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Rector's Allocution

*We have the special pleasure to let you know that the Review of our University, „**Bulletin of Scientific Information**", having ten years of consecutive issue, it achieved the recognition of the **National Council for Scientific Research in Higher Education (NURC)**, being comprised in the category „**National Reviews – C Category**".*

*So, the Bioterra University review „**Bulletin Of Scientific Information**" works as a real platform for the information and exhibition of the most recent and valuable research in the agricultual field and connected sciences (food industry, agro-tourism, ecology, agricultural economics etc.).*

This way I express my gratitude the contributors to our review, authoritative academic and univeritary names of whose studies are found in the selection done by the scientific board of the review, co-workers with whom we have strong relations of partnership and mutual support in the development and course of some conjointed research projects.

I wish to the review many and consistent issues.

Prof. Floarea Nicolae, PhD
Rector of Bioterra University Bucharest

Editorial Board's Allocution

„Bulletin of Scientific Information" magazine was published at the initiative of several young researchers with the direct support of Bioterra University Board, having the first edition in 1998.

Years passed and this magazine has enriched continuously its scientific and didactic dowry, becoming slowly but surely a veritable platform for academic information.

In 2008 the magazine changed itself into a new more dynamic and attractive format, being published in special graphic conditions (full-color) and fully in English language. Also, since 2014 the magazine benefits of a modern website: www.bsi.bioterra.ro.

Every year the editorial team has increased the number of members; nowadays it brings together numerous personalities of the scientific and academic world from different foreign countries, thus being a guarantor of a high scientific level.

Thanks to all our readers and collaborators that through their suggestions, criticisms and feedback contribute to the improving of our magazine quality.

Prof. PETCULESCU Nicole Livia, PhD
Vice Rector of International Relations

Prof. GALAN Catalin, PhD
Vice Rector of the Educational Activity

Summary:

BULLETIN OF SCIENTIFIC INFORMATION

RISKS AND EFFECTS OF AIR POLLUTION IN AGRICULTURE

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Abstract: *The air becomes polluted when the concentration of newly introduced substances from human activities or from natural sources, systematically or accidentally, exceeds a certain level that generate toxicity for humans or for other living beings. This is one of the most often cited definition of air pollution. Beyond the dirtying effect suggested by this statement there are other effects too that come into action in certain conditions.*
The paper aims to uncover some of these effects by referring to the impact on the regulatory mechanism of the atmosphere and also the consequences in terms of changes in the living conditions. In fact process that undergo in the air lead to the elimination or neutralization for most of the pollutants. Nevertheless, than the path of emission exceeds the path of elimination, some pollutants mount up and generate the so called cumulative effects (IPCC, 2014).
These cumulative effects enter into action at different spatial scales by various mechanisms. It could be differentiated global, regional, and local cumulative effects. This process is unleashed by changes in the composition of atmosphere. These changes mean increased concentration in carbon dioxide, nitrous oxide, methane, and freons. Our paper refers to the first category and uncover its mechanism, causes and consequences.

Key words: *air pollution, greenhouse gases, climate change, ozone depletion*

Introduction

The atmosphere is the gaseous cover of the Earth and by its characteristics is the closest to the significance of this definition. This reflects a certain continuity that does not allow spatial isolation. In this condition the scale of human impact could vary widely being influenced by the general and local dynamic of atmospheric processes. another important aspect is timing. From this point of view the atmosphere is a complex system in a dynamic equilibrium that maintains constant its characteristics as a result of the interaction among its components and among them and external factors. In general terms, this equilibrium is quite stable [1].
The air becomes polluted when the concentration of newly introduced substances from human activities or from natural sources systematically or accidentally, exceeds a certain level that generate toxicity for humans or for other living being. The dirtying effect suggested by this definition is not sole. The air pollutant could not reach toxic concentrations but still have negative environmental effect.

This situation occurs than the concentration of gases below toxic level change the physical properties of the air with impact on living conditions such as temperature, rainfall regime, wind regime etc.
In fact process that undergo in the air lead to the elimination or neutralization for most of the pollutants. Nevertheless, than the path of emission exceeds the path of elimination, some pollutants mount up and generate the so called cumulative effects[3]. These cumulative effects enter into action at different spatial scales by various mechanisms. It could be differentiated global, regional, and local cumulative effects. Our paper refers to the first category and uncover its mechanism, causes and consequences.
Global cumulative effects of air pollution lead to changes in living conditions worldwide, regardless to the repartition of emission sources. Generally speaking it comes into action within a large timeframe. This characteristic poses serious difficulties for decision making since the only information is provided by research, and even this is subject of various interpretations.

Materials and methods

Climate change is the first environmental priority of contemporary society. Such position is explained by the complex and serious consequences in terms of economic, social, and environmental effects. Some of them are presented below.
This process is unleashed by changes in the composition of atmosphere. These changes mean increased concentration in carbon dioxide, nitrous oxide, methane, and freons.

Climate change consequences

1. Atmospheric and marine systems
Atmospheric and marine systems that regulate climate will be modified at such extent that this will yield a novel pattern of climate distribution and different characteristics of climate types. Thus, it is foreseen an increased frequency and intensity of storms due to the more intense energy change between atmosphere and marine systems and increased strength of vertical currents. This process is important in the development of tropical cyclones, tornadoes, lightning, and hails. A material proof could be considered the large number of natural disasters and the size of damages produced in the last five years.
A 3 to 4 Celsius degree increase in sea water temperature will enhance with 5% the destructive power of hurricanes and will generate very powerful winds (beyond 150 km/hour) [2].

2. Level of seas and oceans
Increased temperatures in polar areas lead to the meltdown of icecaps. This will contribute to a 20 cm increase in sea level until 2030, respectively 65 cm until the end of the century. Consequently important terrestrial areas will be flooded, including deltas, estuaries, high human density lands, triggering massive migration of human population with serious social problems.

3. Water resources
Water resources especially aquifers, will suffer a reduction do to seawater infiltration, reduction of glacier contribution, and drought. Thus important surfaces, especially in islands and mountain areas will become inappropriate to be inhabited by human population.

4. Agriculture

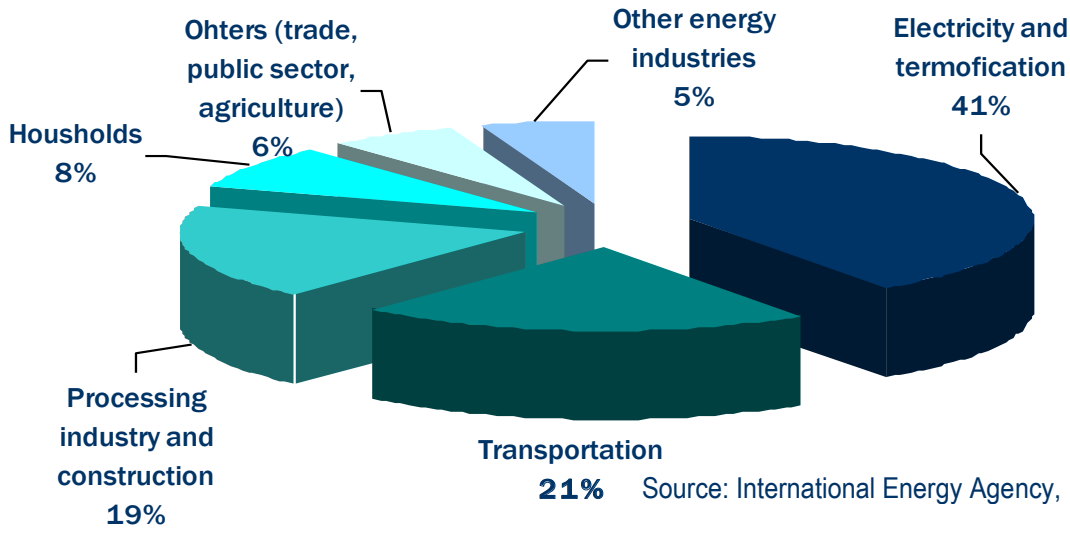
Agriculture is the main provider of food and it will be seriously affected do to changes in crop distribution, expansion of drought in wheat producing areas, unavailability of irrigation water. On the other hand, areas that are now improper for cereal crops will become producers, while the increased carbon dioxide concentration will add up on crops productivity.

The main concern is related to carbon dioxide, which is also the largest contributor to this process (more than 50%). The structure of emission sources for greenhouse gases (GHG) is presented in Graphic no. 1.

One important source of GHG emissions is fossil fuels burning. In the oil century we consider relevant to present the contribution of oil industry to this priority global environmental issue.

Although GHGs emissions occur in every stage of the oil products life cycle, this final stage is by far the most important contributor. In fact, the contribution of this stage to the total emissions of oil industry is 50 times higher than the contribution of the other stages.

Graphic no. 1:
The structure of GHGs sources



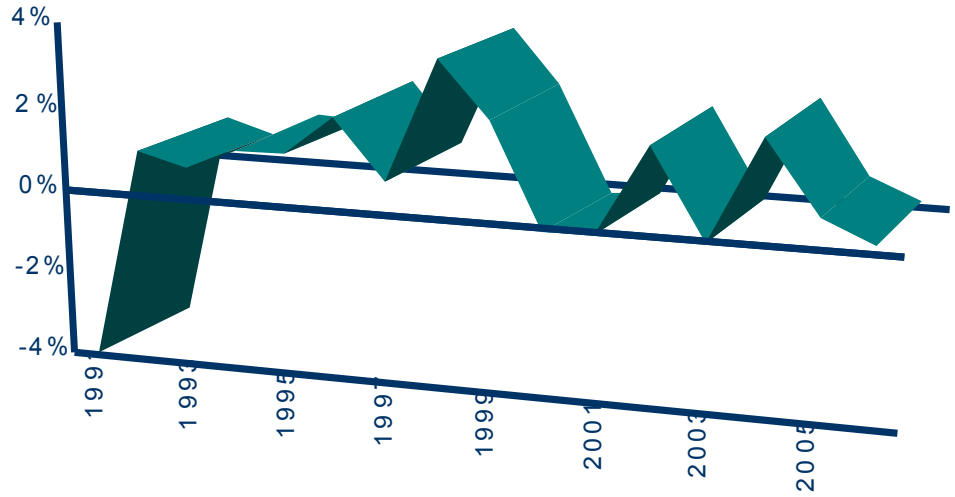
Source: International Energy Agency

Transportation annually releases 3.7 million Ggrammes of GHGs. This amount continuously increased in the last two decades, with a total increase of 13.5% between 1990 and 2006 (Graphic no. 2).

In this period only in four years the variation was negative (1991, 2000, 2001, and 2003). The annual rates were of 1 or 2%, although there were also recorded 4% variations, both upward (1998) and downward (1991).

Road transportation is the main contributor of GHGs (85%). The other transportation means (air, railway, naval) have comparable contributions. In the 1990-2006 period road and air transportation emissions increased, but they were unequal (20.2%, respectively 2.4%). Meanwhile naval and railway transportation has decreasing emissions, the reduction being more significant for naval transportation (-10.6%).

