

Institute for Nuclear Research and Nuclear Energy  
Bulgarian Academy of Sciences

**BEOBAL**

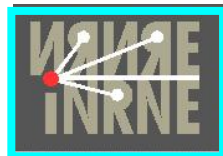
**BEO Centre of Excellence**

**BEO Centre of Excellence  
Research Capacity Improvement for  
Sustainable Environment and  
Advanced Integration into ERA**

Jordan Stamenov, Boyko Vachev



**FP6 Project**



# **BEOBAL – 3 main conceptual Pillars**

1. System approach to  
Nuclear Science, Environment and Society
2. Long – Term Development of  
Strategic Cooperation and Integration
3. Enhancement and Development of  
New Organisational Structures in  
European Context with  
Regional Accent

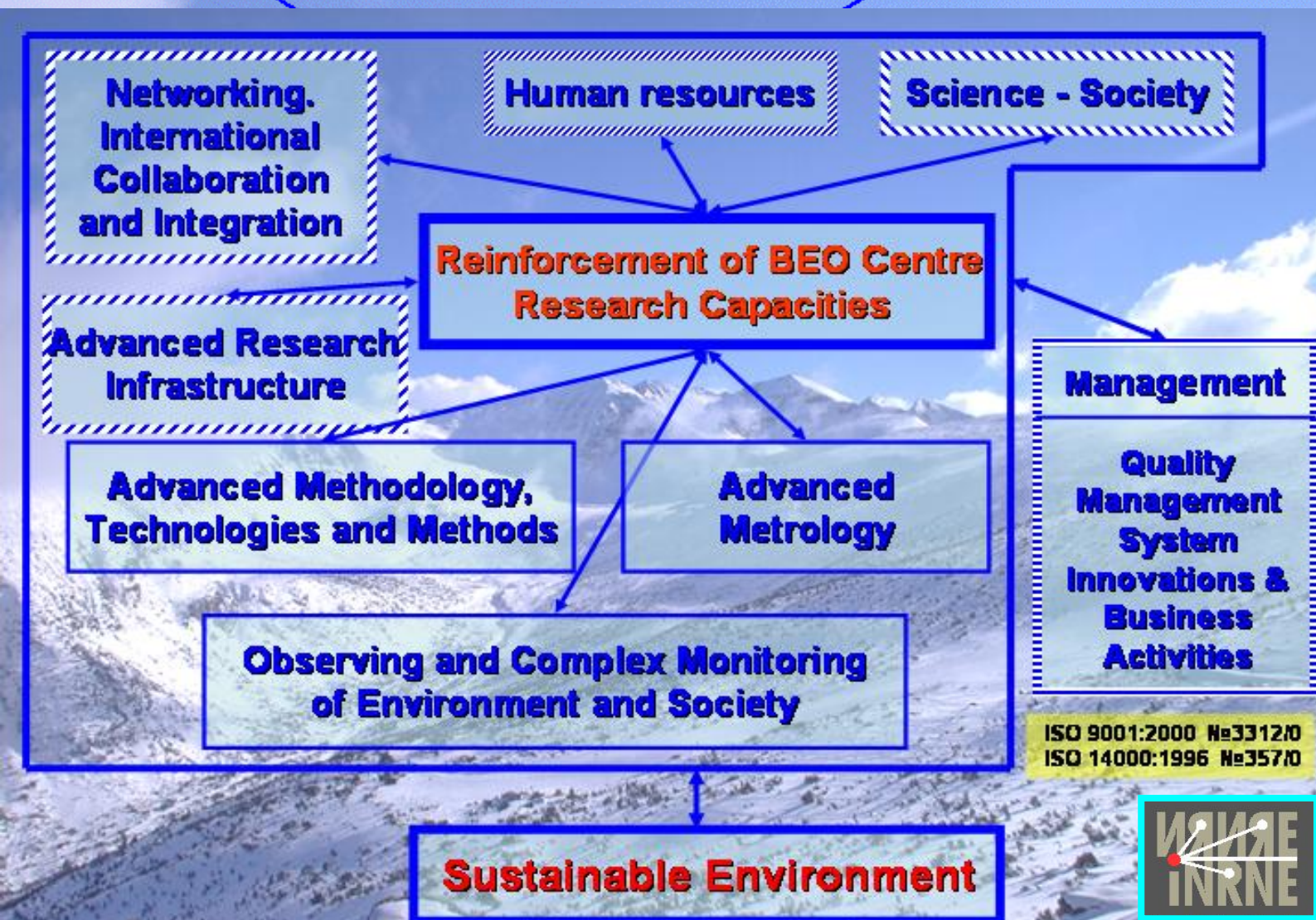


# BEOBAL – 1st Pillar

Advanced Technologies  
and Methods

International Collaboration  
and Cooperation

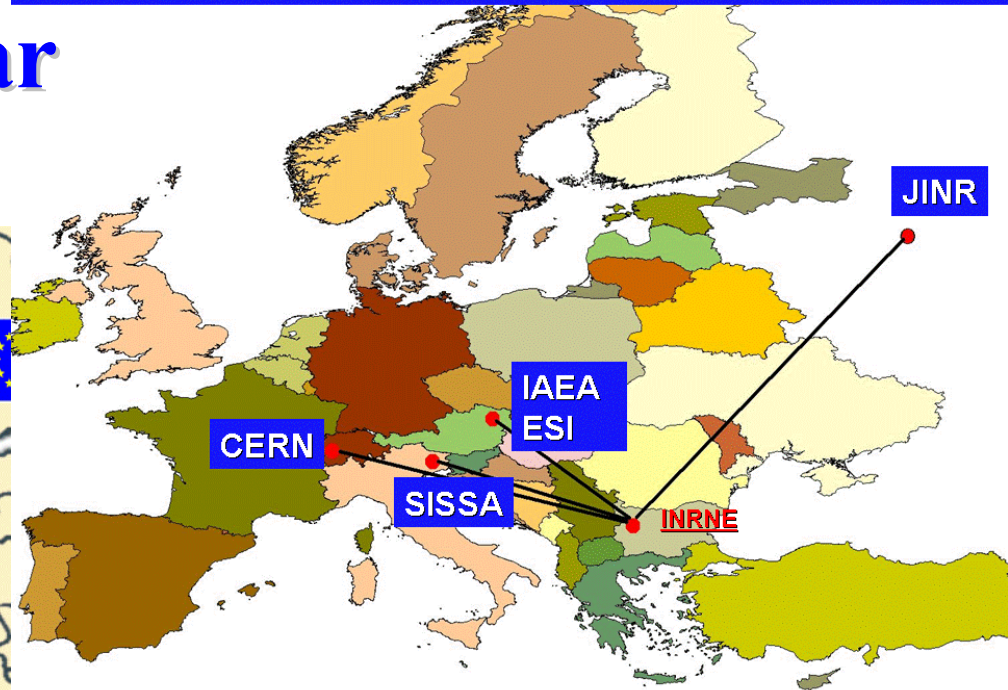
Advanced  
Metrology



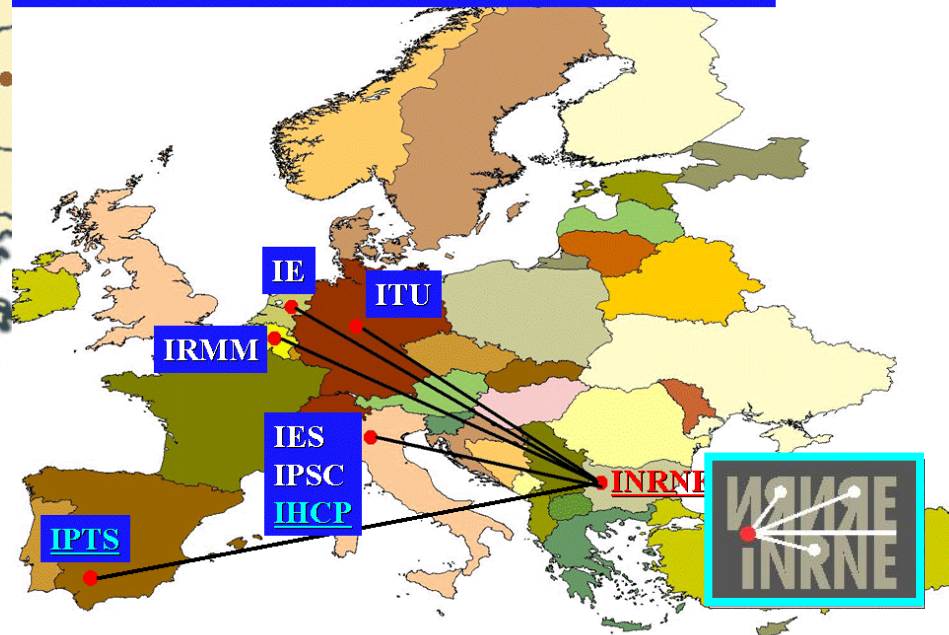
# BEOBAL – 2nd Pillar

## European HMO

Global Change &  
Climate Research  
Natural Hazards &  
Technological Risks  
Aerospace &  
Terrestrial Environment  
Management Aspects &  
Future Projects Discussion



