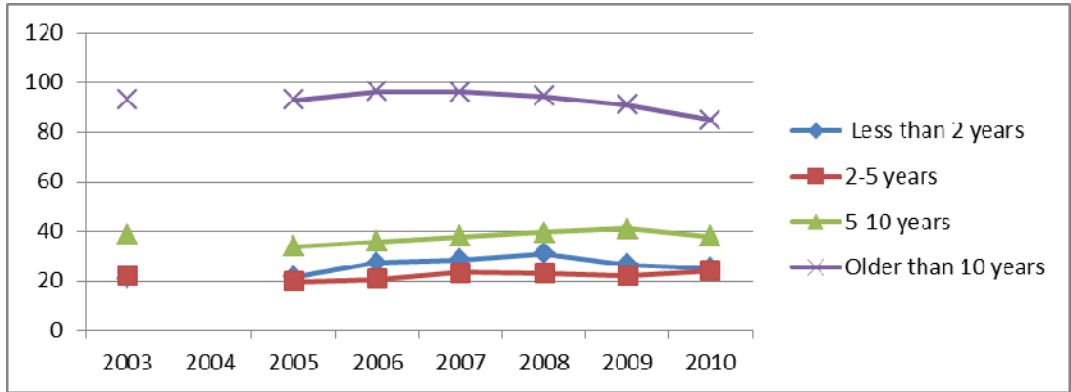


Figure 49: Ukraine (thousands of vehicles)

Former Yugoslav Republic of Macedonia has filled all items of the questionnaire starting from 1990 with the exception of the number and age of city buses and trolleys. Shares of age groups of passenger cars in per cents in Macedonia together with its change in time is presented in figure 50.

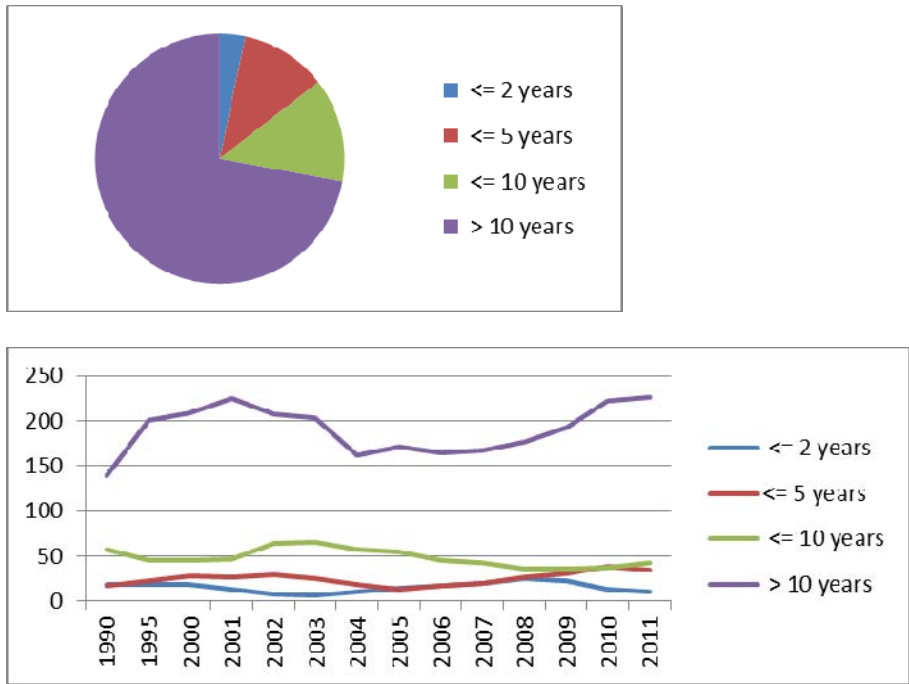


Figure 50: Former Yugoslav Republic of Macedonia (thousands of vehicles)

Starting from 2000, Russian Federation has available full time series of data with the exception of vehicles „younger“ than two years and of road tractors.

Serbia has reported data for the whole reporting period presenting mainly passenger cars, coaches and trolleys older than 5 – 10 years.

Georgia and Montenegro have reported data on total numbers of vehicles without break down into age categories.

Belarus has available data on passenger cars, buses and freight transport vehicles including road tractors broken down by age categories for 2011 only. Similar data for this period but for passenger cars only are available in Kazakhstan. Data from Bosnia and Herzegovina cover the period 2010 – 2011.