Graphic no. 2:
Annual rates of GHGs emissions in transportation

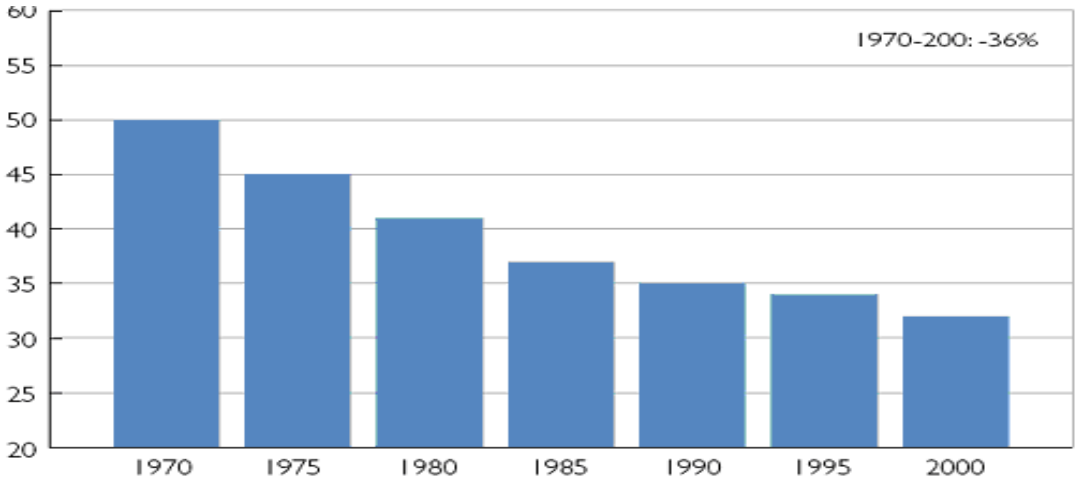


Source: United Nations Framework Convention on Climate Change, 2008

The above analysis provides enough reasons to consider road transportation as the most relevant intervention stage for GHGs emissions reduction. This transfers the responsibility to automobile industry.

Considering the evolution of specific consumption (Graphic no. 3) it could be stated that a positive trend is recorded.

Graphic no. 3:
Evolution of specific fuel consumption for commercial transportation (l/100 km)

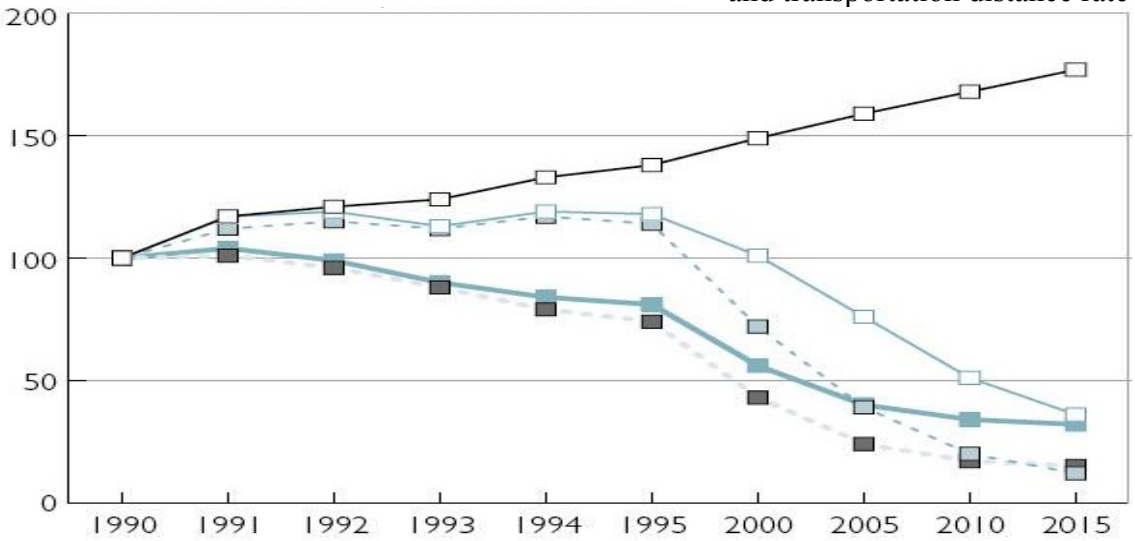


Source: Verband der Automobileindustrie (VDA)e.V.

Thus in case of 40 tones tracks the fuel consumption for 100 km dropped from 50 liters in 1970 to almost 30 liters in 2000. Nevertheless, several sector studies suggest that the most effective technological changes are already in place. This means that on short run there are not expectable further significant reductions in fuel consumption.

On the other hand, a decoupling between fuel consumption and emissions could be brought in discussion. Thus, nitrogen oxides, hydrocarbons and other emissions evolution and perspectives (Graphic no. 4) against transportation distances evolution and perspectives reveal that after 1995 the emissions rate became opposite to transportation distance rate.

Graphic no. 4:
Evolution of commercial transportation emissions rate and transportation distance rate



Source: IFEU Institut fur Energie und Umweltforschung, Heidelberg

Road transportation's environmental impact could be reduced by:

- reducing the road transportation distance through encouraging alternative transportation means (public transportation, bicycle, foot);
- reducing the health impact of road transportation.

Oil industry could contribute on the second pillar, by improving the quality of fuel in order to reduce consumption, on the one hand, and to reduce health impact of emissions, on the other hand.

Results and discussions

The depletion of the ozone layer is a result of mounting quantities of clorfluorocarbons (CFCs or freons) that have a high chemical stability and also the capacity to destroy ozone molecules at the stratosphere level.

The mechanisms of this process was explained with a high certainty level in the 1970s. Thus, in 1974 American researchers demonstrated that CFCs could destroy ozone molecules. The effects of this chemical behavior at the stratosphere level

was described in 1985 when a dramatic diminishment in the ozone layer thickness was recorded over Antarctica. During the astral spring an ozone hole is formed where the layer's thickness was of only 1.5 mm. The ozone hole's position over Antarctica is explained by the specific weather patterns of this area. In the winter, the stratosphere lying over this region is isolated from the rest of the world due to the strong winds that rotate as a whirlpool. In addition, ice particles are up lifted to the polar stratosphere providing good surfaces for the speeding up of ozone's chemical reactions. Although ozone depletion is the most intense over Antarctica (40% loss), the process was recorded in other locations too: Arctic pole (20%); 53-64 degree of latitude (23%); and 40-52 latitude (1.7%).

CFCs were first produced in 1900, being used as industrial cooling agents. Later new uses were found: cleaning of plastics, metals and electronic components; propulsion for sprays, industrial foam agents. Expanding the use of these compounds is explained by a number of advantages:

- low toxicity;
- are not inflammable;
- high solubility;
- low production and storage costs.

These advantages contributed to the increase of their production that reached 1 209 million tones in 1986 and also to their mounting and lifting up in the atmosphere. Here, under the action of ultraviolet radiation they release the halogen atoms (chlorine, fluorine, bromine) and these catalyze the ozone molecules degradation reaction. It is estimated that a molecule of CFC could destroy 104-106 molecules of ozone through the following mechanism [2] :

$X + O_3 \rightarrow XO + O_2$

$2XO \rightarrow O_2 + 2X$

Where X is a molecule of halogen

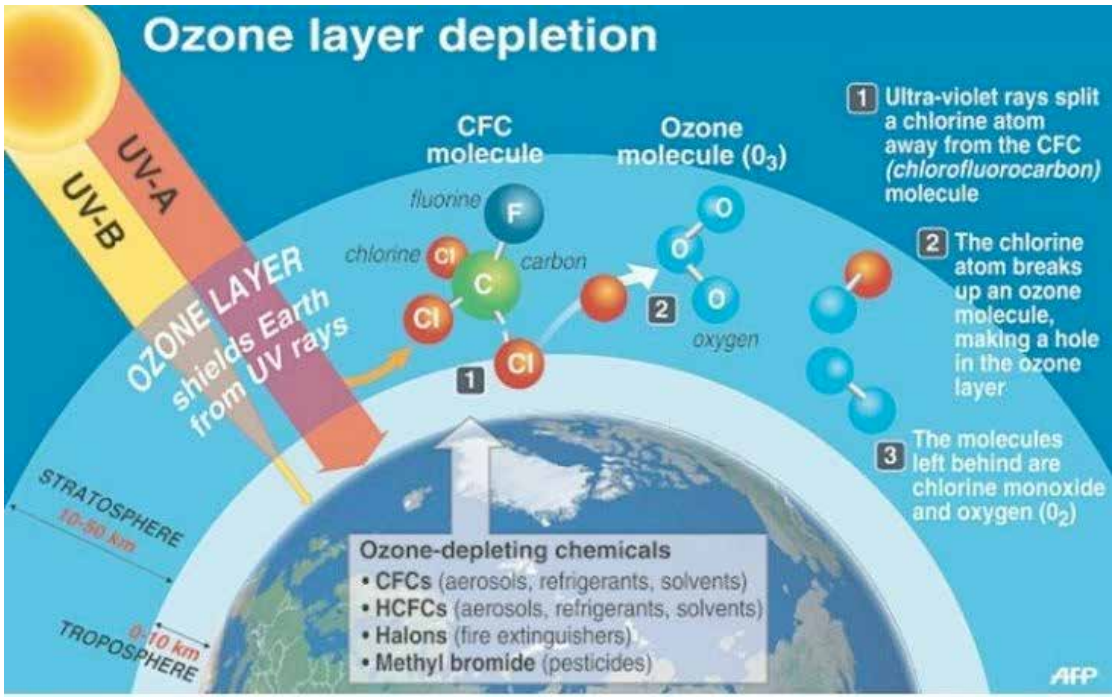


Fig. no. 5 - Ozone depletion

(Source: http://eco-globe.com/what-destroys-the-earths-ozone-layer/)

It has to be added the fact that each CFC molecule persists for decades in the atmosphere. The depletion of ozone layer has significant ecological impact and determines serious human health problems by reducing the protection against ultraviolet radiation. One percent reduction in ozone concentration intensifies ultraviolet radiation with two percents (Fig. no. 5).

Conclusions

The industrialization unleashed a number of processes that undermine the stability of Earth's ecosystems. Climate change and ozone depletion are among the most challenging processes favored by intense industrial development. Both processes come into action to cumulative effects of air pollution and have significant impact on the overall living conditions. Therefore mitigation has to be planned at global level and has to be urgently enacted. This already in case of ozone depletion, but is still struggling for climate change. The latest climate conference (New York, 2014) produced disappointment and demonstrated again that short term economic interests are beyond long term sustainability in decision making. The scientific controversies over the mechanism of climate change could be therefore considered active, although the latest IPCC report "pronounced" the so called scientific consensus over the anthropogenic determination of climate change.

