

REVIEW

by Prof. Dr. Nesho Hainrich Chipev

Member of the Scientific Jury, according to order No 01-98/03.07.2020 of the Director of the National Institute of Geophysics, Geodesy and Geography of BAS under an announced competition for the academic position "Professor" in the professional field 4.4. Earth Sciences, scientific specialty "Physical geography, landscape science and GIS" for the needs of the Department of Geography of NIGYG-BAS, announced in the State Gazette issue no. 1000.12.2013 21 of 13.03.2020 with candidate Assoc. Prof. Stoyan Tsvetanov Nedkov, PhD.

According to the announced competition, the only participant who submitted documents is Assoc. Prof. Dr. Stoyan Tsvetanov Nedkov from the GIS Section at the Department of Geography of NIGGG. The submitted documents for participation in the competition meet the requirements of the LDASRB, the Rules of Procedure for acquiring scientific degrees and holding academic positions in the Bulgarian Academy of Sciences and the Rules of Application of the National Institute of Geophysics, Geodesy and Geography at BAS.

1. Short biographical data on the applicant

Assoc. Prof. Dr. Stoyan Tsvetanov Nedkov was born on February 7, 1969 in Sofia. He graduated from the University of St. Kliment Ohridski", Sofia, Bulgaria in 1997 as a Master with qualifications "Geographer, physicogeographic-landscaper with nature conservation, geography teacher". From 1998 to 2003 he was a lecturer in Geography in English at the Second English Language School, Sofia. In 2002 he successfully defended his doctoral thesis on the topic: "Peculiarities of the structure and dynamics of the low-mountain landscapes in Western Sredna Bulgaria" in the scientific specialty "Physical geography and landscape studies" (Protocol No3 of the Va. From 2003 to 2009 he was a research associate at the Institute of Geography of BAS and from 2009 to 2010 he was a senior research fellow at the same institute. From 2010 to 2015 he was consecutively in the position of "Associate Professor" at the National Institute of Geophysics, Geodesy and Geography – BAS and Sofia University "St. Kliment Ohridski". Since 2015 he has been an "associate professor" at the National Institute of Geophysics, Geodesy and Geography of BAS.

Assoc.Prof. Dr. S. Nedkov has expressed scientific interests in the field of physical geography, landscape science, GIS and ecosystem services. He has received qualification courses in for Working with AGWA (Automated Geospatial Watershed Assessment tool) organized by the US Environment Agency (EPA) (2005), Remote training course in Open Geographic Information Systems (OpenGIS) organized by the University of Western

Hungary, College of Geoinformatics (2006); Distance GIS training – ESRI training and education (2006).

The participant in the announced competition, Assoc. Prof. S. Nedkov knows spoken and written English and Russian to varying degrees.

Assoc. Prof. Nedkov has extensive experience in teaching, having taken various courses in the Geological-Geographical Faculty of Sofia University, Veliko Tarnovo University and Specialized Courses at the Bulgarian Academy of Sciences. He has led courses in Bioinformatics and Environmental Assessment with GIS-based technologies at the University of Joensuu and the University of Salzburg.

Assoc. Prof. Nedkov has extensive experience in the management of research projects. He was the head of 5 and participant in 14 national and international projects.

2. Criteria for participation in the competition

To participate in the competition, the candidate has submitted a signed list of publications and copies thereof. List of citations with the signature of the applicant and Reference for fulfillment of the minimum requirements for taking up the academic position "Professor", according to the normative documents. In the analysis of those documents, I found the following:

For the holding of the academic position "Professor" are the requirements are covered, in accordance with Art. 21 item 4.3. from the Rules of Procedure for the acquisition of scientific sterenes and for the holding of academic positions in BAS and Appendix No 1 thereto.

The applicant has presented the number of required and recruited points by group of indicators for the academic position "Professor", on the following table:

Group of indicators	Content	Min. requirements Professor points	Points
A	Indicator 1	50	50
B	Indicator 2	-	-
C	Indicators 3 or 4	100	316
D	Sum of indicators from 5 to 9	220	424
E	Sum of indicators from 10 to 12	120	2790

F	Sum of indicators from 13 to thne end	150	400
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According to the attached report by the applicant for compliance with the minimum requirements, their performance is established according to the indicators of Group A and Group B. The applicant holds a "Doctor" degree (Group A), for which he is given 50 points.

In the metrics group C, Assoc. Prof. Nedkov has presented 20 scientific publications, in one of which he is an independent author and in 4 he is the first author. The total number of points collected under this group of indicators is listed as 316. However, there are inaccuracies in the reference to the applicant's minimum requirements in the specified number of authors and, accordingly, the points on publications, namely: C4_16 lists 6 authors (10 points) and there are 4 authors (15 points); in C4_17 there are 4 authors (15 points), and there are 5 authors (12 points); in C4-18 there are 5 authors (12 points), and there are 6 authors (10 points); C4_19 lists 10 authors (6 points) and has 9 authors (7 points). Thus, the correct number of points is 317.

