

INFRASTRUCTURE DEVELOPMENT OF QUALITY CONTROL FOR ENVIRONMENTAL FACTORS LABORATORY IN ORDER TO ESTIMATE, CHARACTERIZE AND RECOVERY RENEWABLE AND RECYCLE RESOURCES, USING CHEMICAL AND BIOCHEMICAL PROCESSES MEDRES LAB, Research Grant no. 94 /2007 (PNCDI II)

The aim of the project is infrastructure development and capacity extension of an analysis and control of environmental factors laboratory in order to estimate, characterize and upgrade renewable and recycled resources, the first regional laboratory specialized in the recovery of this resources using chemical and biochemical processes.

The data provided by the Romanian Accreditation Association (www.renar.ro) shows a deficiency at national level of a specialized laboratory equipped for complex biochemical modifications of these types of resources taking into account environmental protection.

This project has two major objectives:

- **Upgrading** the Environmental Quality Control Laboratory, part of the Faculty of Chemical Engineering and Environmental Protection, which in the 8 years of activity had realized numerous partnerships with different universities, economic agents, research institutes and non-governmental organizations. Using all the available means, the laboratory ensure the logistics for environment components (water, air, soil) quality control, aside with information and education for specialized staff.

- **Development** of new possibilities to evaluate renewable and recycled resources. The uses of the new directions are in agreement with the current researches, the requirements of the industry and the actual European trends. Currently, the renewable and recycled resources are used as rough material for chemical and energetic supplies and the tendency is to substitute conventional initial materials. Based on this information, the recycling of the secondary products can fulfill the sustainable development conditions, becoming the centre of a close functional system compatible with the environment. In the same time, the laboratory will make use of the present knowledge in upgrading secondary products and the development of new processing methods of different resources or special rough materials used for obtaining biopolymers, biofuels, proteins and natural regulators substances. The preservation of environment will be assured by special attentions to recycling, closing the circuits and the following of the duration of life function the use of the products. All these problems will open new possibilities for collaboration and to strengthen relationship with industry and research institutes, founding the premise for competitive approach in different domains and also for technological transfers. The laboratory endowment will anticipate the equipment acquisition necessary to enlarge the offered services and will contribute to testing and certification of special products obtained by biotechnological processes. The project will carry on **four activities**: equipment acquisitions, materials, soft and calculation technologies, applicative and pre-competitive (testing, verifications, measurements, analysis) research activities, dissemination and project management activities. The project will accomplish training activities, audit and certification ISO 17025 of the laboratory and the initialization of the proceeding of RENAR accreditation.

The **general objective** is represented by the **development of the material base for research in the field of sustainable and incorporate management of resources.**

The **specific objectives** are:

- **Development of existing infrastructure** of the Environmental Factors Quality Controls Regional Laboratory, through acquirement of performing equipments in order to reinforce the public private partnership in the region.
- **Accomplish of material base** necessary to build a new research direction of renewable and recycled resources, using the already existing structure.

- **Development of research capacities** in order to participate as work packages or European programs (such as FP 7) coordinators.

- **Disseminations of relevant results** for the national and international scientific communities, governmental organizations specialized in renewable resources management (Agriculture and Forestry Departments, Environment Protection Agencies, local and regional authorities) and civil society.

Implementation of MEDRES laboratory will lead to the following **estimative results**:

- Development of C-D activities and approach of new domains/sub domains of scientific researches, in agreement with the European trends in renewable and recycled resources.
- The quality increase and diversification of the educational act, upgrading of faculties laboratories for practical applications.
- Better accessibility of Romanian research in European programs C-D (there is a partnership proposal in FP 7 - BIOAROMATICS)
- Extensive and new research services for industrial units, especially for measurements, testing, trials and certifications.

Regarding the **stipulated benefits**, taking into account the present tendencies and personnel experiences, it is highly possible that in the next period new opportunities will be develop for resources diversification and increase the treatment possibilities using biorefinery technologies. In this way, renewable and recycled resources are use to obtain chemical products with/or energetic value. These activities in the north east development area will be **correlated with future programs**, having in mind the good use of agricultural areas, supplementation of the forestry zone necessary for providing additional renewable resources. "Gheorghe Asachi" Technical University will have an important role in the excellence centre SUSTENPOL INNOVATION (SUSTINOV) from Piatra Neamt, used to promote the concept of sustainable development. Beside the excellence centre, this laboratory proposed in this project will allow the **promotions of new technologies and activities**, having a positive role in setting up **new working positions** in this area with a high rate of unemployment. The approach of new research programs using the created C-D base will permit the increase of the research capacities of the personnel with the involvement of young researchers (PhD students and postdoctoral researches). The possible risks of this project are related with the difficulties in finding partners and the implementation of developed technologies and products. These risks can be preventive and diminish by the involvement of TECHNOLOGICAL PLATFORM FOR FOREST BASED SECTOR -FTP and the existing excellence centre.

The **estimate profit** is the integration of excellence centers in international CD networks, as well as the expansion of the possible applications in the various regions of Romania. The implementation of this project will allow the access to CDI infrastructure, necessary to obtain new products within the "green chemistry" concept. The created infrastructure will permit specialized and certified services for the business medium and the possibilities of financial support for PhD and postdoctoral fellowships. **Potentials beneficiary** are partners universities thanks to their integration in a CD network regarding the Resources Management, specialized organizations from MEDRES laboratory geographical area, members of national and international networks related with Resources Management, Romanian civil society, researches, PhD students.

For more information on the **Medres Lab Project**, please visit http://medres_lab.cs.tuiasi.ro and contact iwolf@ch.tuiasi.ro

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