The main effects are:

- reduction of foliar surface for many crop plants (beans, cabbage, soybean etc.);
- phytoplankton's productivity is reduced in seas and oceans with important repercussions on the entire ecosystem;
- lower intensity of photosynthesis;
- reduced immunity;
- increased occurrence of cataract;
- skin cancer;
- reduced effectiveness of vaccination, especially against tuberculosis.

The mechanism of ozone depletion is among the best explained environmental processes with clear demonstration of cause-effect relations. This is mirrored in a higher effectiveness of environmental policies enacted for mitigation.

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PROSPECTS OF SUSTAINABLE AGRO-ECONOMY IN SOUTH- MUNTENIA ROMANIA

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Abstract: *The sustainable development is a concept of great importance today, defined by several dimensions, such as referring to the fulfillment of human interests, the environment created aimed at matching the natural man, but by the social. The definition and its practical implementation must take into account more factors and the specific principles. From the economic perspective, economic policy must integrate the ecological principles that ensure its successful development to be sustainable in the long term. This paper presents the case of economic and ecological approach in territorial that is about developing the South-Muntenia Region of Romania.*

With a total surface of 34,453 km2 (14.54% of the total area of Romania), the South-Muntenia Region [3] consists of seven counties (Argeş, Călăraşi, Dâmboviţa, Giurgiu, Ialomiţa, Prahova and Teleorman).

The relief of the Region 3 South-Muntenia is characterized by variety, the difference in level is over 2400m allocated in proportion, stepped down from north to south of the Făgăraş and Bucegi mountains and ridges to the Danube Valley, which leads to the types of mountain, hill and plain climate. Like all developing regions of our country, in the South-Muntenia Region also are made efforts to attain the sustainable development objectives. The situation of the region is studied through analysis of the economic indicators and environmental development.

Key words: *economic approach, ecological approach, sustainable development.*

Introduction

Currently, the natural world indicated a series of negative effects of the economic activity undertaken by humans, resulting in the need to take steps leading to the juxtaposition of these two areas: economical and environmental. Just by what means the intersection of these two plans can be expected to achieve sustainable development aspirations. The question arises how to deal with change, defending the concept of a new economy, which is put in balance with economic interests in the natural world, so taking into account the common elements of both perspectives to choose the best course of action regarding the development of certain areas.

Materials and methods

1. The concept of sustainable development

Development is influenced by five factors: population, natural resources and environment, agricultural production, industrial production and pollution, and the sustainable development strategy aims to find the most appropriate criteria to optimize the ratio needs - resources, by designing and carrying out an economic environment which, through its inputs and outputs, to be in a dynamic compatibility with the natural environment and the needs and interests of the present and future generations which are now and will come [1]. It follows therefore that the sustainable development is defined through several perspectives:

• the dimension of present interests and future generations;

• the rational dimension – state, which refers to the coherence of the optimization criteria, regarding the fact that the man-made environment is compatible with the natural environment.

• the social dimension - human, regarding all the exits from the man-made environment that must respond directly to the needs at a regional or global level.

The concept of sustainable development appeared in the World Commission on Environment and Development report in 1987 covers the following elements [2]:

• the feature of the environmental problems that is becoming of international, even global interest;

• the long term prospects regarding the consequences of the deepening decline of natural resources and pollution for the future generations;

• the obligation to maintain or enhance this legacy is a key element of sustainable development;

• the general welfare depends not only of the economic growth but also of its quality;

• the distinction between the different forms of capital that contributes to the creating of the welfare and of the inheritance for the future generations: "the man-made capital", "the human capital" and "the natural capital" which refers to the maintaining of the natural resources stocks and the pollution diminishing;

• the ability to make a substitution between various forms of capital, which means that we must expect a certain possibility of substitution between the natural capital stocks, on the one hand, and the accumulated human capital, on the other hand.

By adopting the goal of the sustainable development is aimed the fighting of the environmental problems, such as:

• The pollution control, the resource management and the ensuring of the life quality;

• Establishing the effective institutional framework for formulating and implementing the environmental policies;

• Promoting the technological progress for a "green" economic growth;

• A wider use of the economic instruments;

• The need to make regulatory instruments become more effective and less costly;

• Changing the production and consumption trends;

• A greater use of strategies in the formulation and implementation of the environmental policies;

• Developing the integrated strategies that include the environmental sector;

• A more detailed analysis of the links between the environment and economy.

2. Sustainable development and the new economy

The new economy should develop according with sustainable development requirements,

the way to address economic life being the way to change that will ensure continuity of economic and population, which manages the business [2].

The principles that are necessary for creating the new economy are considered to be those listed below, which are appropriate for each geo-economic area, each level, each feature of economic and social life:

- Systematic principle approval;
- The principle of systematic conservation and environmental resources on which the sustainability of the environment;
- The principle of relocation policy and ethical factors in conjunction with economic factors;
- The principle of the qualitative values, not just quantitative values;
- The principle of the female values, not just those men.

The policy implementation is possible through the systematic features of the new economy are the following:

- Realistic perspective about human nature;
- The systematic and synergistically;
- The critical and constructive;
- The dynamic character of labor;
- The chancing character.

Currently, all efforts should be directed to building and implementing new economy, which is described as a sustainable economy that will challenge major activities from the market, namely those profitable both for the employees and the economy. The other economic systems are so left behind, such as the centralized one, the long-term development that integrates ecological principles and found no place to be accomplished.

In this type of economy, government should give confidence and encourage the population to be more productive and efficient by developing an appropriate regulatory and financial code, the market should reach to serve human interests and also highlights the importance the new economy nonprofit organizations, groups representing civil society, voluntary organizations to find its proper directions.

The politics of the "new economy" is concentrated towards the sustainable development of economic and social life, with particular focus on population, thus different from that of conventional economies focused on business, finance, trade organizations, employees who work directly influences economic. Areas covered by the policy implementation of sustainable development are agriculture, tourism, energy, services, construction, transport, health, law and order, local development, business, technology, etc., through their high proportion of government revenue being shifted towards the population income.

In the context of the new economy, implementation of economic policies relating to:

- Restructuring the tax system for environmental sustainability, use of labor, use of natural resources;
- Introduction of unconditional payment to all citizens from the income of the population;
- The complete restructuring of energy systems - which would help to reduce non sustainable development of this branch;
- Introduction of public procurement policy that encourages contractors to adopt sustainable practices;
- Development of local economies through financial support and would help change the image locally, would build a strong local infrastructure to ensure easy access to running residential population of productive activities, tourism, environment, etc.;
- Use of economic indicators, social, environmental, performance and progress;
- Development of audit procedures, reporting and establishing sustainable business

performance and organizational levels;
- Implementing policies to reduce demand for transportation and energy resources and the need to assess their implications in terms of social, economic and environmental;
- Promoting changes that took place in the international companies that had the effect of encouraging sustainable forms of development.

Results and discussions

Case study: The South-Muntenia Region of Romania

With a total surface of 34,453 km2 (14.54% of the total area of Romania), the South-Muntenia Region [3] consists of seven counties: Argeş, Călăraşi, Dâmboviţa, Giurgiu, Ialomiţa, Prahova and Teleorman (Fig. no. 1).

The relief of the Region 3 South-Muntenia is characterized by variety, the difference in level is over 2400m allocated in proportion, stepped down from north to south of the Făgăraş and Bucegi mountains and ridges to the Danube Valley, which leads to the types of mountain, hill and plain climate.
Like all developing regions of our country, in the South-Muntenia Region also are made efforts to attain the sustainable development objectives. The situation of the region is studied through analysis of the economic indicators and environmental development.
The employed population indicator has been a downward trend in the South-Muntenia Region in the 2008-2014 periods, reflecting the economic instability of the inhabitants of this development region of our country (Table no. 1 and Graphic no. 1).
An indicator that reflects the Romanian agriculture is the cultivated surface in the South-Muntenia Region, indicator whose values have decreased during the 2008-2014 years (Table no. 2 and Graphic no. 2).

Fig. no. 1 - The South-Muntenia Region of Romania
(Source: http://www.mdpi.com/2071-1050/8/8/760/htm)

Table no. 1:
The employed population in the South-Muntenia Region
in the 2008-2014 periods

The employed population	2008	2009	2010	2011	2012	2013	2014
Number of people	1684	1674	1443	1443	1417	1414	1437

Source: www.insse.ro [4]

Graphic no.1:
The employed population in the South-Muntenia Region
in the 2008-2014 periods

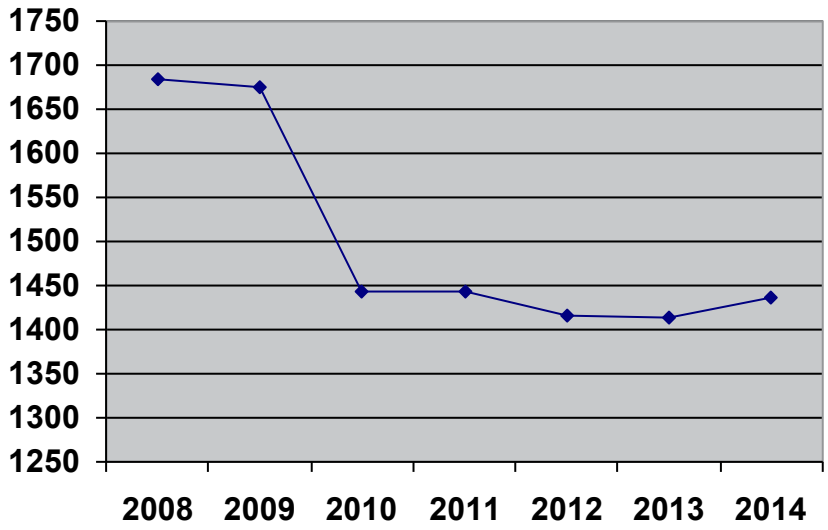


Table no. 2:
The cultivated surface in the South-Muntenia Region
in the 2008-2014 years

The cultivated surface - total	2008	2009	2010	2011	2012	2013	2014
hectares	1850467	1925543	1944669	1891341	1932176	1885424	1784510

Source: www.insse.ro [4]

Graphic no. 2:
The cultivated surface in the South-Muntenia Region
in the 2008-2014 years

