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AN OVERVIEW OF SUSTAINABLE DEVELOPMENT INDICATORS

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Abstract:
Sustainable development requires better quality of life for present and future generations. Additional data is required to measure lasting progress, that tracks economic growth. The objectives that take these aspects into consideration should be accompanied by economic, social, environmental and demographic indicators. Thus, sustainable development indicators satisfy these requirements. The articles makes an analysis of the main indicators of sustainable development. Even though it is important to observe them at a macro, European level, it is necessary to take into consideration the specific situation existing at a local and regional level, as well. Equally important is the integration of objectives aimed at sustainable development into the national policies. Economic improvement can be achieved through jobs and sustainable consumption.

Key words: Sustainable development, environment, Romania, European Union

JEL classification: Q01, Q56

1. INTRODUCTION

Issues relating to sustainable development have emerged for the first time in 1972 by the Club of Rome Report - Limits Growth. This report summarizes the data on population growth, the impact of industrialization on the effects of pollution, food production and resource depletion trends. The report also draws attention to economic issues. Continuing on a separate approach, on the one hand, the economic and social developments, namely the consequences of human activity on the natural, not benefits. Thus, it is concluded that this development model cannot be sustained long term.

In these circumstances, the international community began to be concerned with the issue of the relationship between humankind and the natural environment.

Subsequently, based on the first UN Conference on the Environment (Stockholm, 1972), it was held meeting of the World Commission on Environment and Development.

Report of the Commission was entitled Our Common Future. It was presented in 1987 by Brundtland and offered first accepted definition of sustainable development – „development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs".

There followed several high-level meetings. Such a meeting was World Conference on Environment and Sustainable Development in Rio de Janeiro (1992). Sustainable development is the result of an integrated approach to policy and decision. In this approach, environmental protection and economic growth are considered complementary and mutually dependent on each other.

It notes that the concept of sustainable development has revealed the complex issues of sustainable development. They have acquired a global political dimension and are addressed at the highest level.

In 2012, the United Nations Conference on Sustainable Development (‘Rio+20') renewed the global political commitment to taking a holistic approach to tackling modern world challenges. One of the most important outcomes is that the world is currently debating the concrete agenda for the future – Sustainable Development Goals – which build on the current Millennium Development Goals. The European Union already has a lot to say in this debate with its more than 100 Sustainable Development Indicators. Eurostat's quick picture of the mixed trends of Sustainable Development in the EU is an important contribution to this debate.

2. SUSTAINABLE DEVELOPMENT INDICATORS

Following developments, sustainable development and expanded scope, from a pillar, the environmental, and the other pillars: the economic and social. Thus, the Johannesburg Declaration made reference to this interdependence. Economic pillar is considering issues related to economic efficiency, profitability in the short, medium and long-sectoral avoid imbalances that can affect agricultural and industrial production. Social pillar concerns the welfare of all members of a community, equity and social justice, inclusiveness, cohesion and social solidarity, health and education. Environmental pillar aims at maintaining a stable base of natural resources and biodiversity.

Indicators of sustainable development can be divided into two groups. One group for the aggregated single index where just one variable is reported and the second group for the indicator set where many variables are reported. Whatever the division is made, it is expected that policymakers to make sense of this data, to make better decisions.

There are certain principles to be taken into account when discussing sustainable development. Thus, according to the World Bank, a principle envisages protection of human health, animals and plants. Also seeking the conservation of biodiversity and landscape. They assume control of current anthropogenic phenomena and processes polluting production and consumption patterns. It also wants the conservation of natural ecosystems and ecological restoration of degraded economic activities.

Another principle concerns the effectiveness of natural capital, human and financial. It seeks natural capital efficiency by exploiting natural resources in the interest of future human generations. The key to economic development is the human capital efficiency. In this respect, entrepreneurship and creativity is important. To obtain maximum value and valuing human capital envisages financial capital efficiency.

To fight poverty and reduce the gap in living standards between members of a community is so important to apply the principle of equity between generations and within the same generation. Also important are actions to move towards productive activities, and for traditional pursuits.

