The ethical dimension of the Romanian scientific research for sustainable development

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Abstract: This article presents some elements related to the connection between scientific research and sustainable development, considering the ethical principles assumed by the scientific community. The Romanian laws concerning the National Sustainable Development Strategy 2013-2020-2030, as well as the objectives related to Science and Technology, are also presented. Responsible scientific research must be managed with respect towards the dignity and security of the human beings, towards the animals and the environment, ensuring the preservation of the biological diversity, with moral integrity, in an ethical and legal context, which is in continuous improvement.

Key-Words: -ehics, sustainable development, research-development, Romania, law

1. Introduction

Sustainable development has been defined in many ways, but the most frequently quoted definition is from the Brundtland Report [1,2]. Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- the concept of needs, in particular the essential needs of the world's poor, to which overriding priority should be given;
- the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.

The 2000 Lisbon Strategy takes into account almost all EU activities on an economic, social and environmental plane. Each spring, a report of the European Commission analyzes, in great detail, the extent to which the strategy was implemented. The European Commission's spring report is the only document on the European Council's spring agenda, when the EU's state or government leaders assess the progress recorded in attaining the goal set in Lisbon and establishes future priorities, with a view to attaining this goal.

The Council held at Goteborg, on June 15-16, 2001, introduced, among other goals, a new dimension, the environment. This new, three-dimensional approach of examining, in a coordinated way, the economic, social and environmental consequences and taking them into consideration represents the concept of durable development.

Subsequently, the revised Lisbon Strategy has had the following general goals: investing 3% of the GDP in research and development; more durable economic growth; more, better quality jobs; a governance mechanism, both at community and at national level, as part of a partnership for growth and workforce employment.

Sustainable development is an overarching that our present development does not comprise the ability of future generation to meet their needs. **Generating and exploiting scientific knowledge represent the most important sources for attaining welfare.** Current EU policies are based on the renewed Sustainable Development Strategy of june 2006, that deals in an integrated way with economic, environmental

and social issues and where research and development plays an important and multifaceted role [3]. The Seventh Framework Programme for research and technological development (FP7) is the European Union's main instrument for funding research in Europe. Interdisciplinarity and integration are key drivers of the EU research policy, and this mirror effect of FP7 and the SDS is reflected throughout the different areas of EU R&D policy [4].

In the year 2007, Romania finalized the National Strategy for Research-Development and Innovation which offers new perspectives to the System of Research-Development and Innovation, also determining through the National Plan the main areas of knowledge which will benefit from public investment in the period between 2007-2013 [5, 6].

The particular complexity of organizing and financing this area can also bring about problems in integrating the ethical dimension of research. In order to solve the issues regarding ethics in science within a unitary national frame, the law of proper behavior in scientific research, technological development and innovation was approved in 2004 [7].

2. Problem Formulation

The field of ethics, also known as moral philosophy, implies systematizing and recommending concepts of correct behavior, as well as defending correct outlooks. Its purpose is to discover and introduce principles by which human character and action may be judged.

The freedom to organize and conduct research-development activities is guaranteed in all European countries and is correlated to the assurance of financial resources, while complying with the laws in force and the principles of professional ethics regarding the adverse or damaging effects of applying the outcomes of science and technology on humans. Drawing a limit between incorrect conduct and fraud is difficult and here is intervenes the role of the scientific community for establishing appropriate standards and codes of conduct, as well as rules of procedure, in order to prevent professional errors.

Collection of ethical standards comprises the following types of standards: oath, pledge, code, guideline, principle, appeal, recommendation, manifesto, statement, declaration, resolution, convention, charter, and law. The collection includes 115 standards: 39 international standards (28 interdisciplinary + 11 discipline-specific) and 76 national standards (36 interdisciplinary + 40 discipline-specific) representing 23 countries in 6 continents [8].

3. Problem Solution

In 2008, Romania adopted the National Sustainable Development Strategy 2013-2020-2030, which was performed with the support of the United Nations Development Program, in which Research & Development plays a key role.

For this purpose three strategic objectives were defined:

a) *Creation of knowledge* by obtaining cutting-edge scientific and technological results, increasing the international visibility of Romanian research, promoting the transfer of results into the economy and society, substantially improving, in qualitative and quantitative terms, the performance of human capital, also through the development of centres of excellence;

b) *Increasing the competitiveness* of the Romanian economy by promoting innovations that have an actual impact on the activity of companies, accelerating technology transfers, shifting the emphasis towards exercises in complex problem-solving with direct applications, encouraging partnerships with manufacturing and service companies on a competitive basis, creating centres of competence and technological platforms;

c) *Improving the social quality of research* by generating conceptual and technological solutions that have a direct impact on the preparation and implementation of public policies, and correlating research with social requirements, particularly in such fields as public health, environmental protection, infrastructure, land use and spatial planning, and sustainable management of national resources in an ecologically responsible fashion.