In Azerbaijan, Belarus, Kyrgyzstan, Serbia, the Republic of Moldova, Russian Federation and Ukraine, numbers of buses are being collected without distinguishing between city buses and coaches. The same countries register trolleys separately, with the exception of Azerbaijan and Montenegro, where trolleys are not being used.

In Azerbaijan and Russian Federation, data on vehicle age is being collected broken down among the following age groups: 0 – 5 years, 5 – 10 years and older than 10 years; in Ukraine 0 – 3 years, 3 – 5 years, 5 – 10 years, 10 – 15 years and older than 15 year. Serbia has not reported on vehicles younger than 5 years.

Number of passenger cars has increased in all reporting countries during last 22 years; from 1.3 times in Georgia and former Yugoslav Republic of Macedonia to 4.4 times in Kazakhstan.

Azerbaijan, Kazakhstan, the Republic of Moldova, Russian Federation and Ukraine have reported trends in upgrade of bus fleets taking into account both international and city buses. For the 22 years period of time, the highest increase of bus fleet can be seen in Georgia – 3.6 times, the lowest in the Russian Federation – 1.4 times. In Serbia, the size of bus fleet remains at the constant level.

The highest increase of freight vehicle fleet can be seen in Serbia – 2.2 times. In parallel, such fleet has decreased 1.2 times in Georgia.

In those countries which have reported on age categories of vehicles, the share of passenger cars older than 10 year in the passenger cars fleet dominates representing at this moment: In Azerbaijan 62%, in Belarus 53%, in Bosnia and Herzegovina 74%, in Kazakhstan 79%, in the Republic of Moldova 75%, in Serbia 87%, in the former Yugoslav Republic of Macedonia 72 % and in Ukraine 51 %. Russian Federation is the only country where cars older than 10 years represent 48% (figure 51).

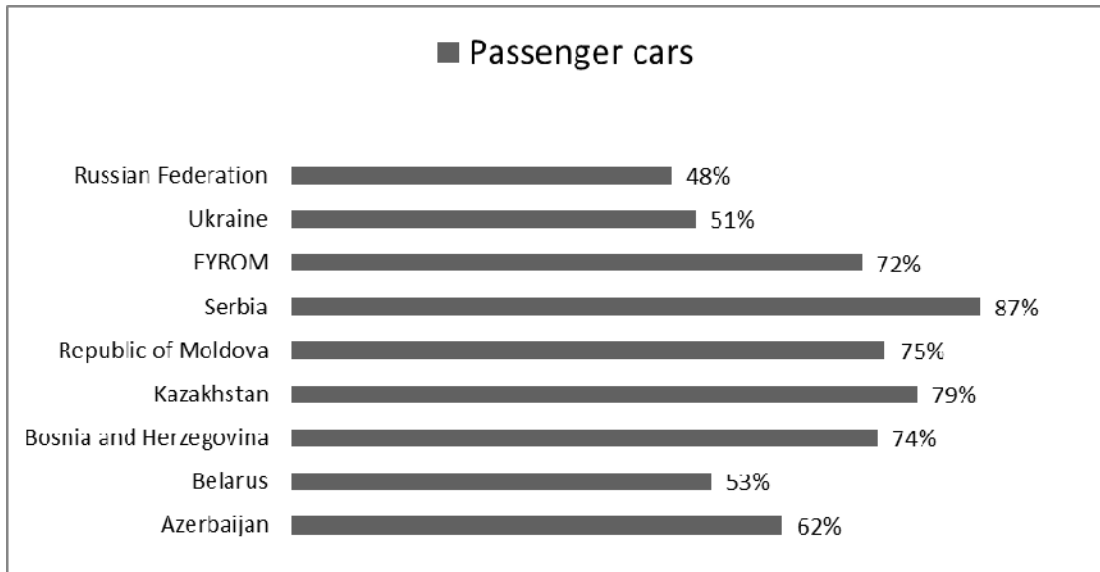


Figure 51: Passenger cars older than 10 years

Vehicles older than 10 years dominate in the category of buses as well: In Azerbaijan and Bosnia and Herzegovina 77%, in the Republic of Moldova 90% and in Serbia 86%. The only exception can be seen in Belarus (main group of buses – 53 % - belong to the age category 5 – 10 years) and the Russian Federation – 48 % of buses within this age category (figure 52).

