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European Union Policy on Climate Change Framework

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Abstract – The aim of the paper is to study the European policies in the matter of climate change and water resources management, especially Common Agricultural Policy, Environmental Policy, EU Emission Trading System (ETS), climate and energy policies nexus with international agreements in climate action and world global warming, and the way these European policies are settled and applied in national countries. The paper studies the manner these policies are implemented in European Union countries, funding resources for climate action, with impact on decision-making level and good-governance.

Keywords: EU Climate Governance, European Policies, Water Management, Renewable Energy, Green-Technologies, CAP, European Integration.

I. INTRODUCTION

Climate change effects are becoming evident worldwide, with serious regional and local impacts. The European Union (EU) has launched and developed initiatives and policies that scratch the surface of climate change and so, EU is a key player in designing climate, energy, agricultural, or environmental policies.

The main scope of this paper is to study the EU climate governance in the matter of climate change and water resources management, especially Common Agricultural Policy, Environmental Policy, EU Emission Trading System (ETS), climate and energy policies nexus with diverse entities at European level or with international agreements in climate action and world global warming from three points of view: economic efficiency, social equity and ecological sustainability [2].

Another important aspect is to see the manner these European policies are settled and applied inside EU and national countries. EU approach is toward highly energy efficiency and low carbon economy. Likewise, EU policies are directed to encourage investment in green-technologies, to reduce greenhouse gases (GHG) and ozone-depleting, and to increase the use of renewable energy (water, wind, solar, biomass) with impact on economic competitiveness, social cohesion and friendly with the environment. The paper studies the manner these policies are implemented in EU countries, funding resources for climate action, with impact on decision-making level and good-governance [1].

Economics is the science that deals with limited resources capable of being used in order to satisfy human needs, and classical economics stressed the power of the market both to stimulate growth and to serve the interests of society. Agricultural economics emerged as a field of applied economics that deal with agricultural production, the transformation of yields, and crop in food, for to be consumed by people. If there is food, there is energy, this means life [7].

II. METHODOLOGY

Paper's methodology is based on comparative analysis between European countries (using EUROSTAT database) and consists in presenting EU policies related to climate change and analyzing the results of applying them in the frame of EU-28.

III. EUROPEAN POLICIES, REGULATIONS, AND ENTITIES RELATED TO CLIMATE CHANGE

3.1. Agriculture, energy, environment and climate change policies in EU

EU, using own policies and strategies, is very interested to protect environment quality, to use the highest standards of protection for the natural resources and natural habitats, to keep clean the air and the (ground and surface) water, to ensure proper waste disposal, to promote sustainable production (sustainable development for businesses, low-carbon technologies) and sustainable consumption (to reduce the waste), to present knowledges about toxic gases (pollution) and chemicals, to supply legal framework saving the health and wellbeing of European citizens.

In this section there are briefly presented the most relevant directives that are part of EU water policies. With direct influence on water resource management

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and on agricultural water use [4]. The Treaty on EU (Maastricht Treaty) in Article 130-R made specific reference to environment policy and high protection, in order to ensure human health and sustainable development.

Environmental policy objectives were present in various types of regulations, such as (Council) directives that tackled water pollution (dangerous industrial substances, urban waste water, agricultural nitrates and pesticides) and set quality objectives for water for a specific use (drinking water, for instance): 778/EEC/1980 (Quality of water intended for human consumption), 440/EEC/1975 (Water intended for the abstraction of drinking water), 160/ECC/1976 (Quality of bathing water), 659/EEC/1978 (Freshwater Fish), 923/ECC/1979 (Quality required of shellfish waters).

A second type of regulations sets Emission Limit Values (ELV) for certain substances, such as: Council Directive 464/EEC/1976 (pollution caused by certain dangerous substances discharged into the aquatic environment was amended by Council Directive 656/EEC/1990; and Council Directive 692/EEC/1991), Council Directive 271/EEC/1991 (Urban Waste Water Directive helped to ameliorate water quality in rivers and on the shore of EU and to reduce pollution by urban sources, laying down basic ELV for firms, with a specified timetable until 2005), Council Directive 676/EEC/1991 (Nitrate Directive for protection of waters against pollution caused by nitrates from agricultural sources, that can contaminate groundwater resources), and Council Directive 414/EEC/1991 (placing of plant protection products on the market).

Member states (MS) may decide the treatment facilities. For instance, for some countries these Directives created high additional cost for the consumer (Germany), and for other countries (Portugal), the opportunity for important investments from Structural Funds source. Likewise, MS must define *good agricultural practice*, the use of fertilizers, the concentration, and identify vulnerable areas.

Concerns about quickly deterioration of water resources with important consequences for environment were expressed in the Dublin Statement on Water and Sustainable Development (1992), which set a commitment to sustainable water resource management and development. With agenda action towards alleviation of poverty and diseases, protection against natural disasters, water conservation and reuse, sustainable urban development, agricultural production and rural water supply, protecting aquatic ecosystems, resolving water conflict, enabling environment, knowledge base, capacity building, this Accord emphasized that water should be promoted as an economic commodity, not a free good becoming increasingly scarce, valuable, and expensive to provide.