On the basis of a comprehensive foresight exercise, the first of its kind in Romanian

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science and research, the Strategy indicates the priority areas for publicly funded research and development activities: technologies for the information society, energy, environment, health, agriculture, food security and safety, bio-technology, materials science, innovative products and processes, space and security, socio-economic research and the humanities.

Conducting science is based on basic principles valid for all countries and all scientific fields. The first of these principles is honesty towards oneself and others. Honesty is both an ethical principle and the basis of all rules whose details vary in behavior among fields of study, or among professionals in science; these rules make up what is known as good scientific practice. Transmitting the principle of honesty to students and young researchers, but also to savants, is one of the core missions of research units, as well as universities.

„Is the intervention of state authorities necessary? Is there a need for new regulations to protect science, sustaining it financially with public funds, and society, depending on scientific results, against abusive research practices? Based on available knowledge and based on the entire experience published in other countries, these questions may be answered thus: the high level of achievements in the scientific system provides a daily proof of the successful application of the principles of good scientific practice. Severe cases of dishonesty in science are rare events. Given the fact that dishonesty – unlike error – fundamentally contradicts the principles and essence of scientific activity, it also represents a grave danger for science as such. It may undermine the public's confidence in science, and may destroy the confidence that researchers have in each other, without which the success of scientific activity is impossible"[9].

Knowing the general frame within which Romanian research is carried out, we wish to give a brief presentation of the stipulations in the law of proper behavior in scientific research, technological development and innovation, the Law no. 206/2004 regarding proper behavior in scientific research, technological development and innovation**.** The goal of the law was to introduce binding moral principles, which bring about special requisitions. The law states that proper behavior in research-development must take into consideration the human being and its dignity, the suffering of animals which must be reduced to its minimum level, but also protect and restore the natural environment and ecological balance, making sure that they are protected against potential aggressions produced by science and technology. The law cites actions of researchers that are considered as infringements of proper behavior:

- concealment or elimination of undesired results and fabrication of results;
- replacement of results with fictional data and deliberately distorted interpretation of results and deformation of conclusions;
- plagiarism of results or publications of other authors;
- deliberately distorted presentation of other researchers' results and incorrect ascription of a work's authorship; introduction of false information in grant demands;
- concealment of conflict of interests; misappropriation of research funds; failure to record and/or store results, as well as incorrect recording and/or storing of results; lack of information of the research team, before starting the project, regarding: salary rights, responsibilities, co-authorship, rights on research results, financing sources and associations; lack of objectivity in evaluations and infringement of confidentiality conditions;
- repeated publication or financing of the same results as elements of scientific novelty.

Citing these infringements leads to the conclusion that all possible cases of misconduct have been included and, in this respect, the law starts form defining some notions, so that the approach would be unitary and without allowing any interpretations. The following notions are defined: fraud in science, fabrication of data, forgery, plagiarism and conflict of interests.

The text of the law mentions the fact that "differences of experimental or practical conceptions, differences of data interpretation and differences of opinion are factors specific to research development and are not regarded

as infringements of proper behavior". For the purpose of coordinating and monitoring the application of moral and professional conduct regulations, the law established the setting-up of the National Council of Scientific Research, Technological Development and Innovation Ethics as a consultative body of the National Authority for Scientific Research. Starting from the fact that each institution, each employer is responsible for the observance of good practice and ethical regulations, the National Council of Ethics has the following main responsibilities: it establishes the ethical principles specific to the research-development area; it establishes the specific ethical procedures to follow in case of misconduct; it focuses on the application and observance of the legal dispositions referring to regulations of moral and professional conduct, by institutions and staff; it formulates opinions and recommendations with respect to ethical issues raised by the evolution of science and knowledge;

- it analyses reported cases referring to the infringement of rules of proper behavior and makes recommendations of solving and/or applying sanctions.

The National Council of Ethics carries out its activity in plenum or in committees having three permanent-status committees: for socio-humanistic sciences, for sciences relating to the living world and for exact and technical sciences. The National Council of Ethics has a proper work apparatus and, in case of necessity, can call upon experts. The members of the National Council of Ethics, in number of 11, as well as the members of the permanent-status commissions have been appointed by order of the secretary and are persons with a recognized activity in the field: academicians, professors, scientific researches, representatives of the National Authority for Scientific Research etc. Only in 2008, The National Council of Ethics investigated eighteen misconduct cases.

