# SIXTH FRAMEWORK PROGRAMME
# PRIORITY 6
# Global Change and Ecosystems

**Contract for:**

## SPECIFIC SUPPORT ACTION

## *Annex I - "Description of Work"*

Project acronym: **BEOBAL**
Project full title: **BEO Centre of Excellence Research Capacity Improvement for Sustainable Environment and Advanced Integration into ERA**
Proposal/Contract no.:
Related to other Contract no.: *(to be completed by Commission)*

Date of preparation of Annex I: 25.01.2005

Start date of contract: *(to be completed by Commission)*

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## 1. Project summary

The BEOBAL project is devoted to **Reinforcement of the BEO Centre of Excellence Research Capacities,** and by this way the respective S&T potential of INRNE and Bulgaria for advanced **Sustainable Environment** studies, devoted to the main Global change and ecosystems observing problems, using sophisticated information technologies and advanced **Integration in ERA**, in their institutional, national, regional and European aspects

**The main project goal** is decomposed in **4 operational goals:**

**A. The Networking, International Collaboration & Integration and Reinforced Research Infrastructure** containing of:

**1.** *Diversification, broadening and enhancement of international collaboration and cooperation*

**2.** *Enhancement of the research infrastructure* of European importance

**3.** Advanced *observing and complex monitoring* of Global change processes and ecosystems.

**4.** *Implementation and development of advanced methodology, technology, methods and advanced metrology*.

**B. Advanced Human Resources long-term management**

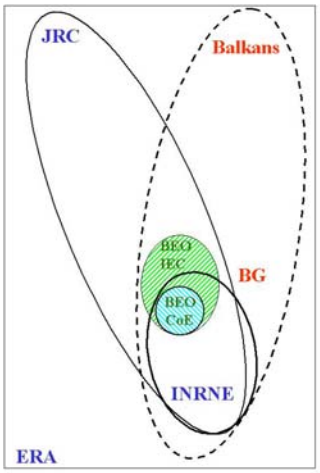
**C. Advanced Science – Society Interaction policy** to succeed in the active science communication.

**D.** Application and development of **advanced Management system.**

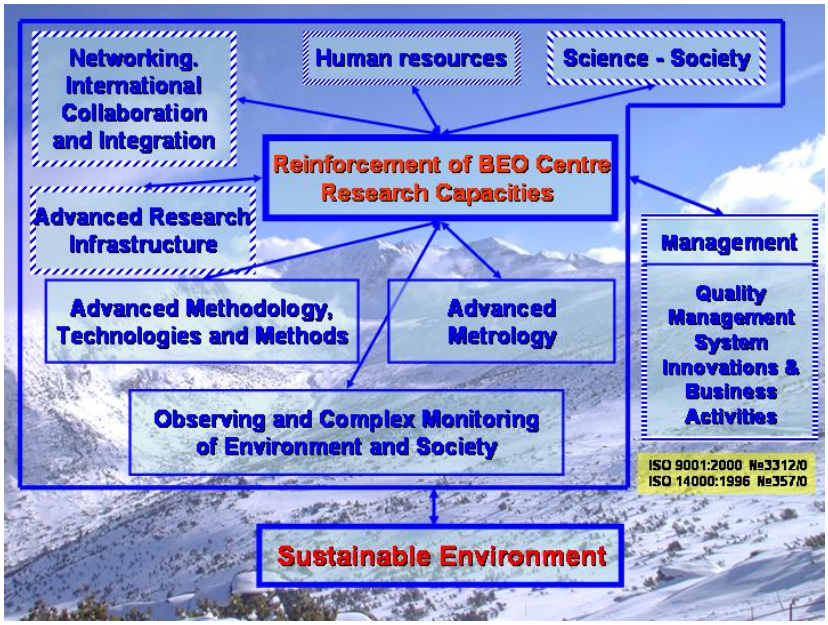
These objectives will be archived by the set of SSA activities in the areas of networking, improvement of human resources, exchange of personnel, visiting fellows for teaching and short training of Ph.D. students and Post Docs, a special program for hearing young researchers, broad and regular improvement of collaborative activities and joint projects, all in the framework of continuously enhancement and development of INRNE integration with JRC, European high mountain observatories and other leading international institutions and centers of excellence.
The realization of BEOBAL objectives will contribute the objectives of the sub priority "Global Change and Ecosystems" of 6$^{th}$ thematic priority, ERA development and reinforcement of Bulgaria RTD capacity.