Sustainable development indicators, abbreviated as SDI, aim to measure sustainable development over longer periods of time. The sustainable development indicators are grouped into 10 subject categories: Socioeconomic development; Sustainable consumption and production; Social inclusion; Demographic changes; Public health; Climate change and energy; Sustainable transport; Natural resources; Global partnership; Good governance.

2.1. SOCIOECONOMIC DEVELOPMENT

The operational indicators of this theme are: economic development, innovation, competitiveness and eco-efficiency, employment. The headline indicator of the ‘socioeconomic development’ theme is GDP. Gross domestic product (GDP) includes goods and services that have markets (or which could have markets) and products which are produced by general government and non-profit institutions.

In 2014, compared to 2005, GDP in EUR per habitant for the EU rose by 4.44% to 25900 EUR per habitant. In Romania, for the same period, it increased by 35.29% to 6900 EUR per habitant. Among the 28 EU member states, Romania is the second place, ahead of Bulgaria.

Luxembourg is ranked first (78200), Denmark (43700), Sweden (40300), Ireland (39500). Among European countries, non-EU Norway has 67500 EUR per habitant, and Switzerland has 57200 EUR per habitant.

The following figure presents the variation of GDP for the EU and Romania, for the period 1995-2014, in EUR per habitant.

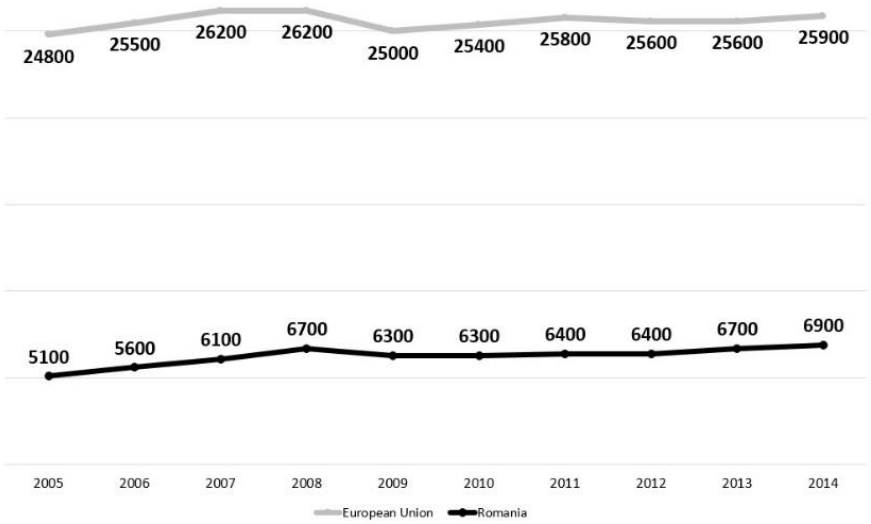

Figure no. 1. The variation of GDP for the EU and Romania, for the period 1995-2014 (EUR per habitant)

Source: Own elaboration using data from http://ec.europa.eu/eurostat

For Romania, GDP increased to 6900 EUR, in 2014.

2.2. SUSTAINABLE CONSUMPTION AND PRODUCTION

The operational indicators of this theme are: resource use and waste, consumption patterns, production patterns. The headline indicator of the 'sustainable consumption and production' theme is resource productivity. Resource productivity is GDP divided by domestic material consumption (DMC). DMC measures the total amount of materials directly used by an economy. It is defined as the annual quantity of raw materials extracted from the domestic territory of the focal economy, plus all physical imports minus all physical exports.

For the period 2000-2014, some countries recorded increases and others decreases. Thus, increases the higher resource productivity have registered: Spain (113%), Cyprus (94%), Ireland (93%), Italy (86%). Decreases were recorded for the following countries: Romania (-33%), Estonia (-26%), Malta (-4%).

For 2014, the highest values correspond to the following countries (EUR/kg): Luxembourg (3.81), Netherlands (3.68), United Kingdom (3.49), Italy (3.05). The lowest values: Bulgaria (0.28), Romania (0.32), Estonia (0.45), Latvia (0.51), Poland (0.62).

The following figure presents the variation Resource productivity for the EU and Romania, for the period 2000-2014, in Euro per kilogram.