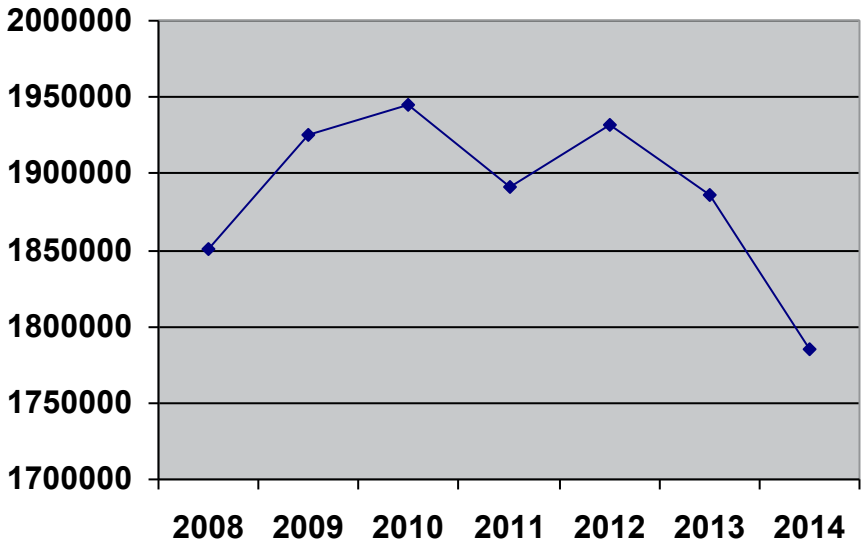


Table no. 3:
The forested fund in the South-Muntenia Region
in the period of 2008-2014

The forester fund	2008	20019	2010	2011	2012	2013	2014
hectares	659295	659408	659168	655764	655986	657076	659043

Source: www.insse.ro [4]

Graphic no. 3:
The forested fund in the South-Muntenia Region
in the period of 2000-2006

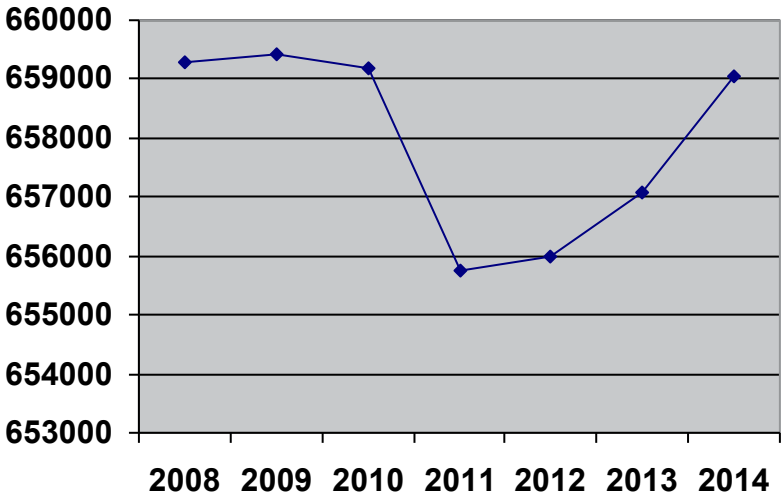


Table no. 4:
The afforestations in the South-Muntenia Region
in the period of 2008-2014

The afforestations	2008	2009	2010	2011	2012	2013	2014
hectares	1317	1494	1737	1782	1349	1139	1571

Source: www.insse.ro [4]

Regarding the reorientation of services and tourism as a subordinate activity in order to promote and develop the area, the values of the tourist accommodation capacity in service in the South-Muntenia Region in 2000-2006 are increasing (Table no. 5 and Graphic no. 5).

In the South-Muntenia Region the analysis of these indicators reveals some problems, first regarding especially to their varying development, and on the other hand, highlights a number of efforts to achieve a sustainable region.

Graphic no. 4:
The afforestations in the South-Muntenia Region
in the period of 2008-2014

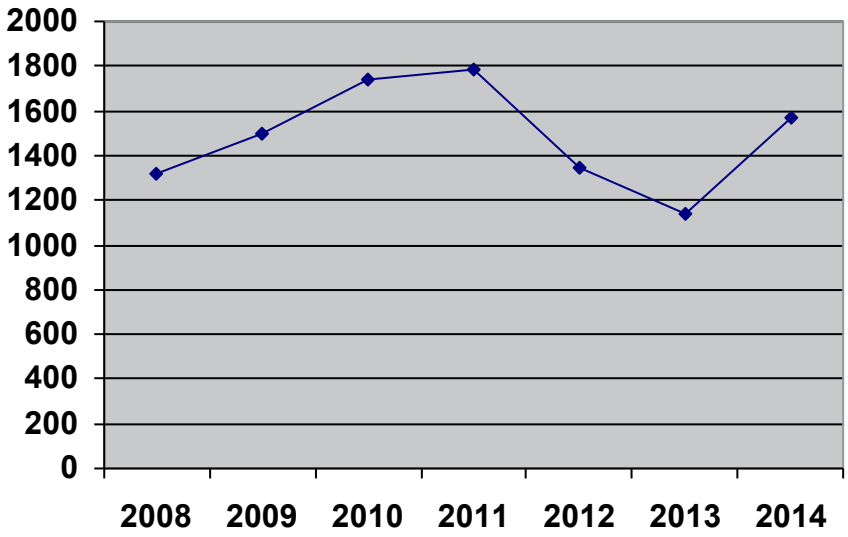
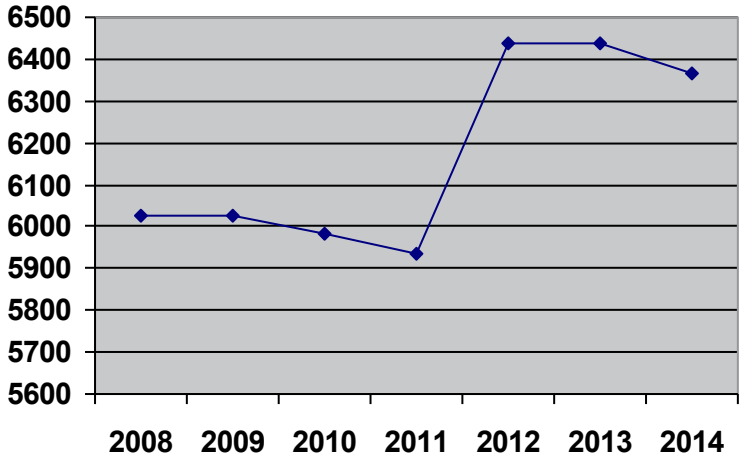


Table no. 5:
The tourist accommodation capacity in service in the South-Muntenia Region
in the period of 2008-2014

The tourist accommodation capacity in service	2000	2001	2002	2003	2004	2005	2006
Thousands accomodation- days	6025,3	6026,9	5985,1	5932,9	6437,8	6439,0	6367,1

Source: www.insse.ro [4]

Graphic no. 5:
The tourist accommodation capacity in service in the South-Muntenia Region in the period of 2008-2014



Conclusions

Current issues that are facing the environment and human society have imposed the need for the emergence of new ways of treating economic development, allowing natural factors and improve the quality of people's living conditions. This is why appeared the concept of new economy along with sustainable development, defined as development for future generations as effective as those for the future.

The implementation of the sustainable development can be achieved only by simultaneously addressing both to the economical and ecological problems of the related business achievement. Only by considering the two perspectives it can be achieved the sustainable wishes, at general, national and territorial level.

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THE IMPORTANCE OF COMMUNICATING THE REFORMED COMMON AGRICULTURAL POLICY (CAP) TO THE FARMERS

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Abstract: *It is very important to communicate to the general public the multifunctional role of EU farmers which goes beyond food production. Farmers play an important role in conserving our common natural heritage and in many rural areas they continue to be the economic heartbeat. This must be done for the following purposes:*
- the need to better respond to market opportunities;
- emphasizing that the reformed CAP has strengthened the EU farmers' ability to respond to market signals, thereby giving the EU an opportunity to strengthen its supply of food at a time of higher food prices and help to alleviate the concerns about food security in some parts of the World;
- the simplification and better targeting of the direct support to farmers;
- the strengthening of the rural development policy to respond to new challenges, mainly related to climate change, water management, renewable energy and biodiversity.

Key words: *CAP – Common Agricultural Policies, CROSSCAP/2010 Italy-Romanian Project, rural, renewable energy and biodiversity.*

Introduction

For more than 40 years, the Common Agricultural Policy (CAP) has been the European Union's (EU) most important common policy. Nevertheless it has been going trough continuous adjustment processes every 5 years. In particular, the new reforms lie under the pressure of the world agricultural markets changes and on the new political framework as a result of EU enlargement as well [1].

Romania has 14.7 million hectares agricultural land and retained huge quantity of local traditional products, being one of the European countries with the best resources for agriculture.

In addition, the stability of the Rumanian economy is mostly based on the stability of agricultural market (the share of the Rumanian population employed in agriculture is around the 32% of the total population). Nevertheless, Romania as new Member State of Europe (since 2007) mostly lacks of information about the application of the CAP measures.

Materials and methods

On this perspective, trough the implementation of the Italy-Romanian CROSSCAP/2010 Project activities, the Rumanian agricultural farmers and general public will be able to take advantage from the economic benefits of the CAP in a short and long-term period, and will be sustainable exploit the natural resources of the Country.
On this regard the general identified need for the targeted countries is to receive detailed information on the development of the CAP measures. This is mainly relevant for the Rumanian farmers who nowadays do not have a direct perception of the CAP implementation. Even though the traditional agriculture measures are linked to those funded by the CAP (i.e. implementing organic agriculture) farmers lack information on possible benefits they may receive by implementing the CAP.
On the other hand, the specific need for Italy relies on the fact that, since agricultural subsidies are financed by public money, taxpayers rightfully expect that these are correctly spent. It is therefore of paramount importance that information reach both the stakeholders and the general public.

Results and discussions

This papers presents the goals and the partially results of our Italy-Romanian Project CROSSCAP/2010/2011 in which Bioterra University is a partner [1]. The expected results are:
- On an overall level: the increased knowledge and awareness on the benefits deriving by the CAP implementation;
- On a specific level: the possibility by the stakeholders, to be informed on how to fine-tune those measures depending on their local needs.
The project's action seen as an important information campaign deserves to be supported by the European Union for the following reasons:
- The type and the methodology of the proposed action are consistent with call requirements;
- The applicant and the associates can mobilise high level experts on the specific topic to be treated during the information events;
- The work schedule allows proper implementation of action activities;
- places of implementation allow proper visibility to the information events and guarantee the reaching of target audience;
- The project is run by a well-balanced group of co-organisers; tasks assigned to the co-organisers are consistent with their specific field of expertise and cover complementary sectors of expertise, which are necessary to the correct implementation of the project activities either in Italy or in Rumania.

The CROSSCAP project's aims to which the information's measure contributes are the following:
- helping, on the one hand, to explain and, on the other hand, to implement and develop the CAP;
- promoting the European model of agriculture and helping people understand it informing farmers and other parties active in rural areas;
- raising public awareness of the issues and objectives of the CAP.

Communicating the reformed Common Agricultural Policy (CAP) means:
- a better respond to market opportunities;
- emphasizing that the reformed CAP has strengthened the EU farmers' ability to

respond to market signals, thereby giving the EU an opportunity to strengthen its supply of food at a time of higher food prices and help to alleviate the concerns about food security in some parts of the World;
- the simplification and better targeting of the direct support to farmers;
- the strengthening of the rural development policy to respond to new challenges, mainly related to climate change, water management, renewable energy and biodiversity.