## INRNE – JRC Scientific Connections



# BEOBAL – 3rd Pillar



BEO Moussala and  
BEO INRNE

Radio Analytical Methods

Radio Chemistry &  
Pharmacy

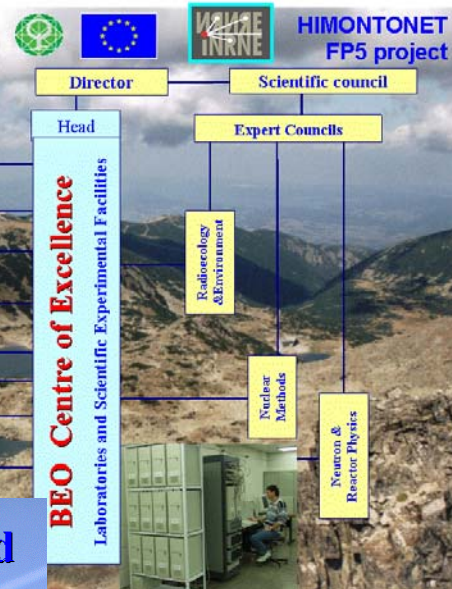
Radioecology

X-ray - Fluorescent Analysis

Neutron Generator

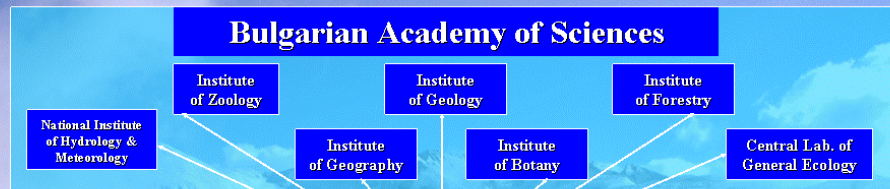
Neutron Data

Control Laboratory of  
Radiation Protection



**BEO IEC**

**BEO Integrated  
Environmental Centre**



**South-West University  
Blagoevgrad**

**Sofia University**

Faculties of  
Chemistry,  
Physics, Biology

**American University  
Blagoevgrad**

**Reference Points**

BEO Moussala  
Almiza  
Parangalitsa  
Hotovo  
Kallakra  
Chernomir

**Schoumen University**

**Plovdiv University**

**JRC**

**Balkans**

**BG**

**BEO  
IEC**

**BEO  
CoE**

**INRNE**

**ERA**



# **Institute for Nuclear Research and Nuclear Energy Bulgarian Academy of Sciences BEO Centre of Excellence**



# BEOBAL – Objectives



## Main Goal

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

## 4 BASIC OBJECTIVES

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

# Fields of Research

Complex Environmental Monitoring  
Control of Long Range Radionuclides  
and Toxic Elements Transport

Atmospheric Physics

Atmospheric Chemistry

Astrophysics

## Existing Basic Equipment

- Automatic meteorological station
- Monitors of acidity of clouds
- Nitrogen oxide monitor (TECAN – 700)
- Ozone monitor (DASIBI 1003 AH)
- Monitors for Radionuclide Pollution
- $\alpha$ ,  $\beta$ ,  $\gamma$  – spectrometry of aerosols
- $^{220}\text{Rn}$  monitoring
- Monitors of gamma background
- Neutron detectors
- Cherenkov light telescope



# BEOBAL – SSA Tools Kit



**SSA\_A1: 14** Networking with other research centres in Member States (MS) or ACCs: organising exchange of personnel and of results and joint experiments;

**SSA\_A2: 27** Visiting fellows (teachers and/or researchers):

**SSA\_A21: 8** Hosting scientists from abroad for teaching, training

**SSA\_A22: 19** Hosting scientists from abroad for research activities

**SSA\_A3: 14** Training in MS or ACCs for Ph.D. students and/or post-doctoral researchers: sending scientists from the centre for short stays, to laboratories abroad, either for specialised training or to carry out a specific research experiment;

**SSA\_A4: 3** Workshops, conferences: in order to diffuse and to exploit research results;

**SSA\_A5: 20** Study visits of the researchers from the Centre to other institutions in MS or ACCs in order to prepare cooperative activities and/or joint RTD proposals;

**SSA\_A6: 4** Hiring of new young researchers to reinforce human potential;

**SSA\_A7: 15** Upgrading and/or renewal of S&T equipment

# BEO Centre of Excellence

## New Equipment

Gas concentration detector  
for O<sub>3</sub> , NO<sub>x</sub>, CO, SO<sub>x</sub>,