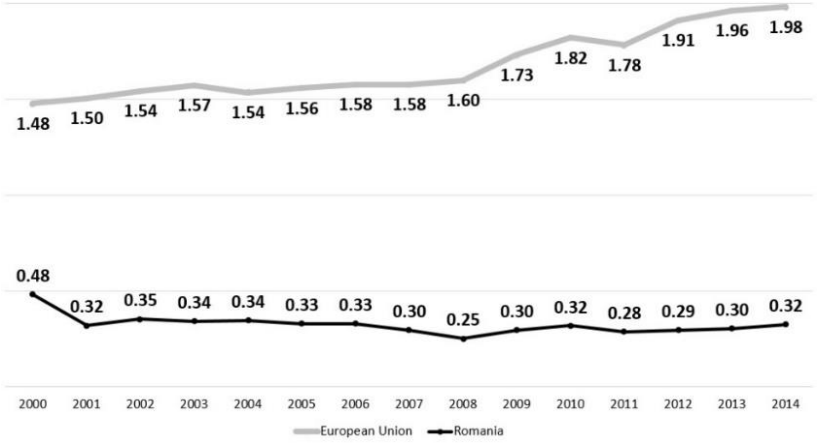

Figure no. 2. The variation Resource productivity for the EU and Romania, for the period 2000-2014 (Euro per kilogram)

Source: Own elaboration using data from http://ec.europa.eu/eurostat

SOCIAL INCLUSION

The Europe 2020 strategy promotes social inclusion, in particular through the reduction of poverty, by aiming to lift at least 20 million people out of the risk of poverty and social exclusion.

The operational indicators of this theme are: monetary poverty and living conditions, access to labour market, education. The headline indicator of the 'social inclusion' theme is persons at risk of poverty and social exclusion. This indicator corresponds to the sum of persons who are: at risk of poverty or severely materially deprived or living in households with very low work intensity.

For the period 2000-2014, the percentage of people at risk of poverty or social exclusion varied from country to country. In countries where People at risk of poverty or social exclusion has increased are: Greece (30%), Estonia (20%), Italy (13%), Sweden (13%). This percentage decreased: Lithuania (-20%), Bulgaria (-19%), Latvia (-14%).

At EU level in 2014, the highest percentages of People at risk of poverty or social exclusion of the population they hold the following countries: Romania (40.2), Bulgaria (40.1), Greece (36), Latvia (32.7), Hungary (31.8). The countries with the lowest percentages are: Czech Republic (14.8), Netherlands (16.5), Sweden (16.9).

In 2014, most people in the category of people at risk of poverty or social exclusion are in: Italy (17.15 million persons), Germany (16.51 million persons), United Kingdom (15.19 million persons), Spain (13.40 million persons), France (11.54 million persons).

2.4. DEMOGRAPHIC CHANGES

Another important consideration is given to demographic change. Due to the increasing number of older people is important their employment rate.

The operational indicators of this theme are: demography, old-age income adequacy, public finance sustainability. The headline indicator of the 'demographic changes' theme is employment rate of older workers.

The employment rate of older workers is calculated by dividing the number of persons in employment and aged 55 to 64 by the total population of the same age group. The indicator is based on the EU Labour Force Survey. The survey covers the entire population living in private households and excludes those in collective households such as boarding houses, halls of residence and hospitals.

Compared to 2002, 2014, increased employment rates of older workers The following countries: Slovakia, Bulgaria, Germany, Poland, Hungary. Thus, at higher percentages 2014 is recorded in: Sweden (74%), Germany (65.6%), Estonia (64%), Denmark (63.2%). Countries where

this percentage is low are: Greece (34%), Slovenia (35.4%), Croatia (36.2%), Malta (37.8%). There are some countries where the rate of increase was higher for females (Slovakia, Bulgaria, Belgium, Italy) and others in which the percentage increase was higher for males (Poland, Germany, Hungary).