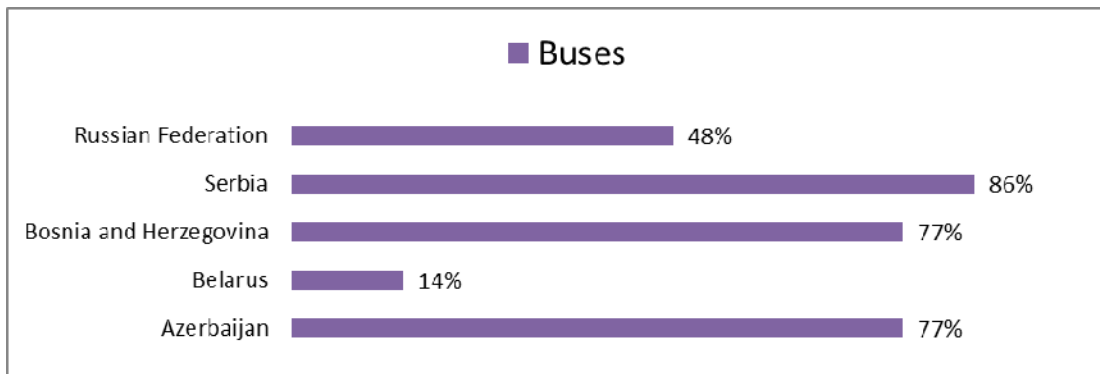
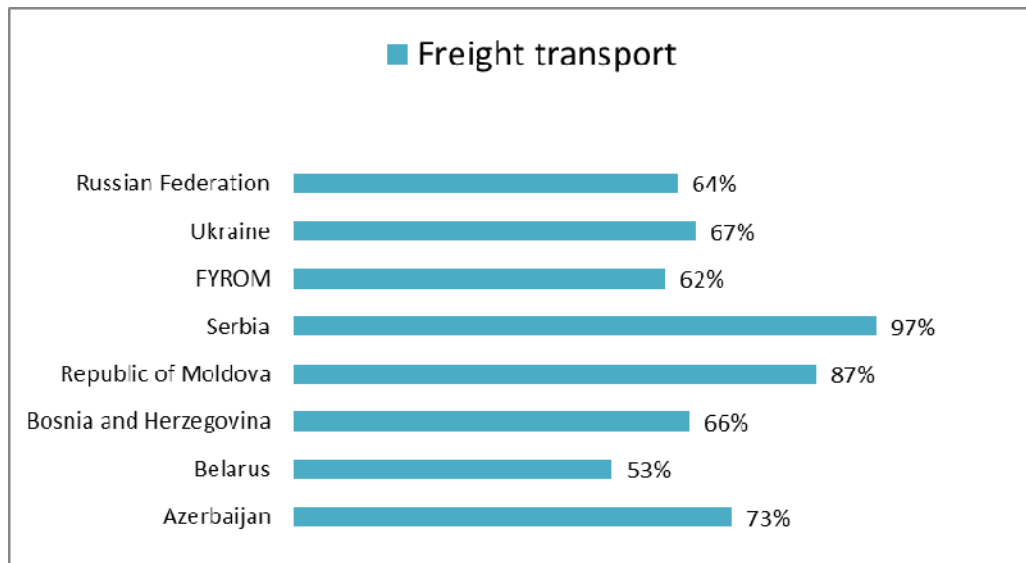


Figure 52: Buses older than 10 years

The average age of freight vehicle fleet exceeds 10 years in all countries: In Azerbaijan 73%, in Belarus 53%, in Bosnia and Herzegovina 66%, in the Republic of Moldova 87%, in the Russian Federation 64% and in Serbia 97%, in the former Yugoslav Republic of Macedonia 62 % and in Ukraine 67 % (figure 53).



*Figure 53: Freight vehicles older than 10 years*

Serbia has reported additional information on gradual introduction of fuel complying with the Euro standards in the case of passenger cars.

In most countries responsibility for collection and control of data lies with internal affairs (interior) authorities. In Azerbaijan and Bosnia and Herzegovina, this competence is given to statistical authorities at present.

In the Republic of Moldova, this indicator is being developed in accordance with the international methodology Glossary transport.

Data on size and composition of road vehicle fleet are being published in various types of publications in Azerbaijan, Bosnia and Herzegovina, Georgia, Kazakhstan, the Republic of Moldova, Serbia, Montenegro and Ukraine. The former Yugoslav Republic of Macedonia has informed that it plans to publish the information on vehicle fleet size and age regularly starting from 2012.

Kyrgyzstan and the Russian Federation have reported on publication of this data as well, however without specifying addresses of websites. Belarus has informed that such publications are not periodic.