The project's action consists of a set of integrated information measures to be implemented in the 2 partner countries Italy and Rumania (fig. no. 1), namely:
- Production of a 1 hour long documentary on meaning, level of implementation and perspectives of new CAP in Italy and Rumania. Audio and video materials for documentary will be collected on Italian and Rumanian territories (visits to representative farms on which CAP is expected to significantly impact and to farms being examples of good practices, interviews to Italian and Rumanian experts on agriculture and CAP). The documentary will consist of a unique bilingual deliverable to be diffused over the 2 countries (fig. no. 2);
- Organization of symposia. One thematic symposia will take place in Italy and one in Rumania in the framework of the two local main agriculture exhibitions: AGRIFIERA in Pisa and INDAGRA in Bucharest.

Fig. no. 1 - Transnational actions for communicating Common Agricultural Policy

Fig. no. 2 - Food analysis laboratory – CROSSCAP

Agrifiera is the largest exhibitions of equipment and products in the fields of agriculture, animal husbandry and food production held in Pisa province. The exhibition is held in Comune di San Giuliano Terme, and the Municipality takes responsibility over the whole organization and management. It lasts one week. In particular the last editions have been focusing on high-quality food, local traditional products and sustainable agricultural practices.

It normally hosts around 200 local exhibiting companies, 80 public events such as symposia and filming shows on an area of 20.000 sqm. A total of 120.000 visitors usually attends the fair, 56% of which are common people from urban and rural areas, 43% are professionals (farmers and managers of cooperatives) and 1% are students from Universities which are mainly attracted by the symposia. There is also a strong interest showed by local Authorities (such as Regional administrations and Municipalities) which support the implementation of the Agrifiera by co-funding it.

All farmer organisation and the co-organiser CIA among them are involved in public events and have stand at the exhibition. Local press and TVs are invited to attend the fair in order to spread news and inform people living in remote areas and not attending the fair.

AGRIFIERA takes place every year in Comune di San Giuliano Terme - Pisa, Italy, from the 25th of April to the 1st of may.

INDAGRA is the most important international exhibition of equipment and products in the fields of agriculture, animal husbandry and food production, held in Romania and lasting 4 days.

During the 12 editions (the first one was in 1996), the exhibition has continuously developed. In 2007 INDAGRA gathered 800 prestigious domestic and international companies, from 26 countries (Belgium, Bulgaria, Canada, South Korea, Finland, France, Germany, Greece, Ireland, Italy, Lebanon, Great Britain, Moldavia, The Netherlands, Poland, Czech Republic, Rumania, Slovakia, Spain, United States,

Sweden, Turkey and Hungary) on an exhibiting area of 46.000 sqm.

INDAGRA has attracted in 2007 a total number of 34.553 visitors: 49,8% of them were common visitors such as people from urban and rural areas (17.225 people), and 50,2% were professionals such as farmers and managers of cooperatives (17.328); moreover during the last years more and more students from Romanian Universities have been attracted by the fair public events. The INDAGRA fair is also a suitable means for exchanging new approach to agricultural measures and products among stakeholders because it hosts numerous symposia and filming shows.

Moreover, thanks to the presence of the National and International Press, the Event reaches people from the remote areas not attending the fair. INDAGRA take place every year at the beginning of November.

The symposia represent the main communication events of the project, and in their framework the documentary will be officially released to the public and shown non stop to reach the maximum audience. International experts will take part to the symposia, illustrating CAP concept and strategies. Speaker's contributions are tailored on the specific information needs identified for Italy and Rumania by the stakeholders:

- TV Special. The Italian symposium will be filmed and edited to become TV special to be diffused on local television [2];
- The information campaign will be complemented by an extensive dissemination of project activities and deliverables in the form of public shows, press conferences, press release, setting up of advertising stands at agriculture exhibitions both in Italy and Rumania.

Conclusions

- The symposia, traditionally addressed to a more targeted audience (professionals and students), are expected to attract a larger audience of visitors during the show of the documentary (general public). The involvement of speakers coming from the Italian and Rumanian Universities (Bioterra University and Pisa University), the documentary will be additionally shown in the framework of lectures, thus amplifying the numbers of students targeted.
- Moreover through the involvement of press and TV journalists the event will be reported on the regional and specialist press, so reaching a larger audience of general public and professionals.
- The direct involvement in the organisation and implementation of the events of representatives of farmer associations will multiply the impact of the information measure over the rural citizens. Also, the main indirect beneficiaries of the information measures are represented by the press readers (estimated 50.000 people in the 2 countries on the basis of local and specialist press diffusion) as well as farmers (estimated in 3.000 people). This last will be reached by information spread by other farmers and professionals targeted by the information event.

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THE ANALYSIS OF RESOURCES AND SERVICES AGRO-ECONOMY IN COMMON VLADESTI OF VALCEA COUNTY

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Abstract: *In an effort to help understand better the whole service area, arose the idea of this research on the content of the services and the analyze of resources, services in the contemporary economy, market demand and quality service. Research undertaken in this paper tried to highlight the role of services in the Romanian economy, based on the contribution approach from different angles and that of the degree of engagement of services in the global effort of economic development as follows: employment in service activities (which increased from 44.9 to 53.3%); contribution to GDP creation services, net investment in services and labor productivity over the other sectors of the economy (3 times higher than the primary and secondary sectors).*

The research had highlighted the slow development of these services in the analyzed period of 2007 – 2014. The countryside has great natural resources that can contribute to a greater extent in development. We are talking about forests (which represents 52.5% of the county) and 17 rivers arranged as hydro-electric stations for hydro-electric production. Rural transportation are fully private and no longer covered by municipalities.

Based on conducted research there was drawn the SWOT analysis of County and of the commune, these analyzes highlighting the strengths that correlate with opportunities and weaknesses which in turn correlates with menace or risks. On the basis of this analysis were the statistical data processed to reveal the dynamics of services, their structure and effects on rural development, there have been used general indicators of services and specific indicators for each type of service as well. There were analyzed permanent services on water feed production, collecting and disposal of water, gas, electricity and sanitation.

Key words: *resources, services economy, market, SWOT analysis.*

Introduction

Economic aspects of village Vlădeşti however is characterized by a complex economy that includes: mining, wood processing, meat products and construction materials. Industry, trade and services were developed through SRLs present within the village and very small distance from the city of Ramnicu Valcea (Fig. no. 1). Agriculture is based on gardening, horticulture and animal husbandry. These brief data about conditions in the village Vlădeşti services that are available to residents and public

institutions were still allowed efecuarea SWOT analysis of the village stating the strengths and opportunities that currently creates and weaknesses with threats that they can induce [4].

Materials and methods

The indicators used in the research performed were calculated based on the data specific to each service, allowing calculation and analysis dynamics setting. Besides less complex methods (comparison, induction, deduction) was used based on the observations and conclusions of the analysis performed on each service SWOT analysis method [1].

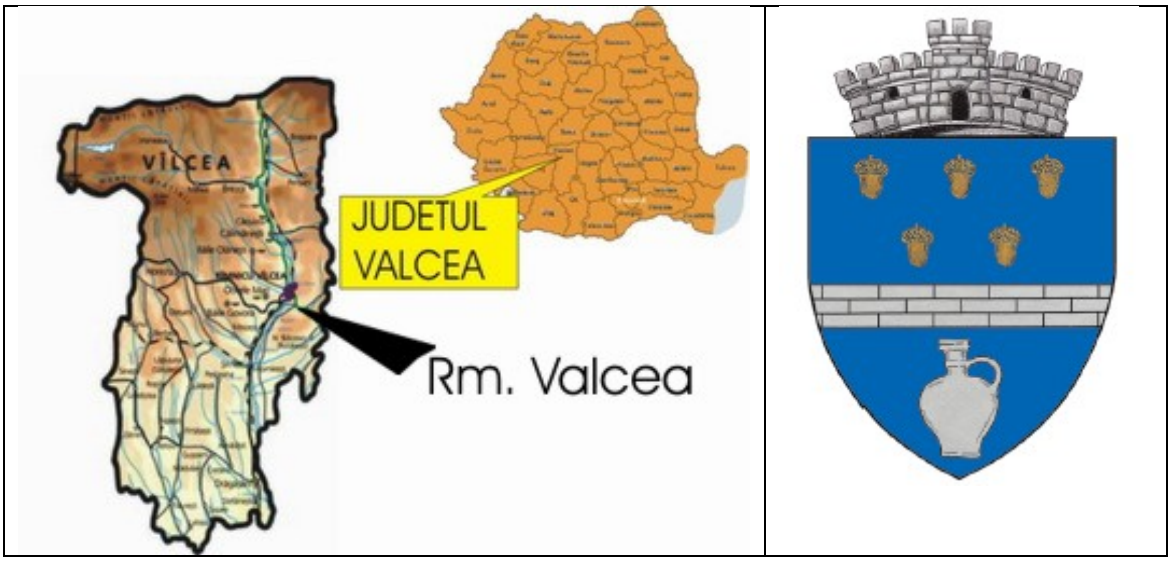

Fig. no. 1 - Village Vlădeşti very small distance from the city of Ramnicu Valcea
(Source: http://www.turismlaramnicuvalcea.ro)

Results and discussions

1. RESOURCES AND ECONOMIY SERVICES

1.1. The land

The main resource in rural area was farmland and non-agricultural. The indicators dynamics and structure on the land fund in the village Vlădeşti are reflected in table no. 1, the total area was and is 2118 ha and representing 0.36% of the total area of Valcea county [3]. Agricultural area ranged from 922 ha in 2012, 952 ha in 2013 and 935 ha in 2014 which represents about 44% of the total area of the village. Category arable land represents about 19% of the total area ranging between 391 ha and 402 ha of pastures and hayfields occupied categories occupying a large share in this geographical area, 14% to 10% pastures and hayfields. In absolute numbers pasture area varied between the studied period 272 to 297 ha and meadows while Vlădeşti commune ranged between 204 ha and 234 ha [4].

In addition to these categories of land forming agricultural area of the commune, the difference to the total area is the non-agricultural land accounting for 55.8% of the total and in absolute figures from 1196 to 1183 ha. Geographical features of the area where the commune is situated Vlădeşti shows that non-agricultural land occupies a higher share than farming. In the largest non-agricultural land area (1007 ha) is occupied by forests. We appreciate that there are two categories of the non-agricultural land and ponds filled with water 30 ha (1.4% of the total) and degraded and unproductive 45 ha (2.2% of the total area). Size, dynamics and structure of the categories of land is linked to other resources: population and rural development as will the data presented below.