For the 2002-2014 period, compared to the EU and Romania, the situation is shown in the following figure:

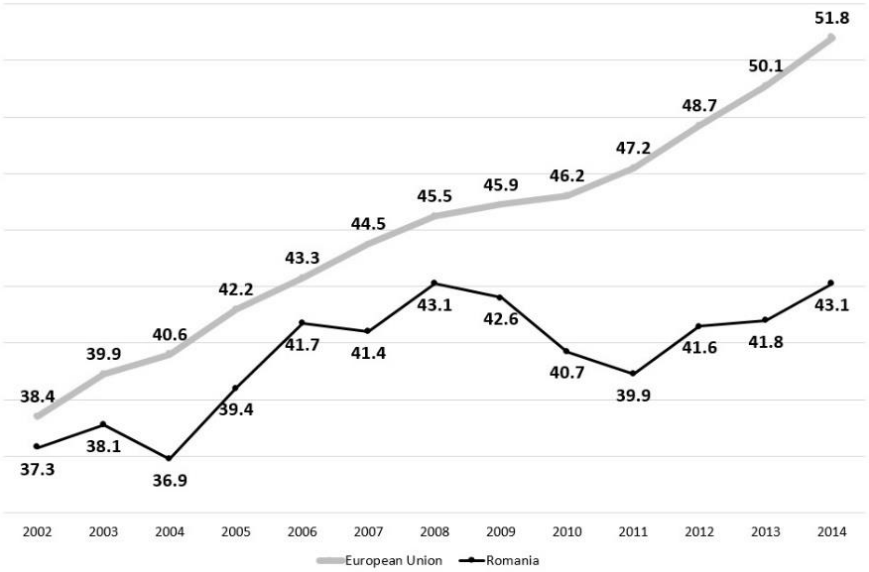

Figure no. 3. The employment rates of older workers, for the EU and Romania, for the 2002-2014 period (%)

Source: Own elaboration using data from http://ec.europa.eu/eurostat

2.5. PUBLIC HEALTH

The operational indicators of this theme are: health and health inequalities, determinants of health. The headline indicator of the 'public health' theme is healthy life years.

The indicator Healthy Life Years (HLY) at birth measures the number of years that a person at birth is still expected to live in a healthy condition. Life expectancy at birth is defined as the mean number of years still to be lived by a person at birth, if subjected throughout the rest of his or her life to the current mortality conditions.

For Romania, the variation Healthy Life Years, for females, is as follows:

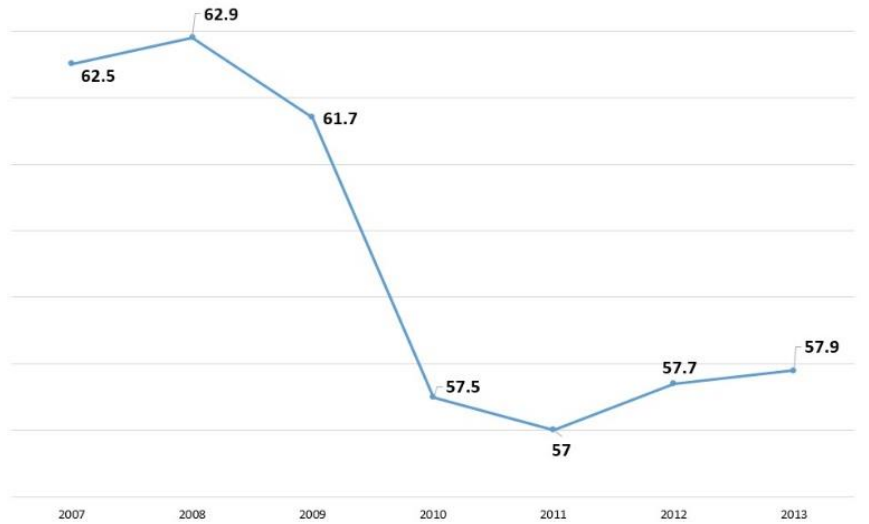

Figure no. 4. The variation Healthy Life Years, for females (years)

Source: Own elaboration using data from http://ec.europa.eu/eurostat

There is a decrease values to 62.5 years in 2007 to 57.9 years in 2013.

The highest decreases were registered in Denmark, the Netherlands and Bulgaria. Increases were registered in Portugal, Lithuania, Estonia, Cyprus, Ireland and Hungary.