## 2. Objectives of the project and state of the art

The BEO (Basic Environmental Observatory) "Moussala" Centre of Excellence (CoE) is the youngest environmental CoE in South – East Europe. The BEO CoE is promoted by FP5 HIMONTONET project (*EVRI-CT-2002-80003*) and is in a strong interrelations with other INRNE initiative – the FP5 NUSES JRC – INRNE joint project (*ICA1-CT-2002-60040*), devoted to the highly varied cooperation and further integration of the JRC and INRNE activities.




In the present proposal, a new level of development with projection on the Networks of European and global importance, as GAW Program and on South – East Europe and the Balkan region has to be reached, harmonizing the level of the national and regional activities with the research level of the European research area, having the worldwide mapping of the Global change studies.




The **main goal** of proposed project is:

**Reinforcement of the BEO Centre of Excellence Research Capacities**, and by this way the respective S&T potential of INRNE and Bulgaria for advanced **Sustainable Environment** studies, devoted to the main Global change and ecosystems observing problems, using sophisticated information technologies and advanced **Integration in ERA**, in their institutional, national, regional and European aspects.

**The project goal is transformed into 4 basic project objectives and operational goals**

- **Networking, International Collaboration & Integration and Reinforced Research Infrastructure**
- **Improvement of Human Resources**
- **Advanced Science – Society Interactions**
- **Advanced management**

*A. The Networking, International Collaboration & Integration and Reinforced Research Infrastructure contains:*

**1.** ***Diversification, broadening and enhancement of international collaboration and cooperation***

**2.** Reinforcement of S&T equipment and systems of BEO CoE directed to ***enhancement of the research infrastructure*** of European importance

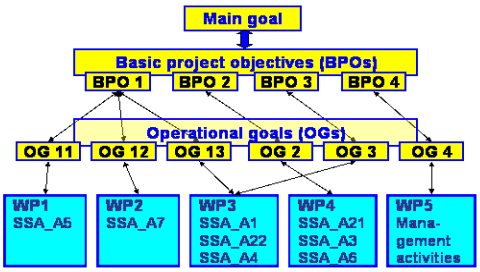
**3.** The ***implementation and development of advanced methodology, technology, methods and advanced metrology*** in the field of Global change and ecosystems and their regional and European projections and components.