Table no. 1:
The situation of land in the village Vlădeşti

No.	The Indicators	U.M.	Years			Dynamics (%)			Structure (%)
			2012	2013	2014	2012	2013	2014	
1	Total areas	Ha	2118	2118	2118	100	100	100	100
2	Agricultural areas	Ha	922	952	935	100	103.2	101.4	44.1
3	Arable lands	Ha	391	391	402	100	100	102.8	18.9
4	Pastures areas	Ha	272	272	297	100	100	109.1	14.0
5	Meadows areas	Ha	204	234	214	100	114.7	118.1	10.1
6	Fruit trees areas	Ha	55	55	22	100	100	40	1.8
7	Total area non-agricultural lands	Ha	1196	1166	1183	100	97.4	98.9	55.8
8	Forests areas	Ha	1007	1007	1007	100	100	100	47.5
9	Lakes and waters areas	Ha	30	30	30	100	100	100	1.4
10	Degraded and unproductive lands	Ha	45	45	47	100	100	104.4	2.2

Source: Romanian National Institute of Statistics; By authors' calculation and interpretation

1.2. Population

Source of population growth is the infants and those arriving shared live births in the municipality Vlădeşti oscillating between 27 and 34 people, with a downward trend during 2007 - 2014. The commune's population grew from 2542 people in 2007 from 3011 people in 2014, ie 18.5% in the same period the number of dwellings increased by 48%. Migration situation and the factors that influenced it as shown in table no. 2 indicator departures from other regions ranged between 17 and 20 persons with decreasing trend after 2010. Arrivals were less numerous

but with a growing trend the second period. Together, departures and population decline reflects a commune in 2007 and 2008 by 15 people, 14 in 2009, 6 in 2011, 3 in 2013, 10 people in 2014. It notes that the number of departures exceeded arrivals only 2010 [4].

Table no. 2:
Migration departures and arrivals

No.	The Indicators	UM	2007	2008	2009	2010	2011	2012	2013	2014
1	Departures	No.	17	16	20	10	16	16	16	16
		%	100.0	94.1	117.6	58.8	94.1	94.1	94.1	94.1
2	Arrivals	No.	2	1	6	16	10	17	13	6
		%	100	50	300	800	500	850	650	300

Source: Romanian National Institute of Statistics; By authors' calculation and interpretation

1.3. The housing

Existing housing and living space reflects in part an issue of increasing living standards. The number of homes in the period under review in table 3, varied between 994 and 1473 homes. The most important increases were in 2012 by 9.3% and 48.1%. The last 3 years were significantly increased the number of dwellings.

The indicator showed habitable surface but important variations from 34,186.00 m2 to 77,920.00 in 2014. The increases were habitable surface of 26% in 2012, 45.7% in 2013 and 18.4% in 2014 which means an average increase and housing built in recent years.

Table no. 3:
Households and habitable surface

No	The Indicators	UM	2007	2008	2009	2010	2011	2012	2013	2014
1	Housing	no.	994	1001	1011	1017	1025	1087	1150	1473
		%	100.0	100.7	101.7	102.3	103.1	109.3	115.6	148.1
2	Habitable surface	M^2	34,186	35,096	36,001	36,661	37,358	43,077	49,738	77,920
		%	100.0	102.6	105.5	107.3	109.3	126.0	145.7	118.4

Source: Romanian National Institute of Statistics; By authors' calculation and interpretation

1.4. Staff employed and unemployed

Staff employee, employee decreased from 435 employees to 179 employees in 2013, 2007 in the village Vlădeşti, the percentage drop was from 100% in 2007 to 50% in 2011 and 47.5% in 2014. This demonstrates the phenomenon the most severe negative impacts on livelihoods in rural areas. Indicator analyzed in table 4, is decreasing the number of employees this is also reflected in the share of employees in the total population from 17.1% in 2007 and 6% in

2013. However, the statistics do not reflect a significant increase in both the unemployed. Numeric unemployed dropped from 92 in 2008-69 to 33.4% in 2013 respectively. Perhaps some of the unemployed have gone to other counties, states or conducted activities that made household incomes [5].

Table no. 4:
The number of employees and unemployed

No	The Indicators	UM	2007	2008	2009	2010	2011	2012	2013	2014
1	Total population	no.	2542	2611	2689	2758	2794	2855	2956	3011
		%	100.0	102.7	105.5	108.2	109.8	112.2	116.1	118.5
2	Employees	no.	435	390	386	373	220	194	179	207
		%	100.0	89.6	88.7	85.7	50.5	44.5	41.1	47.5
3	Structure	%	17.1	14.9	14.3	13.5	7.8	6.7	6.0	6.8
4	Unemployed	nr	90	92	90	86	80	83	69	77
		%	100.0	102.2	100.0	95.5	88.8	92.2	76.6	85.5

Source: Romanian National Institute of Statistics; By authors' calculation and interpretation

2. ANALYSIS OF LOCAL PUBLIC SERVICES

2.1. Drinking water distribution service

Supplemental water supply and the discharge of wastewater in the municipality where they are connected to the network Vlădeşti about 800 households is administered by SC APAVIL SA Ramnicu Valcea. For service water distribution are presented in table no. 5 three indicators: the length of pipeline capacity water production facilities and the amount of water supplied to consumers. The increase of this indicator took place in 2011 from 15.9 km to 17.9 km previous years as a result of the investment, representing 13.3% increase in network length. Their capacity to produce drinking water has also increased in 2011 from 150 m3 to 172 m3 per day in 2011 to 588 m3 capacity since 2012. The production facilities of drinking water has increased almost 4 times realizing and quantity indicator to consumers.

Table no. 5:
The length of the water network and capacity of the facility for the production of water

No	The Indicators	UM	2008	2009	2010	2011	2012	2013	2014
1	The length of the water network	km	15.9	15.9	15.9	17.7	17.7	17.7	17.7
		%	100.0	100.0	100.0	111.3	111.3	111.3	111.3
2	Capacity to produce drinking water	M^3/zi	150	150	150	172	588	588	588
		%	100.0	100.0	100.0	114.6	392.0	392.0	392.0

Source: Romanian National Institute of Statistics; By authors' calculation and interpretation

2.2. Gas distribution service

It analyzes the 2 indicators namely sized service gas pipelines length and volume of gas distributed. In the analyzed period 2007 - 2014 was an increase in the length of gas pipelines from 7.5 km to 8.2 km in 2010 to 13.1 km in 2014, the works of these pipelines were permanent during 2010 - 2014 analyzed indicator allowing an increase from 109% to 174%. And this gas volume showed an increase but not as important as the length of the pipes. The volume of gas distributed increased significantly in 2011 to 13% in 2012 to 21% 2013 27.9% 2014 13% compared to 2007. It concluded that the basic services analyzed were recorded increases indicators especially in 2010, the most important to water supply and distribution of natural gas in table no. 6.

Table no. 6:
The length of the gas pipe and the volume of distributed gas

No.	The Indicators	UM	2007	2008	2009	2010	2011	2012	2013	2014
1	The length of the gas pipe	km	7.5	7.2	7.5	8.2	8.4	12.8	12.9	13.1
		%	100.0	96.0	100.0	109.3	112.0	170.6	172.0	174.6
2	The volume of distributed gas	M^3	336	334	347	333	380	407	430	447
		%	100.0	99.4	103.2	99.1	113.0	121.1	127.9	133.0

Source: Romanian National Institute of Statistics; By authors' calculation and interpretation

2.3. Health service

The indicators presented in table no. 7 reflects the presence and the smallness of health services in medical common. Medical offices are two during the years 2007-2014 and the existence only since 2008, a testing laboratory whose presence is important in the countryside, especially as there is at this level hospitals. Indicator of doctors is correlated with the number of surgeries [5].

2.4. Education department

Table no. 7:
Specific indicators of care

No.	The Indicators	UM	2007	2008	2009	2010	2011	2012	2013	2014
1	Medical offices	nr	2	2	2	2	2	2	2	2
		%	100	100	100	100	100	100	100	100
2	Medical testing laboratory	nr		1	1	1	1	1	1	1
		%	100	100	100	100	100	100	100	100
3	The number doctors	nr	2	2	2	2	2	2	2	2
		%	100	100	100	100	100	100	100	100
4	Public medical personnel	nr	2	2	2	2	2	2	2	2
		%	100	100	100	100	100	100	100	100
5	Privat medical personnel	nr	-	-	4	5	5	5	2	2
		%	-	-	100	125	125	125	50	50

Source: Romanian National Institute of Statistics; By authors' calculation and interpretation

The analyzed indicators in table no. 8, were: schools, school population, children in kindergarten, rural primary and middle schools, teachers, classrooms. Schools increased from a unit in 2007 to 3 in 2013. The school population grew until 2013 after which he appeared so tendency to reduce the number of children engaged in education increased from 193 students in 2007 to 241 students in 2013 to about 25%, representing one of the rare cases of increasing school population. They represent about 1/3 of children enrolled in kindergarten, 52 children in 2007 to 110 in 2013, growth will decrease from 61 children in 2014, this development indicates kindergarten utility service in rural areas and preparing for class zero.

The reduction in 2014 was due to the lower number of pupils in primary and secondary education. For preschool, teaching staff increased from 3 in 2007 to 7 in 2013. The capacity of classrooms and school offices was steady in August 2013 when the number of rooms reached to 9 in 2014.

Table no. 8:
Indicators on the number of schools, school population, children enrolled in kindergarten, primary, secondary

No.	The Indicators	UM	2007	2008	2009	2010	2011	2012	2013	2014
1	The number of schools	Nr	1	2	2	2	2	2	3	2
		%	100	200	200	200	200	200	300	200
2	School population	Nr	193	218	233	225	237	226	241	207
		%	100.0	112.9	120.7	116.5	122.7	117.0	124.8	107.2
3	Children enrolled in kindergarten	Nr	52	79	92	83	93	92	110	61
		%	100.0	151.9	176.9	159.6	178.8	176.9	211.5	117.3
4	Children enrolled in primary school	Nr	78	74	78	79	71	65	68	79
		%	100.0	94.8	100.0	101.2	91.0	83.3	87.1	101.2
5	Children enrolled in secondary school	Nr	63	65	63	63	73	69	63	67
		%	100.0	103.1	100.0	100.0	115.8	109.5	100.0	106.3

Source: Romanian National Institute of Statistics; By authors' calculation and interpretation

2.5. Tourism services

In rural areas in general and for Vlădeşti village units are represented rural tourism and village houses particular about INS no statistics, but in table no. 9 shows the situation for shelters and tourist accommodation processed on the ground.

2.6. Sanitation services

The collection of waste in the commune Vlădeşti from the population and businesses are carried out by SC Urban SA. Vlădeşti village has many street baskets and containers for storing waste of capacity: 21 000 liters (7 pieces) 1100 liters (22 pieces), 120 and 240 liters (450 pieces).

2.7. Roads infrastructure services

Vlădeşti common characteristic is the existence of roads dense traffic across which heavy traffic is the transport of finished goods and raw materials to existing industrial establishments. The village is crossed by the trail of several public roads ranked by GD 540/2000, which serve as streets in town: DN 64A, 168 Vlădeşti DC - Trudin, DC 165, DC 164, DC 62 Vlădeşti - Valley Ursului . Length Valley Road Vlădeşti the village is 38.5 km of which 28 km are local roads.