The **Romanian Academy,** founded in 1866, is the highest national scientific independent institution. From the year 2003 onwards, this institution published many articles and reports regarding the intended exploitation of Rosia Montana and emitted declarations soliciting the Romanian authorities to disapprove the mining process proposed at Rosia Montana. The analysis of the biodiversity and of the natural habitats from Rosia Montana illustrated the existence of numerous rare plant species, highly protected by the national and european mechanisms, as well as the exceptional biodiversity of the area, with habitats formed in the daco-roman period and preserved thanks to traditional agriculture.

Additionally, the performed studies highlightened the inestimable value of the site, by presenting the most important components of the cultural treasure, which recommend the site for the Universal Patrimony List: vestiges of the most complex and extended ancient gold mining exploitation, known until now on the whole Roman Empire; the mining landscape enherited from the Roman, Medieval, Modern and Contemporary periods (till the half of the XX^{th} century); the mining fair, as a consequence of the Industrial period, and the uniqueness of the ancient Alburnus Maior (the latin name of Rosia Montana) in the universal culture. The presentations of the company representatives, which intend to implement the mining project in open quarry, could not offer credible reasons concerning the possibility of sustainable development of the territory. The economic and technical grounds which sustained the mining project could not provide the elaboration of a real protection of the historical and natural environment and community.

Integrating the ethical dimension in scientific research in Romania is accomplished, both "bottom-up" as well as "top-down". In the bottom-up approach, scientific research institutions, including universities, research management and funding institutions have created specific structures for assuring observance of ethical norms and values. In the case of universities, these have created institutional ethics codes. The top-down approach created the legislative framework that also provides a Code of ethics and professional conduct as well as the national structures. The role of the National Ethics Council and its committees becomes extremely important not only by its attributes but also by the fact that it will have to

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establish ethical codes for scientific research in several specific fields. It is necessary to cultivate the essential values on which the quality of the assessments relies: respect for people, environment [10] and institutions, efficiency and professionalism.

4. Conclusion

Scientific research and innovation should be the nodal points of any national governmental programme targeting durable development. The governmental program must establish a balance between priorities set by actors within the system and those defined by the government, a balance that has nowadays heavily shifted towards the interests of actors. A better coordination of research at governmental level is imposed, by using all levels of administration, by a more accentuated orientation of policies towards strategic planning and by monitoring public research institutions and R&D programs. Financing and administration structures must be strengthened, but so must R&D consultative bodies. It is necessary for a better regulation for using new technologies to exist, as well as to direct state subsidies towards innovation and discovery. Other goals that might be pursued are: improving efficacy and the use of intellectual property; building a single market, attractive for scientific research; a broader use of fiscal facilities in R&D. Among the possible paths are: increasing SME access to R&D funding, mobilizing funding through national programs, as well as other sources for funding in favor of European research and innovation, placing research at the center of the companies' concerns, developing university-industry partnerships (a situation formerly known as "integrating research with education and production"), creating dynamic services for sustaining enterprises, with a view to stimulating research and development, as well as techniques for assessing research and innovation, for managing innovation and social mutations. The potential of innovating services must massively increase, and Romania must participate with all the force of its scientific research in creating a European system for sustaining industrial innovation and research, for improving research and innovation policies, regarded as a priority of member states' national programs, for reform in the sense of growth and more efficient use of human resources. In this sense, there is a need for superior training and management of the highly qualified R&D workforce, while preserving integrity and cohesion within the scientific system, and ensuring the flexibility of research structures for the purpose of rapid adaptation to changes.

The role of ethics in scientific research becomes essential, in the context of durable development, by: respecting intellectual property, contractual liabilities, the quality and internal security of products, internal deontology relating to the conflict of interests, the protection of private property; protecting the environment through biosphere conversation, durable use of resources, waste reduction or removal, risk reduction; ensuring labor conditions, with regard to the freedom of creation, non-discrimination, the right to equal access and equal chances.

The knowledge and application of the definition of ***good practices*** as being *the ensemble of quality requirements (norms) in science and ethics, recognized nationally and internationally, which must be observed, starting with planning, implementation, completion, reporting and transfer of the outcomes of a scientific research* must be generalized.

Romania, as a member of the European Union, amongst other obligations, must strictly respect the laws and regulations of the European Union, regarding the ethics in science. Under these circumstances, responsible scientific research, especially in sustainable developement, must be led with respect towards human dignity and security, towards animals and environment, ensuring the preservation of the biological diversity, in an ethical and legal context, which is in continuous improvement.

The relationship between science, sustainable development and ethics is considerably tight.

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