B. Improvement of Human Resources *includes advanced Human Resources long-term management*

C. Advanced Science – Society Interaction policy

D. Application and development of **advanced Management system**

**The BEO is the focal point of BEO CoE.**

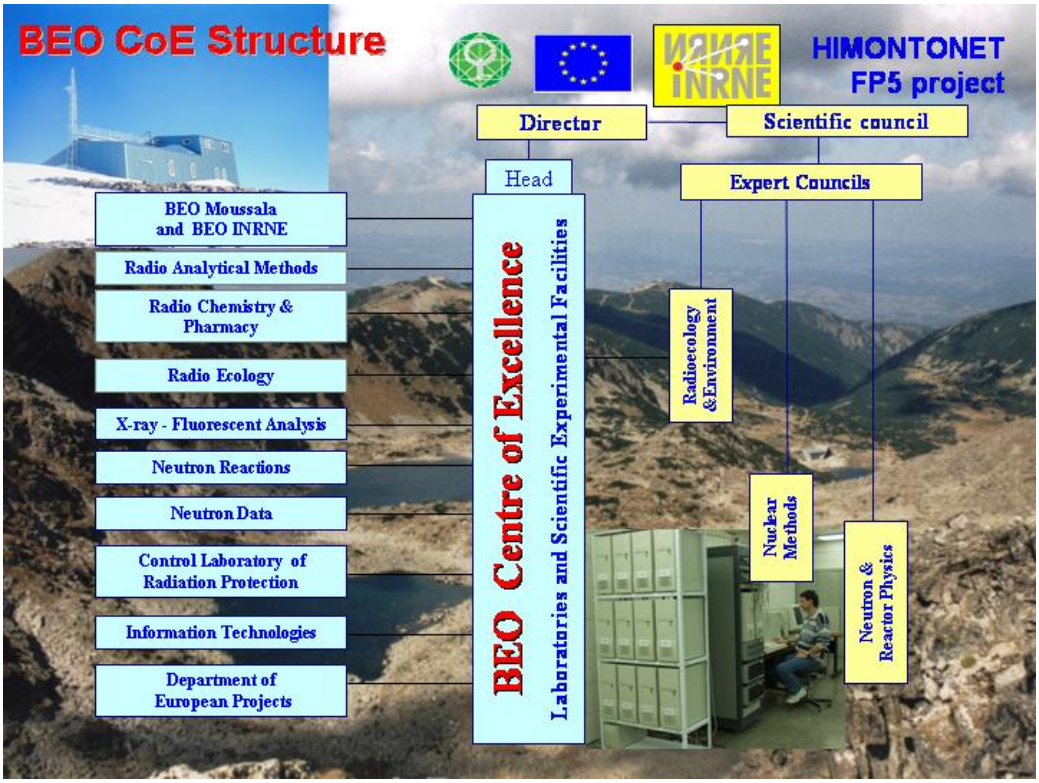


The Basic Environmental Observatory Moussala **is located on the highest peak (2925 m asl)** of **Rila mountain and the Balkan Peninsula (70 km from INRNE).** The access to BEO is by walk and cargo lift. Because of the high elevation of the mountain observatory, the site can be considered to be in the free troposphere and far away from the regional contamination for most of the time. The Observatory is constructed in 1959, destroyed in 1983 and totally rebuild in 2000.The basic characteristics of the site are: Mean temperature (annual): -3.1°C; Temperature min: -31°C; Temperature max: +18.7°C; Precipitation (annual): 1300mm; Snow period: 8 months; Mean number of sunny days: 150 with large annual fluctuation; Max wind velocity: 70m/s; The local wind field at the site is dominated by west (from north – north – west to south – south – west) winds, the suitable specific physical-geographical position (longitude 23°35, latitude 42°11).

**The main fields of BEO CoE activities are:**

**The extended environmental observing** of the high mountain ecosystems using inside French-Bulgarian OM2 project: physical, chemical, hydro-meteorological, botanical, zoological and socioeconomical monitoring. The correspondent data bank is created in the basis of three-dimensional GIS ARC INFO and the results are published in 9 volumes of the series OM2.

**The radionuclide and toxic element transport control** is an activity carried out at several European HMO since years using quite well elaborated nuclear methods for measurements. Since 2002 such measurements were started at BEO and till now it remains the only HMO in the SE Europe region performing such measurements.




**The radiation measurements at BEO** are connected with the gamma-background control, radon measurements monitoring of the neutron cosmic ray flux and UV-AB. The background observations are important for the nuclear accidents and pollution control, what leaded to the creation of JRC EURDEP data bank in Ispra.

**The atmospheric physics and chemistry activities** at BEO CoE are relatively limited independent of their importance for different global programs as GAW and JGACO. This is the reason to put high priority of the reinforcement of BEO CoE with new $O_3$, NOx, SOx and CO gas concentration detectors. The lack of aerosol measurements at HMO in SE Europe region is the other difficulty by performing precise GAW and Global change studies inside the existing programs. The start of aerosol measurements in frame of BEOBAL project will be an essential contribution to ERA and the existing global networks.

**The sensor and detector development and device design** is mainly connected with cosmic ray components measurements and their use towards to control some atmospheric and space weather parameters. The INRNE and BEO CoE have good experience on this field participating and contributing in big experiments in different European research centers like CERN, DESY, etc.

**The high frequency (2,4GHz) telecommunication system** realized inside FP5 project (EVRI-CT-2002-2003) ensures high speed data transfer up to 10 Mbits/s what gives the real possibility for data and image transfer from BEO into INTERNET in real time and corresponds by this way with the possibilities of the best European HMO.