Cascade impactor

PM<sub>2.5</sub> and PM<sub>10</sub> instrument

Integrated nephelometer

Gamma Background Detector

Muon telescope

Neutron detector

**Radon detector**

Aut. Weather Station - wind detector

Emergency power supply system

## BEOBAL FP6 project



# BEOBAL – Partners



N	Organization	Country	Role
1	Institute for Nuclear Research and Nuclear Energy, Sofia	Bulgaria	<i>Executor and Co-ordinator</i>
2	JRC EC, Joint Research Centre	Belgium	<i>Cooperative Partner</i>
3	Institute for Transuranium Elements, ITU, JRC EC, Karlsruhe	Germany	<i>Scientific Collaborator (SC)</i>
4	Institute for Environment and Sustainability, IES, JRC EC, Ispra	Italy	<i>SC</i>
5	Institute for Reference Materials and Measurements, IRMM, JRC EC, Geel	Belgium	<i>SC</i>
6	Mt. Cimone Environmental Research Station, HMO MC	Italy	<i>SC</i>
7	Testa Grigia Research Station HMO TG	Italy	<i>SC</i>
8	UFS Schneeferner hause, Zugspitze, HMO ZS	Germany	<i>SC</i>
9	High Altitude Research Station Jungfraujoch and Gornergrat, HMO JFJ	Switzerland	<i>SC</i>
10	Sonnblick Observatorium, HMO SB	Austria	<i>SC</i>
11	Nuclear Physics Institute, Czech Academy of Sciences, Prague, NPI	Czech Republic	<i>SC</i>
12	National Institute of Nuclear Physics, INFN, Torino sect.	Italy	<i>SC</i>
13	Institute of Nuclear Sciences, Ege University, Izmir, INS	Turkey	<i>SC</i>
14	ALOMAR Observatory, ALOMAR	Norway	<i>SC</i>
15	Meteorological Observatory Hohenpeissenberg, Deutscher Wetterdienst, MOHP-DWD	Germany	<i>SC</i>
16	Lomnitský Štit Observatory, LS	Slovakia	<i>SC</i>
17	Norwegian Institute for Air Research, Polar Environmental Centre, Tromsø, NILU	Norway	<i>SC</i>
18	Institutes and Universities from BEO IEC	Bulgaria	<i>SC, Users</i>
19	European organization for nuclear research, CERN	Switzerland	<i>SC</i>
20	<a href="#">Vinca Institute for Nuclear Science, Belgrade</a>	Serbia, Serbia and Montenegro	<a href="#">User</a>
21	<a href="#">Centre for Ecotoxicological Research, Podgorica</a>	Montenegro, Serbia and Montenegro	<a href="#">User</a>
22	<a href="#">Institute of Nuclear Physics, Tirana</a>	Albania	<a href="#">User</a>
23	<a href="#">Institute of Physics, Scopie</a>	Former Yugoslavian Republic of Macedonia	<a href="#">User</a>



## Conference Activities

Three levels of conference activities are planned:

- 3.3.1. (7) **Methodological and coordination workshop**, Bulgaria, 23-25 October 2005
- 3.3.2. (22) **Project conference** “*Global Changes, Environment and Sustainable Development of the Society*”, UFS, Schneefernerhause, Zugspitze, Germany, 2nd half of 2nd year
- 3.3.3. (27) **Conference – Informational Days**, “*South – East Europe Environment – Collaboration, Cooperation, Integration in ERA*”, INRNE, BEO CoE, Bulgaria, Sofia, 1st half of 3d year

# BEOBAL – Management



## Executive Board

## Steering Committee

## Executive Board

**Project Coordinator**

**Prof. Jordan Stamenov**

**Project Manager and  
sub Coordinator**

**Dr. Boyko Vachev**

**Chief Accountant  
of INRNE**

**Mr. Petio Petkov**

**WP1  
Responsible**

**WP2  
Responsible**

**WP3  
Responsible**

**WP4  
Responsible**

**WP5  
Responsible**

Prof. J.Stamenov

Prof. J.Stamenov T.1.1

Prof. J.Stamenov,

Dr. B.Vachev T.1.2

Prof. J.Stamenov

Mr. P.Ivanov T2.1,2

Dr. I.Kirov T2.3

Mr. I.Kalapov T2.4

Prof. J.Stamenov,

Dr. B.Vachev T.2.5

Dr. A.Damyanova

Dr.A.Damyanova T3.1

Prof. J.Stamenov T3.2

Dr. B.Vachev T3.3, 4, 5

Dr. A.Damyanova,

Dr. B.Vachev T3.6

Prof. N.Janeva

Prof.J.Stamenov T4.1

Dr. I.Penev T4.2

Prof. N.Janeva T4.3

Prof. N.Janeva,

Dr.B.Vachev T4.4

Dr. B.Vachev

Dr.B.Vachev T5.1

Prof. J.Stamenov,

Dr. B.Vachev T5.2

[www.beo.inrne.bas.bg/BEOBAL.htm](http://www.beo.inrne.bas.bg/BEOBAL.htm)