2.8. Electricity services

În comuna Vlădeşti reţeaua de energie electrică alimentează atât consumatorii casnici cât şi obiectivele economice, unităţile social culturale cu ajutorul PTA şi PTM 20kv/0,4 kv care sunt legate la LEA 20 kv Râmnicu Vâlcea Sud – Băile Olăneşti.

In common Vlădeşti electricity grid supplying both domestic consumers and the economic, social cultural establishments using PTA and PTM 20kv / 0.4 kv are connected to LEA 20 kv South Ramnicu Valcea - Băile Olăneştii.

2.9. Telecommunications services

Telecommunications are the services telephone and cable television. Not all villages have fixed telephone, the latter being replaced by mobile telephony which is represented by companies such as Vodafone, Orange, Cosmote. Vlădeşti common benefit of connecting to cable television, internet and telephony services through various companies such as RCS & RDS, UPC, ROMTELECOM (TELEKOM).

Conclusions

Vlădeşti village is located 5 km away from city of Ramnicu Valcea and stretches over 10 km along DN 64 A. The villages that make up common Vlădeşti are administrative center Fundătura Vlădeşti villages, Pleaşa, Priporu and Trundin.

The commune's surface is 2,118 ha of which 31% is urban and 69% outside town. Also, the commune has natural reserves, forests and agricultural land fund. The population of people increased from 2.542 in 2007-3011 people in 2014, ie 18.5% in the same period the number of dwellings increased by 48%.

1. Water distribution is done through indicators such as: network length which increased by 11.3% in the seven years analyzed and the amount of water supplied increased by 62%.
2. Service natural gas distribution improvements by increasing the length of gas pipelines from 7.5 to 13 km in 2014 (74%) and the volume of gas distributed increased from 336-447 m3.
3. The health service is provided for the 3,011 inhabitants 2 2 medical doctors, public health staff (2 people) and private health personnel working since 2009, improved the situation of health services and the existence of a laboratory analysis medical.
4. Supplemental education includes two schools and a school population rose slightly from 193 students to 207 students in 2014. The teaching staff has been stable except for teachers in pre-school that has grown from 3 to 7 people .
5. Travel services in town are represented by a pension Vlădeşti agritourism and rural houses particulare.În vicinity of the village but there Vlădeşti numerous guesthouses representative for this area.
6. Infrastructure services - the commune is crossed by DN 64A (length - 10 km) and 4 roads serving the town and the streets in the area (length - 28 km), the remaining movements being made on secondary roads (streets).

7. Service electricity supplies and household economic goals. Since 1994 there is a common small hydroelectric power (1.7 MW) which operated for 10 years and has been connected to the national power system, currently being conserved.

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GREEN ENERGY, A MODEL OF INDEPENDENT ENERGY IMPLEMENTED IN ECOTOURISM COMPLEX NEPTUN

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Abstract: *"Green energy" is a term that refers to renewable and unpolluted energy sources, implemented in the Ecological Complex Comorova Forest Neptun - Romania, owned by Bioterra University of Bucharest. Students perform their specialty practice stages here. So by choosing some renewable energy sources consumers can support the development of clean energy that will reduce environmental impact and increase energy independence. Bioterra University's energy policy is based on the existence EU 2020 Biodiversity Strategy which states "objective 20/20/20":*
- reduce greenhouse gas emissions by 20%;
- the use of green energy at a rate of 20 %;
- increase energy efficiency by 20%.
So, within the Faculty of Environmental and Costumer Protection was started a research project which has the aim is to achieve full energy independence within Comorova Ecotourism Complex.
Major investments have been made from our funds, in order to achieve the objective mention before, by purchasing wind turbines, solar panel kits, solar panels for hot water preparation, heat pumps, infrared panels, led bulbs and green mobility. The study of weather phenomena, monitoring and processing of electrical parameters was carried out in real time with modern equipment assisted by computer and with Internet connection.

Key words: *green energy, energy independence, ecological, computer, environment.*

Introduction

The U.E. directive known as "20/20/20" provides both a harm reduction by 20% until 2020, and a requirement to obtain a 20% renewable energy out of the complex needs. Many energy scenarios are developed each year by specialized organizations in the field of energy. These scenarios indicate a need for 15 to 25 Gtep to the 2050.

In the same time, it is reasonable to predict that by mid-century, the energy demand will be doubled. This will generate an urgent need of developing new technologies, which in the first place will be inevitable expensive. If the same level of consumption will be kept, it is estimated that current oil reserves will be exhausted in about 40 -80 years.

After the Fukushima disaster from 2011, the general idea is to replace nuclear energy with renewable energy.
Energy giants E.ON, RWE, EnBW and Vattenfall need to close their nuclear plants in Germany until 2022, as the deadline set by Chancellor Angela Merkel. The dependence on Middle Eastern countries, which represents 65% of current oil reserves, will increase. Since 2020-2030, economic and political tensions can lead to diminishing fossil resources exploitable and to their concentration in politically unstable areas, which will cause harm to security of supplies for EU countries. As a consequence imposing large-scale development of technologies for green energy is required [7].

Materials and methods

Complex Comorova entered the heritage of Bioterra University in 2001 and it is located in the heart of the forest Comorova, having an area of approximately 5 hectares.
The defining characteristics of this modern tourist complex are quality and elegance, both in terms of the villas with a capacity of 500 beds, pools of sulphurous waters, arrangements saline, sports, bars, disco, restaurants, terraces, wine cellar, rustic lounge, landscaped barbecue places, etc., and through the catering services offered. Moving between resorts is ensured in the Tourist Complex Comorova - Neptune with green mobility using in this purpose five minibuses electrics, with electric batteries and solar panels. These minibuses are connecting the resort and beach, Mangalia and Neptun-Olimp with the south of our seaside and the tour of Mamaia resort [2].
Since that time huge efforts have been made, both financial and human, to reduce power consumption and to create an integrated energy complex, functional and independent by purchasing wind turbines, solar panels fotofoltaics panels infrared means green transportation (electrics), lamps and induction hobs. Increasing global greenhouse effect raises the temperature of the planet. Because of the human activity, the concentration of greenhouse gas has increased since pre-industrial times (1750-1800).

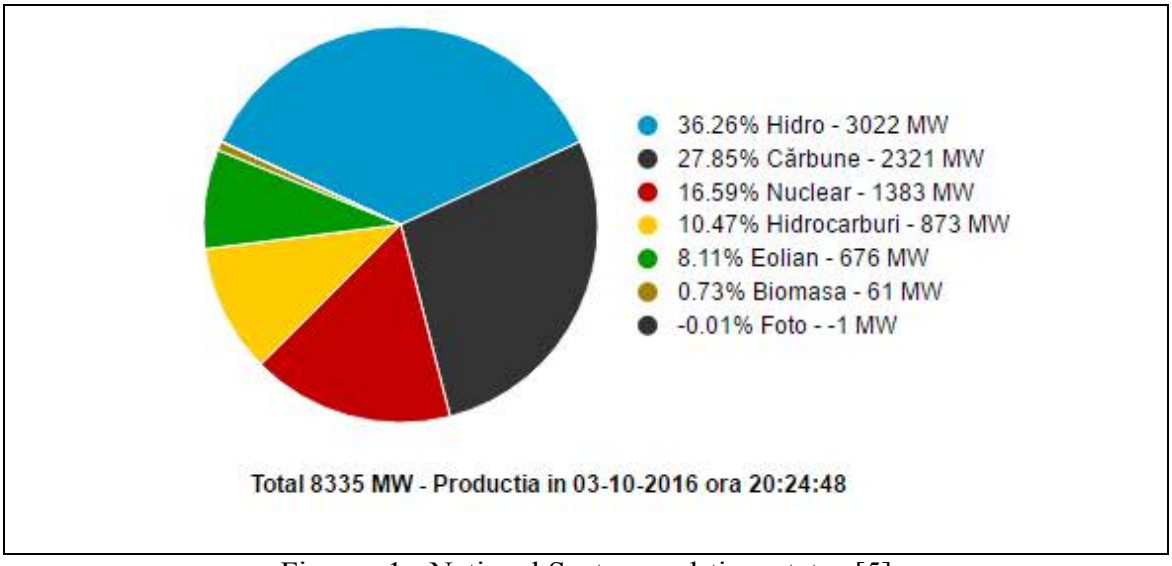

Fig. no. 1 - National System real-time status [5]

The concentration of carbon dioxide (CO_2), the gas emissions with the highest share, has increased by 30% since pre-industrial era. The combined effects of all greenhouse gases (CO_2, methane, ozone, ...) are equivalent to an increase of CO_2 by 50% over that period. For a "radiography" of the electricity production, http://www.transelectrica.ro website offers the possibility to view, in real time, the nature of electricity production, observing substantial share of green energy. However, from analyzing the graphs at different times of the year, it can be concluded that, invest in renewable forms of energy suitable with the seasons, as shown in the map of wind and solar potential in Romania, have to be made. It is noteworthy that Dobrogea has a wind potential estimated at 14,000 MW, the largest in Eastern Europe and the second in Europe. Being in this area, Complex Comorova has in some days wind energy produced that hit values over 25% (fig. no. 1) [10].

Results and discussions

1. The study of renewable energy at the University Bioterra

In order to maintain control of the environment, biodiversity conservation, the study pollution and how to reduce it, it was considered necessary and imperative to create a laboratory to study renewable energy (fig. no. 2).

2. Using renewable energy resources extensively in the complex energy management

- The heating of accommodation and domestic water is made only by using renewable electricity from wind turbines and photovoltaic panels, through both on grid and off grid systems.
- Radiant panels in IR, with high energy efficiency, are used for heating hte accomodation spaces.
- Use of environmentally friendly transport

Fig. no. 2 - Renewable energy laboratory [1]

(Minibuses – Fig. no. 3, electric power through photovoltaic panels Secquoia. ATV and scooters with electric propulsion) ensuring both tourists traveling in the area, the beach, and for recreational activities [8].

3. Photovoltaic panels (Fig. no. 4)
Technical specifications:
- Pi=10KW, Pi(summer)=13,2KW, 35 panels x 285 W=9975W, Uies/panel=36,6V, Imax=9,2A, Installation direction: N-S, 45^0;
- The system is composed by: controller, inverter, battery (12V/200A x 30 battery - deb. 8 h; 12V x 10 battery.=120V);
- 3 groups connected in parallel.

Fig. no. 3 - Minibuses electric [8]

Fig. no. 4 - Photovoltaic panels

4. Comorova-Neptun Complex - wind turbines (fig. no. 5)
Technical specifications:
3 x 5 = 15 against pale;
Optimal wind speed (for producing en. El. -->Pmin): vmin=2,8m/s;
Optimal wind speed (for producing en. El..-->Pmax): vmin=8,4m/s;
Wind speed (for damage): v damage =13m/s;
Pi=20KW, Imax=100A;
Minimum Installation height: hmin=8m;
The kit contains: controller, inverter, 4 pale/propeller (a vertical axis - vertical generator).