#### Conclusions:

1. Regardless that most countries have reported certain data, these are not sufficient for the development of this indicator in the majority of cases.
2. The highest data coverage for the development of this indicator can be seen in the case of the Republic of Moldova, which applies the international methodology Glossary transport, and also of Ukraine.
3. With several gaps, relatively full data series are available in the Russian Federation, Serbia and the former Yugoslav Republic of Macedonia .
4. Data on size and composition of road vehicle fleet are not being published at all in Armenia and Kyrgyzstan while in Tajikistan this data is only available for internal use by the state administration. Uzbekistan has not filled this part of questionnaire without any explanation.

5. Vehicle statistics of Azerbaijan, Serbia, Russian Federation and Ukraine do not include age category 0 – 2 years.
6. In most reporting countries data on buses is being collected as total number without distinguishing between city buses and coaches. Data on trolleybuses is collected separately from city buses.
7. In the countries reporting on this indicator, the size of fleet has increased in the case of passenger cars, trucks and also buses. During the 22 years time period, the highest increase of the number of passenger cars can be seen in Kazakhstan – 4.4 times. The size of freight vehicle fleet has slightly decreased in Georgia only.
8. In most countries more than 50 % of road vehicles of all categories are older than 10 years. Less than 50 % can only be seen in the Russian Federation (passenger cars and buses) and Belarus (buses) and Ukraine (buses).
9. Internal affairs (interior) authorities are responsible for data collection and quality control in the majority of countries.

#### Recommendations:

1. It is recommended to the Republic of Moldova and Ukraine to use available data for the development of indicator „Average age of road motor vehicle fleet“.
2. It is recommended to the former Yugoslav Republic of Macedonia to add missing data on buses and to use these data for the development of this indicator afterwards.
3. It is recommended to the countries to apply the international methodology Glossary transport in the development of this indicator.
4. It is recommended to ask Kyrgyzstan and the Russian Federation to inform on the addresses of websites on which information related to this indicator is being published.

## II. FINAL CONCLUSIONS

Evaluation of the data on specific indicators reported by particular countries is presented in the summary table below. Analysing the data reported by the countries for the development of indicators, following conclusions can be made:

- All countries have available long-time series of data on air temperature and atmospheric precipitation on their territories. However, from the point of view of the development of respective indicators, only 9 from the total of 15 reporting countries have reported sufficient information. The main problem of the resting 6 countries lies in absence of information on long-term average temperatures and /or on annual average temperatures for 1990 – 2011.
- As for the indicator „Drinking water quality“, Ukraine is the only country which has reported data on water quality from all requested sources including open reservoirs where water is being used as drinking water without any treatment. Georgia, Serbia and Montenegro do not have information on quality of ground waters used for the preparation of drinking water. It has been decided by the JTF session to complement the questionnaire on this indicator with the data on the number of water sources broken down by categories as well as to relate quality of drinking water to the respective shares of population supplied with.
- Nine countries have reported information sufficient for the development of indicators “Final energy consumption” and “Total energy consumption”.
- However, Kazakhstan and Kyrgyzstan have only reported data on energy generation, including export and import, and on total energy consumption without brokerage by economic sectors while Georgia has only reported on several items of the questionnaire. Several countries have presented energy balances exceeding 100 %.

Joint Task Force on Environmental Indicators has recommended to complement indicator “Final energy consumption” with respect to non-energy use of energy and also recommended to those countries which do not do it yet to apply international standards of energy statistics for the data quality control.

- Regardless the fact that most countries have reported certain data for the development of indicator “Average age of road motor vehicle fleet“, these data are not sufficient for the development of this indicator in the majority of cases.
- The most complete data is available in the Republic of Moldova, which applies international methodology Glossary transport and also in Ukraine. Transport statistics in many countries do not specify age category 0 – 2 years. A half of countries does not distinguish between city buses and coaches.

None of countries has reported full data on all requested indicators.

### Assessment of data on indicators reported by countries

Indicator	Armenia	Azerbaijan	Belarus	Bosnia and Herzegovina	Georgia	Kazakhstan	Kyrgyzstan	Moldova	Republic of Montenegro	Russian Federation	Serbia	Tajikistan	FYROM	Ukraine	Uzbekistan
<b>Air temperature</b>							?								?
<b>Atmospheric precipitation</b>				?			?								?
<b>Drinking water quality</b>					?				?		?				
<b>Final energy consumption</b>					?	?	?								
<b>Total energy consumption</b>					?	?	?								
<b>Average age of road motor vehicle fleet</b>					?	?	?		?						

	Full information reported	All parameters requested for the development of indicator are complete
	Information reported partially	Parameters requested for the development of indicator are not complete
?	Reported information is not sufficient	Reported information is not sufficient for the development of indicator
	Information not reported	