For males, the variation for the period 2007-2013 is shown in the following figure:

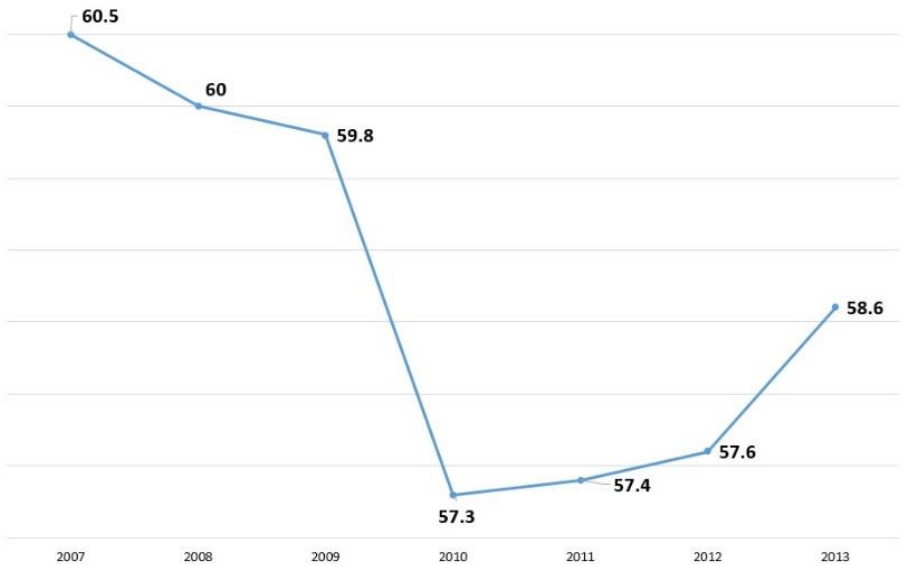

Figure no. 5. The variation Healthy Life Years, for males (years)

Source: Own elaboration using data from http://ec.europa.eu/eurostat

For males, there is a decrease to 57.3 years in 2010, then an increase to 58.6 years in 2013. And for males, decreases were recorded in Denmark, the Netherlands and Bulgaria. Increases were registered in Portugal, Lithuania, Estonia, Ireland and Hungary.

In terms of life expectancy for females at EU level is an increase of about 3% for the period 2004-2014. The highest increases in life expectancy for females were registered in Estonia (5%), Romania (4.8%), Latvia (4.5%), Slovenia (4.1%). However the higher values of life expectancy for females in 2014, can be found in the following countries: Spain (86.2 years), France (86 years), Italy (85.6 years), Luxembourg (85.2 years), Cyprus (84.7 years). The gloomiest countries are: Bulgaria (78 years), Romania (78.7 years), Latvia and Hungary (79.4 years), Lithuania (80.1 years).

Life expectancy for males at EU level is an increase of approximately 3.86% for the period 2004-2014. The highest increases in life expectancy for males were recorded in Estonia (8.5%), Slovenia (6.4%), Cyprus (5.8%), Latvia (5.3%), Romania (5,3%).

However the higher values of life expectancy for males in 2014, can be found in the following countries: Cyprus (80.9 years), Italy (80.7 years), Spain and Sweden (80.4 years). The lowest values are in countries: Latvia (69.1 years), Lithuania (69.2 years), Bulgaria (71.1 years), Romania (71.4 years), Hungary (72.3 years).

2.6. CLIMATE CHANGE AND ENERGY

The operational indicators of this theme are: climate change, energy. The headline indicator of the 'public health' theme is healthy life years.

This indicator shows trends in total man-made emissions of the Kyoto basket of greenhouse gases. Greenhouse gas emissions (in CO2 equivalent) indexed to 1990, for period 1990-2013, in Romania, is presented in figure:

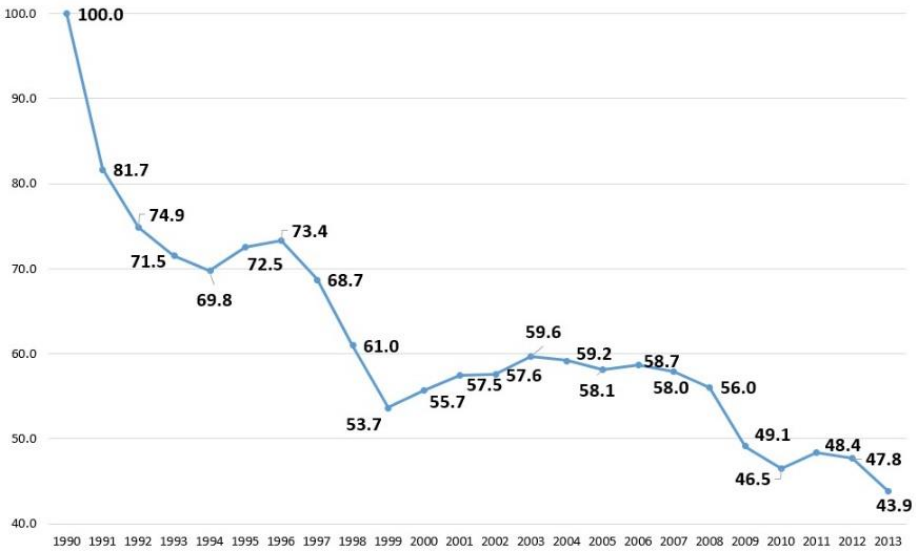

Figure no. 6. Greenhouse gas emissions indexed to 1990, for period 1990-2013, in Romania (CO2 equivalent)

Source: Own elaboration using data from http://ec.europa.eu/eurostat

For the period 1990-2013, for Romania decline it is about 56% and decrease the EU is only 20%.

At EU level, the sharp decrease of Greenhouse Gas Emissions were recorded 58% for Latvia and Lithuania. And, in several countries the percentage of Greenhouse Gas Emissions increased in the period 1990-2013. Thus, the following countries have recorded increases in the percentages of Greenhouse Gas Emissions: Cyprus (144%), Malta (141%), Spain (113%), Portugal (110%), Ireland (105%), Austria (103%).

Another indicator for this subcategory is the Primary energy consumption. By Primary Energy Consumption is meant the Gross Inland Consumption excluding all non-energy use of energy carriers. This quantity is relevant for measuring the true energy consumption and for comparing it to the Europe 2020 targets.

The variation, for the period 2005-2014, with index 2005=100, is shown in the following figure:

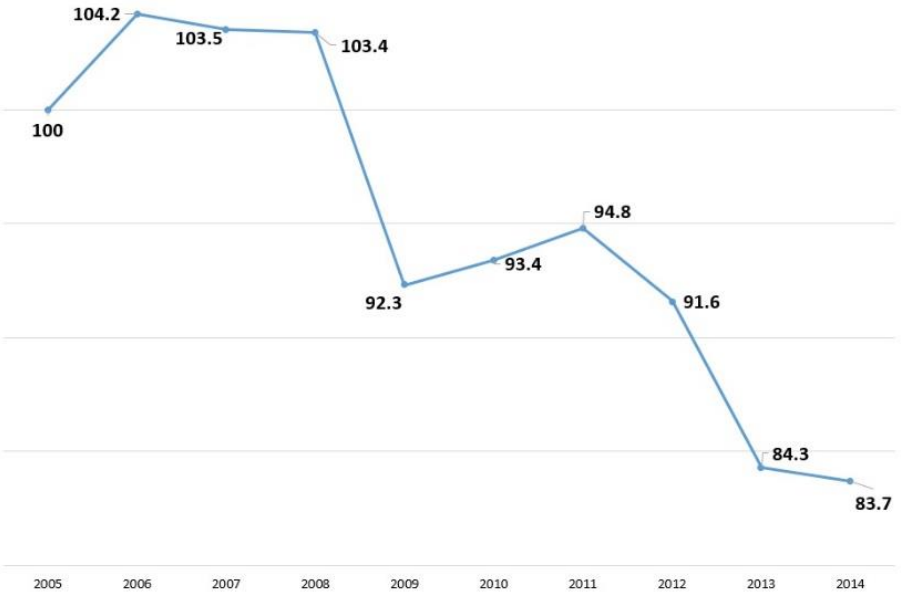

Figure no. 7. The Primary energy consumption, for the period 2005-2014, with index 2005=100

Source: Own elaboration using data from http://ec.europa.eu/eurostat

The largest decreases in values are found for: Lithuania (29%), Greece (23%), Italy (21%). For the period 2005-2014, the percentage of Primary energy consumption has grown Estonia (23%) and Poland (2%).

