

## REVIEW

by assoc. professor Vesela Evgenieva Zaharieva, eng., PhD – UACEG, „Hydraulics and hydrology“ department  
member of the scientific jury in a competition for the academic position “Professor” in professional field 5.7. “Architecture, civil engineering and geodesy”, scientific specialty “Engineering hydrology, hydraulics and water management” (Development and integration of flow and extreme hydrological events forecasting products) at the “Hydrological Forecasts” unit, “Forecasts and information services” department at NIMH.

This review was prepared on the basis of the order of Director General of NIMH No. НД-04-3 from 29.01.2024 and the decision of the scientific jury taken at the meeting on 09.02.2024. It is in accordance with the requirements of the Law for the development of the academic staff in the Republic of Bulgaria (ZRASRB), the Regulations for its implementation (PPZRASRB) and the Regulations of NIMH under ZRASRB. The review consists of three parts and a conclusion.

The competition was published in the “State Gazette” No. 100/01.12.2023. Only one candidate submitted documents for participating in the competition – assoc. professor Snezhanka Balabanova, eng, PhD. With a decision of the commission for admission to participate in the procedure – Protocol No НД-04-6-2/06.02.2024 she is allowed to take part in the competition. During its first meeting the scientific jury found that the candidate meets the minimum national requirements under Art. 26, paragraph 2 and 3 and the requirements under Art. 26, paragraph 5 of ZRASRB respectively.

### I. Requirements to the candidate

under Art. 29(1) and Art. 29b of ZRASRB, art.60 of PPZRASRB and Art. 56 (1), (2) and Art. 57 (1) of the Regulations of NIMH under ZRASRB

Snezhanka Balabanova was born on 29.12.1958 in Sofia. In 1976 she graduated from 31 Polytechnical Middle School “Dimitar Polyakov” (31 Foreign Languages and Management Middle School “Ivan Vazov”) in the city of Sofia. In 1981 she graduated from the University of Architecture, Civil Engineering and Geodesy as a civil engineer in Water Supply and Sewerage. In 2010 she defended a PhD dissertation on “Operational hydrologic modelling of river flow and water resource estimation using GIS”. In 1986 she started working at NIMH. In 2012 she took over the academic position “Associate Professor”. Since 2014 she is the head of the “Hydrological Forecasts” section at the “Forecasting and Information Services” department at NIMH. No violations of the procedure nor the eligibility of the candidate were identified.

### II. Requirements regarding scientific and research-applied activities

Art. 29, p. 1, p.2, p.3, p. 4, p. 5, p.6, (2) and (3) of ZRASRB, Art. 60 (1), p. 3, p. 4, p. 5; p. 6, (2) and (4) of RIZRASRB, Art. 56 (1), p.1, p. 4, p. 5, p. 6, p. 7, (2), (3) of NIMH rules on ZRASRB

The volume and type of scientific production of the candidate Snezhanka Balabanova according to Art. 1a (1) and (2) of RIZRASRB and Art. 2 (4) of NIMH rules on ZRASRB are summarized in the table.

Group indicators	For participation in the competition for professor	
	Number of candidates points	Number of points required
A	50	50
Б	-	-
B	137,1	100
Г	210,01	200
Д	694	100
E	440	150

For group indicators "A" the candidate Snezhanka Balabanova is taking part with a doctoral degree in professional field 5.7. "Architecture, civil engineering and geodesy", scientific specialty "Engineering hydrology, hydraulics and water management", VAK No. 34800 from 12.01.2011, based on dissertation defense on "Operational hydrological modelling of river flow and water resource estimation using GIS".

The candidate Snezhanka Balabanova is partaking in:

- indicators of group "B" with 12 publications. All of them are in English. All of them are co-authored: 4 have 3-4 authors; 4 have 5 authors, 4 have more than 7 authors. 11 are indexed in Scopus; 1 – in Web of Science.
- Indicators of group "Г 7" with 6 publications. All of them are in English. All of them are co-authored: 5 have 2 authors; 1 have 3 authors. 5 are indexed in Scopus; 1 – in Web of Science.
- Indicators of group "G 8" with 16 publications. I accept 13 of them. 8 of them are in Bulgarian; 5 are in English. All of them are co-authored: 6 have 2 authors; 4 have 3 authors, 3 have more than 3 authors.

A list of 66 citations in scientific journals, referenced and indexed in world-renowned databases with scientific information or in monographs and collective volumes and 17 citations in non-referenced journals with scientific reviewing is presented.

The topics of the articles and scientific claims are in the following areas:

- hydrological modelling – analysis of the applicability of various hydrological models; use of up-to-date mathematical methods, artificial neural networks for instance; use of satellite information;
- flood forecasting;
- studying climate change impact on water resources and flood types in Bulgaria; water resource protection and mitigation of water resources vulnerability to climate change.

The articles are of scientific and scientific-applied character. The scientific and research activities of the candidate give the opportunity to assoc. professor Snezhanka Balabanova to take part in managing and organizing the tasks for creating:

- the methodology for flood hazard estimation (Part 2. Methodological guidelines for flood hazard assessment) of the "Methodology for flood hazard and flood risk assessment, according to the requirements of Directive 2007/60/EC" according to contract No. Д-30-62 from 18.04.2012r. with MOEW;
- Watersheds flood alert and forecasting system;
- GIS – database for hydrological modelling and analyses;
- Archive and database of occurred floods.

The candidate Snezhanka Balabanova is partaking in group "E" indicators with:

- a supervision of 3 successfully defended doctoral students;
- a participation in 3 national or education projects;
- a participation in 5 international or education projects;
- management of 4 national scientific or education projects;
- management of 2 international scientific or education projects;
- funds gained for NIMH – 77810 EUR from projects led by the candidate.

### **III. Opinions, recommendations and notes**

The materials for the "professor" competition presented by assoc. professor Balabanova are well structured and clearly present the scientific and research activity and the achievements of the candidate.

A positive impression is the number of PhD students' defenses and the number of joint publications.

Minor inaccuracies in determining the points of some of the scientific indicators were found.

I recommend the candidate to summarize their achievements in the field of flood modelling and forecasting in a monography.

### **Conclusion**

Considering the quality of the presented scientific articles, contributions, results applicability, management and participation in research-applied projects I nominate assoc. professor Snezhanka Balabanova, eng., PhD as a "Professor" in professional field 5.7. "Architecture, Civil Engineering and Geodesy", scientific specialty "Engineering Hydrology, Hydraulics and Water Management" (Development and integration of flow and extreme hydrological events forecasting products) at the "Hydrological Forecasts" section at the "Forecasts and Information Services" department at NIMH.

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