The Integrated Pollution Prevention and Control Directive (61/EC/1996) was another (integrative) policy tool to prevent or reduce emissions to land, air and water. The IPPC regulated activities that can produce damages to the environment (industrial and intensive livestock farming).

In 1997 EU-Commission stated that in most MS most of Directives has not been properly implemented.

In this context, with many challenges and numerous unresolved problems, the European Council of Ministers and European Parliament asked for a reform of the water policies, establishing a framework for Community action in the field of water policy (to reduce emissions of toxic, persistent and bio-accumulated substances discharged by industry to the aquatic environment) and adopted in 2000 the Directive 60/EC/2000, also known as the Water Framework Directive (WFD), it was implemented in 2003 and has the planned completion date as 2027.

WFD is one of the most ambitious European effort for a common integrated management of environmental resources in the European Union, letting MS to choose between ELV or Environmental Quality Standards to reach this aim (all MS have chosen ELV, but EU-Commission did not finish to establish the list of ELV). It states that *water* is not just a good like any other, but it is a heritage which must be protected. Water is a key limiting condition for sustainable development, it increases the quality of life and peace.

Common Agricultural Policy (CAP) is the heavies of European common policies. It was defined by the Treaty of Roma (1957), redefined by Maastricht Treaty (food security), Agenda 2000, and reformed in 2003 (decoupling subsidies, MS may decide to maintain a limited amount of specific subsidy and may apply gradually till 2007), 2009 (the Treaty of Lisbon apply co-decision procedure [6] in agricultural matter), 2013 (with implementation till 2020) where one of the most objective is „sustainable management of natural resources".

Table 1 presents the priorities of CAP in the past and in the future.

Table 1. Common Agricultural Policy

Time	**Issues and concerns**	**Objectives**	**Agricultural water pricing**
In the past	Poverty in rural areas	Equity and rural development	Lower prices
	Increasing food demand	Food self-sufficiency	
In the future	Water and soil pollution	Sustainable development	Higher prices
	Budgetary constraints	Economic efficiency	

Ones of CAP principles and objectives are:

- To increase productivity in agricultural crop using technical progress, in order to ensure rational development of rural yield and optimal use of production factors (especially labor force);
- To increase competitivity;
- To ensure security in supplying, production and delivering activity;
- To ensure a decent living level for agricultural community;
- To ensure reasonable prices for the crop;
- To integrate environment objective in CAP;
- To promote sustainable agricultural policies (to create new jobs, new opportunities for farmers);
- To simplify EU regulations.

From environmental vision, EU has the most intensive and extensive regulations [8] approaching issues like: ozone layer protection, waste water and air pollution, sustainable energy (with the help of European Environment Agency). EU energy policy was established by the Treaty of Lisbon (2009) regarding energy development (production, distribution, and consumption), energy regulations, and energy conservation.

EU Emission Trading System was set up in 2005, it is the first international emission trading system (carbon market) in the world, including all 28 EU MS plus Iceland, Norway, and Liechtenstein. It covers almost 45% of the EU's gas emissions. Its purpose is to limit emissions from more than 11,000 strongly energy-using equipment (industrial companies or airlines operating). Eight EU MS (Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Lithuania, Poland, and Romania) have some allowances in return of investing in environment friendly equipment.

Climate change and energy areas are objectives for Europe 2020 Strategy.

3.2. European Entities in Climate Governance

European climate governance is related not only to European regulation in environment and agricultural matter but also to diverse entities such as European Environment Agency (EEA), Climate Alliance, Renewable Energy and Energy Efficiency Partnership, or Cities for Climate Protection.

EEA was created by European Council for supplying real scientific reports in help of an efficient environment policy.

Climate Alliance is a network of towns, cities, municipalities, districts, regions, NGO, and other organizations from European countries (included Romania) strong committed in reducing CO_2 emissions by 10% every 5 years, to strive for energy conservation, energy, efficiency, and use of renewable energy, and to act for climate justice in partnership with indigenous people. Alliance is concerned about EU policies, it advocates the good-governance in climate and energy policies [3].

3.3. International Climate Policy Framework

OECD developed the Policy Framework for Investment in Agriculture in the fields: investment policy, investment promotion and facilitation, infrastructure development, human resources, research and innovation, financial sector development, trade policy, tax policy, risk management, responsible business conduct and, environment.

The Renewable Energy and Energy Efficiency Partnership (REEEP) is an international organization based on clean energy business model, together with United Nations Industrial Development Organization (UNIDO).

The Cities for Climate Protection (CCP) is a global network of transnational municipalities engaged in reducing GHG emissions, as a local climate policy.

IV. EMPIRICAL RESULTS

This section presents some results about EU environment, according to EUROSTAT database for verify the EU policies implementation.