In million TOE (tonnes of oil equivalent), for 2014, the highest values recorded in Germany (292) France (235), United Kingdom (182), Italy (144), Spain (113).

In Romania, the amounts decreased from 57.3 million TOE in 1990 to 30.8 million TOE in 2014. The graph below shows the change for the period 1990-2014.

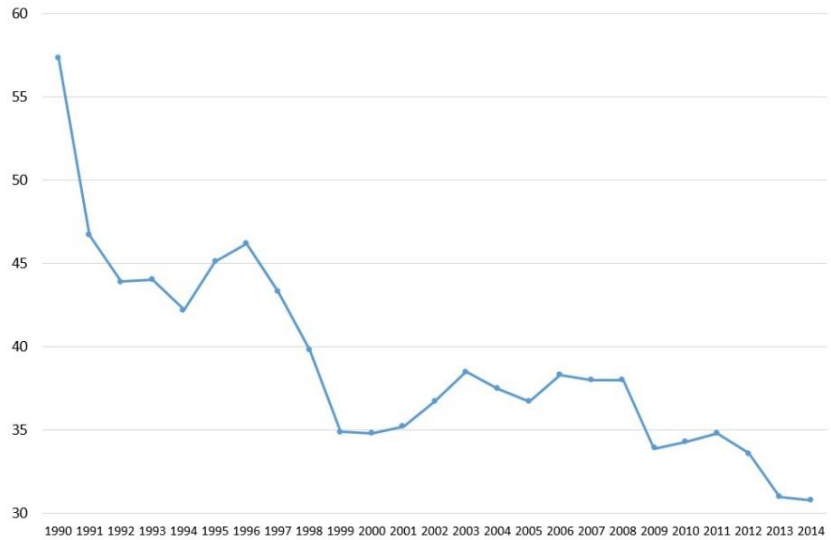

Figure no. 8. The percentage of Primary energy consumption, In Romania, for the period 1990-2014

Source: Own elaboration using data from http://ec.europa.eu/eurostat

At EU level, Primary energy consumption fell from 1569.4 million TOE in 1990 to 1507.1 million TOE in 2014.

2.7. SUSTAINABLE TRANSPORT

The transport affects the environment and the human health. From this point of view, measures are needed to optimize energy consumption. Therefore, satisfaction of mobility needs of the present generations must consider these issues, so that sustainable transport will answer to the needs of mobility of future generations.

This indicator is defined as the ratio between the energy consumption of transport and GDP. Given an index 2010=100 variations for EU and Romania, for the period 2010-2014, are presented in the following table.

Table no. 1. Sustainable Transport, for EU and Romania, for the period 2010-2014 index 2010=100

Countries	2010	2011	2012	2013	2014
EU (28 countries)	100	97.8	95.3	94.1	94.1
Romania	100	103.3	104.5	99.2	98.5

Source: Own elaboration using data from http://ec.europa.eu/eurostat

For Romania, it is noted that after an increase, in 2011 and 2012, following a decrease to 98.5% of 2010 year value.

2.8. NATURAL RESOURCES

Key statistics of "natural resources" refers to headline indicator (common bird index) operational indicators (biodiversity, fresh water resources, marine ecosystems, land use) and explanatory indicators.

The headline indicator of the 'natural resources' theme is the population status of common birds.

According to the description given by the Eurostat website, this indicator is an index and integrates the population abundance and the diversity of a selection of common bird species associated with specific habitats. Three groups of bird species are represented: common farmland species (39 species), common forest species (34 species) and all common bird species (167 species) which include the farmland species, the forest species and a further 94 common.

If considered index for 1990=100, at European level, variation Common bird index for the period 1990-2014, for all common bird species, is:

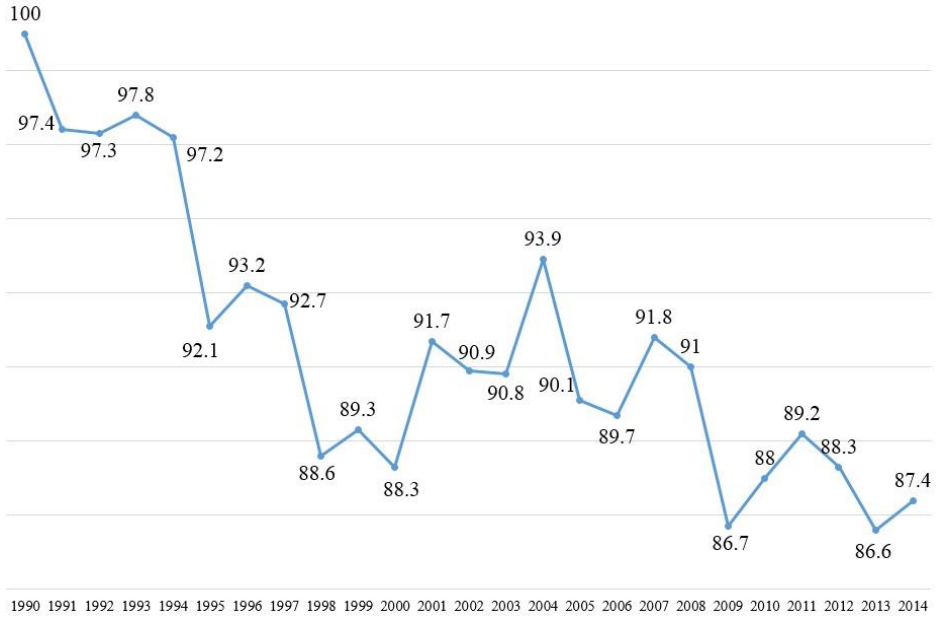

Figure no. 9. The variation Common bird index for the period 1990-2014 index for 1990=100

Source: Own elaboration using data from http://ec.europa.eu/eurostat

2.9. GLOBAL PARTNERSHIP

Official development assistance consists of grants or loans that are undertaken by the official sector with the objective of promoting economic development and welfare in recipient countries. Official development assistance as share of gross national income, for the EU countries, for 2007 and 2014, is show in figure:

Table no. 2. Official development assistance, for the EU countries, for 2007 and 2014

Countries	2007	2014	Countries	2007	2014
EU (28 countries)	0.37	0.41	Lithuania	0.11	0.09
Belgium	0.43	0.46	Luxembourg	0.92	1.07
Bulgaria	0.06	0.08	Hungary	0.08	0.12
Czech Republic	0.11	0.11	Malta	0.15	0.2
Denmark	0.81	0.85	Netherlands	0.81	0.64
Germany	0.37	0.41	Austria	0.5	0.26
Estonia	0.08	0.15	Poland	0.1	0.08

Countries	2007	2014	Countries	2007	2014
Ireland	0.55	0.38	Portugal	0.22	0.19
Greece	0.16	0.11	Romania	0.07	0.1
Spain	0.37	0.14	Slovenia	0.12	0.13
France	0.38	0.36	Slovakia	0.09	0.08
Italy	0.19	0.16	Finland	0.39	0.6
Cyprus	0.17	0.1	Sweden	0.93	1.1
Latvia	0.06	0.08	United Kingdom	0.36	0.71

Source: Own elaboration using data from http://ec.europa.eu/eurostat

3. CONCLUSIONS

Introducing the new EU strategy on issues related to sustainable development aimed at improving the capacity of the Earth to promote life in all its diversity. Another issue was given by introducing the principles of democracy, gender equality, solidarity, rule of law, freedom and equality.

The new strategy envisages a continuous improvement of quality of life and well-being on Earth present generations and those to come. Thus, it promotes a dynamic economy with full employment through labour, high levels of education, health protection, social and territorial cohesion. All this must be done in such a way as to ensure protection of the global environment.

Many sustainable development publications contain a large number of indicators that need to be organised, analysed and described. Many countries use a range of ways to visualise the results. Of the over 130 indicators, the article presents some key indicators of the statistical data of Eurostat. Thus, it offers an overview on the objectives and targets set by the EU Sustainable Development Strategy. To identify the degree to which these objectives and targets are achieved, further study is necessary that would consider all the indicators of progress. Also, according to the general principle agreed by the UN Statistical Commission, in March 2016, sustainable development goal indicators should be disaggregated by income, gender, race, ethnicity, migratory status, disability and geographic location.

At the same time, can be developed new indicators which can pursue the degree of adaptation and mitigation of climate changes, public service efficiency of transport, or the diversity of species and ecosystems.

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