5. Solar panels
Technical specifications:
Hot water tank (there are no pressure hobs, during winter should be empty);
P=2KW, Volum 300l/200l;
1 panel --> 2 rustic little houses;
Endurance heating --> 400 C.
Panels distribution: 14 panels 300l -hotel1, 5 panels 300l -hotel2, 33 panels - rustic little houses, 52 total solar panels.

6. Induction hobs
Technical specifications: Pi=8,4KW, 4 hobs.

7. Solar minibuse
Technical specifications:
Capacity: 14 places;
Electric engine Pi=5 KW; Ualim=36V;
12 Battery 3V/200A;
Photovoltaic panel 12V-->40A;
Vmax=30 KM/h;
Distance autonomy: 70 Km;
The time required for the loading of the network: 6h;
The time required for charging the photovoltaic panels (from the sun): 9h.

8. Sequoia environmental means for displacing
Technical specifications:
P=700W, U=36V;
Battery 36V-->60A;
Two independent motors on each wheel, rr. wheels: 4.

Fig. no. 5 - Comorova-Neptun Complex - wind turbines [9]

9. Led Lamps

Lamp led SMD 12W: 300 pieces. (Pequivalence=12W x ≈8);
Lamp led 3W: 80 pieces.

10. Weather station with an Internet connection (Fig. no. 6)

Environmental monitoring was done using a weather station that has computer interface. The data is stored on a server, with the possibility of accessing online in real time. Thus it was measured wind speed at different heights (6m-12m-18m) and predominant directions, observing that gusting wind blows more.

Fig. no. 6 - Weather station

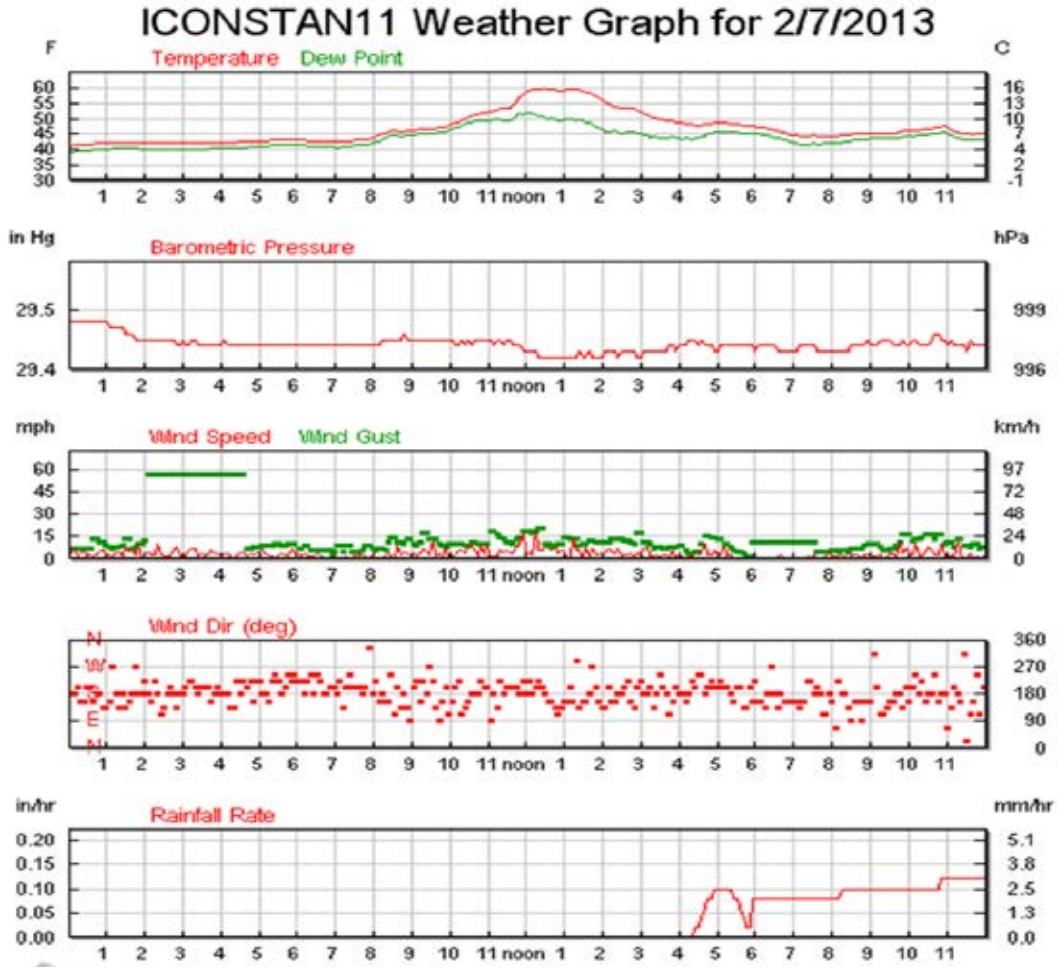

Fig. no. 7 - Weather station measured parameters

In this perspect vertical axis wind turbines, with power of 20 KW, have been used. The measured parameters can be observed in (Fig. no. 7) the software applications generating eloquent graphics for decision making: type turbines, pile height, type blades [6].

11. Digital controller connected to the Interne [4]

For measuring of electrical renewable energy, a digital meter with Internet conection was installed, which stores data on a server, that can be accessed online at any time, the software being able to generate graphs, statistics synoptic at the days, months and years.

12. Monitoring of electricity produced by photovoltaic panels [3]

The controller of photovoltaic panels has web interface, (Fig. no. 8) being connected to the Internet, being able to see at any time

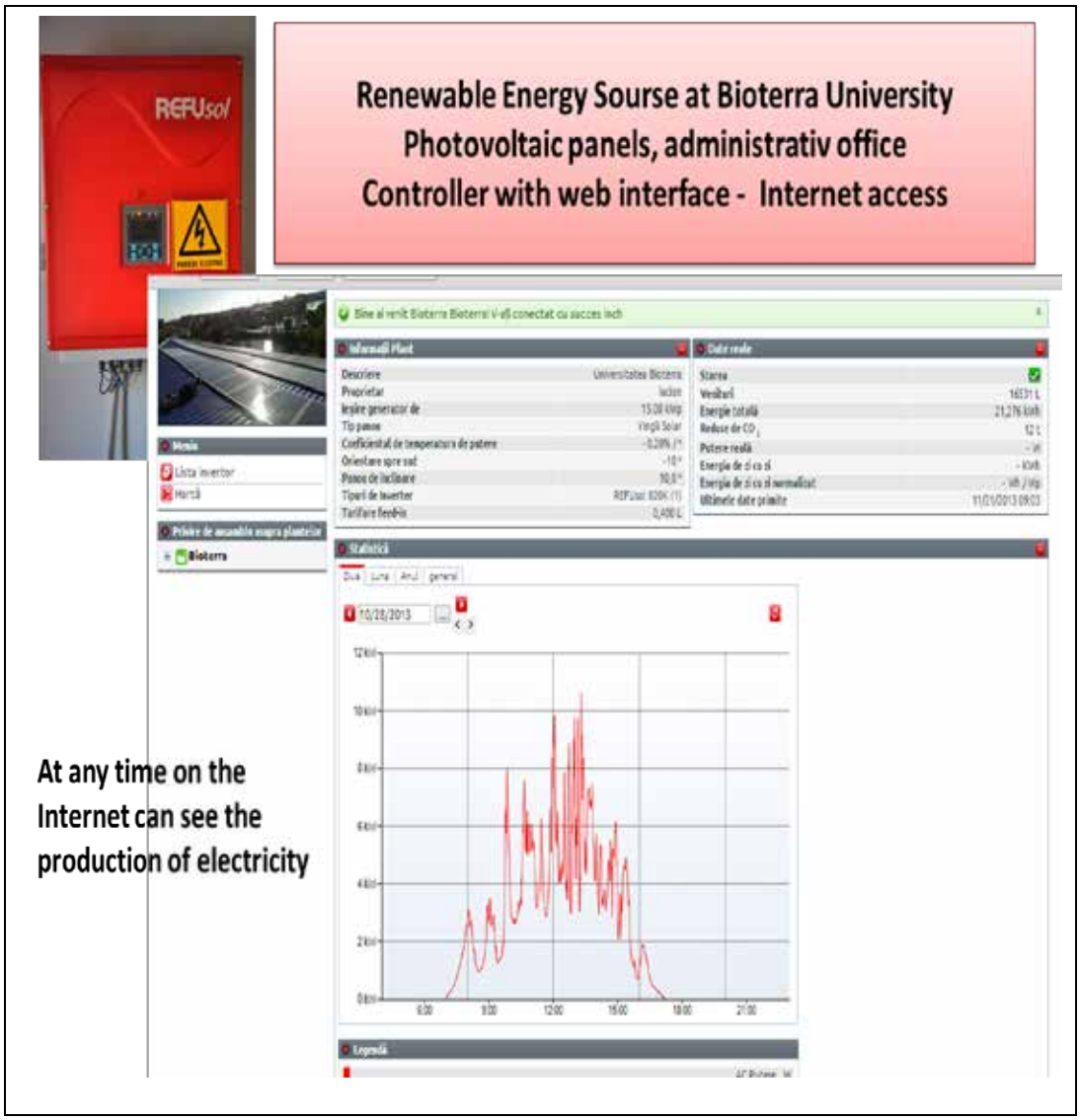

Fig. nr. 8 - Controller digital interface

the amount of green energy that is injected into the network. It the same time, data is stored on a server, which can generate graphs and statistical calculations for days, months and years.

13. Viewing wind turbines (http://comorova.housynapses.com/) using IP video cameras
To have more information, visually, IP video cameras with an Internet connection were mounted, which can provide a "romantic" picture of the wind turbines.

Conclusions

- Bioterra University through the adopted energy policy, wants through investments in renewable energy sources (solar panels, wind turbines, solar panels) to gain energy independence while reducing electricity consumption by replacing incandescent laps with type LED SMD, the electric hobs with induction ones.
- It appears that the renewable resources are part of the green type, thus helping to reduce the carbon footprint. These issues were disseminated both among students through specialized courses in the Faculty of Environmental and Consumer Protection, and as the concrete actions of European projects accessed through ministries: Environment, Tourism, Labor.
- Technical support is provided by laboratories for the study of renewable energy, environmental protection, both at the headquarters in Bucharest and to the bases of practice (mountains, sea, The Danube Delta).
- Noteworthy is the investment in human resource professionals with specialized training courses / Educational trips documentation both in Europe and in China.
- Training of the "Eco" awareness circumscribed to the concept: "The earth is life and energy for all" is the policy that is raised to the rank of nobility.

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