Table 2. GHG emission (baseline 1990)

Geo\Time	**1991**	**2001**	**2011**	**2016**
EU-28	98.26	93.25	83.13	77.64
Belgium	101.41	101.77	84.47	81.53
Bulgaria	79.08	60.16	63.38	57.02
Czechia	90.55	75.19	69.67	65.62
Denmark	114.65	103.58	84.01	73.91
Germany	96.27	85.36	74.65	74.05
Estonia	92.2	43.83	52.49	48.62
Ireland	101.14	128.63	104.65	113.42
Greece	99.74	122.89	111.85	89.69
Spain	102.74	134.28	126.15	116.43
France	104.85	102.73	90.29	85.64
Croatia	77.69	84.14	86.2	76.19
Italy	100.47	108.91	95.79	83.85
Cyprus	110.08	145.61	158.04	152.92
Latvia	92.88	41.98	44.66	43.77
Lithuania	104.29	41.87	44.22	42
Luxembourg	104.93	84.85	100.51	87.53
Hungary	92.81	80.8	68.42	65.82
Malta	107.17	130.07	145.85	99.42
Netherlands	103.49	101.62	92.96	91.63
Austria	104.92	108.28	106.35	103.06
Poland	97.48	83.21	86.94	85.03
Portugal	102.94	138.16	116.71	115.77
Romania	82.27	59.79	51.84	45.82
Slovenia	92.9	107.42	105.71	95.19
Slovakia	87.05	70.38	61.29	55.63
Finland	96.83	105.94	96.47	84.03
Sweden	99.9	97.28	85.94	76.1
United Kingdom	101.1	91.84	73.6	63.64

GHG emission target EU-28 is accomplished (the target is 80). It is noticed that it has decreased in averaged EU-28 along 25 years (Table 2), but there are MS where it increased even very high (Cyprus, Ireland, Spain). Regarding the share of renewable energy in energy consumption, it can be noticed that the target indicator (20 points) is not accomplished in average EU-28. Resource productivity, measured as the ratio between GDP and domestic material consumption, increased over the trend 2000 and 2017 from 1.47 euro/kg to 2.04 euro/kg. In the case of Romania, the indicator is the lowest (0.32 euro/kg), after Bulgaria (0.30 euro/kg). Price index in agricultural production generally has increased in EU-28. Air pollution from agricultural activity has a high level in EU-28 in 2016 (3,611,068 t from total of 3,912,609 t) increasing comparing with previous years (2009, 2010, 2011, 2012, 2013, 2014, 2015). The greater pollutants are Germany (662,574), France (630,049), Spain (492,210), Italy (382,220), UK (289,445), Poland (267,107). Romanian level is 167,469 in decreasing trend. It can be noticed that share of pollution from agricultural sector in total pollution level is very high (over 92%).

V. CONCLUSIONS

EU integration is followed through its policies. Environment policies are directed to encourage investment in green-technologies, to reduce greenhouse gases and ozone-depleting, and to increase the use of renewable energy with impact on economic competitiveness, social cohesion and friendly with the environment. Overall, European climate governance has many strengths but is difficult to release the connection between EU policies and certain entities (Climate Alliance, CCP, REEEP). In order to reduce pollution and respect ELV, there are necessary appropriate reductions in activities that cause pollution. The paper has identified some direction the dimension of change can be oriented to: (a) Demography – in developed countries, it is well defined and well characterized; (b) Economic growth (structure, composition and rate) – it depends on the outcomes of fiscal policy, monetary policy, trade, rules and legislation rather than on *invisible hand*; (c) Technological changes (the rate and direction) and sustainable development (environment friendly) also shaped by market, political, cultural, judicial factors; (d) Social values and social responsibility matter for policy makers and decision makers but furthermore for economic activity, shaping consumption behavior: consumerism/individualism (selfishness, private goals, individual rights and freedom, short-term interests), conservationism/community (altruism, collective interest, social cohesion, equity, equality, social implication, long-term considerations such as sustainable development) or mixed of them shaping economic activity (market, quantity, quality etc.); (e) Political values and governance can be oriented towards globalization/interdependence, international organizations (EU) or regionalization/autonomy, nationalism. Despite of many reforms, the results of the paper show that EU regulations (CAP, energy, related to other entities) are enough far to be strongly established, because of the new dynamics of EU and new challenges inside and outside in present food and sanitary risks [9]. Farmers represent 3% of EU population, they generate at most 6% of EU GDP, but they receive 30% of EU budget through CAP.

Irrigated agriculture is an important economic agricultural activity, but the largest consumer of water. Common Agricultural Policy (CAP) influences decisively the use of water in irrigation activity. Thus, it requested to search the optimal integration of the sustainability of irrigated agriculture in Europe in the context of CAP Reform, WFD, and of the European Environment Policy.

The paper studied the manner EU regulations respond to present climate challenges and the manner these policies are implemented in EU countries, founding resources for climate action [5], with impact on decision-making level and good-governance. But, in accordance with the principle of subsidiarity, EU actions in the field it has competencies and must support the actions of the competent authorities in every EU country. The results of European policies on national level depend also on the case the country is developed or in developing country, emphasizing the role of education on the environment, good practices and good-governance. This paper makes a major contribution to understand climate policies in the frame of EU and beyond for decision-makers, good-governance factors and academics involved in climate policy.

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