In Group D 35 scientific publications are presented, of which 5 publications are published in the D7 metrics and 30 publications in the D8. In the minimum requirements report, the applicant has indicated a total of 316 points scored for Group D and in the table (above) he has indicated 424 points for which it is not clear where they come from. In addition, for publications D7_1 and D7_5, there are given wrong number of authors and, accordingly, wrong number of calculated points. Similarly, the number of authors and the number of points of publications D8_6, D8_7 and G8_8 respectively is confused. Furthermore, such technical inconsistencies are found in publications from D8_2 to D8_18 and then from D8_20 to D8_22, as well as from publication D8_24 to publication D8_30 incl. After all, when recalculating the actual number of points correlated according to the number of authors of those publications, the sum for group D is 318 points.

Notwithstanding the inaccuracies mentioned above, the points collected by the applicant on indicators C and D exceed many times the minimum required for the academic position "Professor".

The vast majority of the publications of Assoc. Prof. Nedkov are in the field of a relatively new and little developed field of ecosystem research in Bulgaria, namely the application of the concept of landscape and ecosystem services, as well as the methodology of landscape research with regard to the state of ecosystems and ecosystem services, including (publications C4_1 to C4_20). Another essential part of the applicant's publications relate to

the application of geoinformation technologies for sustainable environmental management and physicogeographical studies on the risk of hazardous natural phenomena (D8_1, D8_2, D8_3, D8_4, D8_9, D8_12, D8_13, D8_14, D8_15, D8_20, D8_23, D8_24).

In Group E of indicator 10 - Citations or reviews in scientific publications, the candidate presents 558 citations in publications in Scopus/WoS of 19 of his/her articles. These citations form 2790 points at a minimum required 120 points.

In Group F, Assoc. Prof. Nedkov has collected 400 points, including 3 successfully defended PhD students (120 points), 4 participations in national projects (40 points), 5 participations in international projects (100 points), 3 participations as manager of a national projects (60 points) and 2 participations as manager of international projects (80 points).

3. Applicant's scientific contributions

The report on the applicant's scientific contributions shall set out three thematic strands.

The first thematic strand is related to the development of the methodology of landscape research in the context of the modern strand for evaluation of landscape and ecosystem services, and their mapping. This thematic strand also presents a methodical approach to mapping ecosystem services based on landscape information, land cover and a quality assessment matrix developed by the applicant. The publication is in journal with an impact factor and has been cited repeatedly. The developed approach allows to be evaluated and presented in different spatial and time scales the supply and demand for ecosystem services by linking information on ground cover and GIS with data from monitoring, statistics and modelling (or surveys). Other publications of the applicant in this direction (C4_3, C4_14, C4_15, C4_16, C4_18, etc.) contribute to the development of certain aspects of ecosystem mapping and the assessment of the services they provide, which is part of the MAES methodological framework (Mapping and Assessment of Ecosystem Services).

The second thematic strand includes contributions related to the development of a methodological approach for modeling and mapping of ecosystem services at regional and local level. As a significant applied contribution of the applicant is the development of a methodological approach for modeling and mapping of the ecosystem service regulating water flows and flood protection. It is based on the application of GIS-based means of hydrological modeling and spatial analysis combined with a methodology for assessing the capacity of landscapes to provide ecosystem services. The developed approach was published in an impact factor article (C4_2) and was further developed and applied to different regions

in the country and abroad in other publications (C4_9, C4_10, C4_11, D7_3, D8_17). The candidate's GIS-based approaches, databases and mapping products are also designed by the applicant to support the study and assessment of the risk of hazardous natural phenomena in relation to various aspects of human activity (D8_3, D8_8, D8_9, D8_13, D8_15, D8_16).

The applicant's developments regarding the development of a geospatial approach for the evaluation, mapping and mapping of ecosystem services provided by urbanised ecosystems at national level, which is related to the activities under the Implementation of the European Biodiversity Strategy and the MAES initiative, are highly contributing. The approach combines methods for evaluating and mapping 21 services organized into seven GIS-based modules, divided into three tiers. The developed approach is mainly presented in publication D4_19, but in addition individual components of it and specific applications for certain ecosystem services are presented in publications C4_13, D4_2, D7_4, D7_5, D8_22.

The third thematic strand includes developments of a contributing nature, which relate to physicogeographical studies of the risk of dangerous natural phenomena on the territory of the country. A number of theoretical and practical and applied aspects related to flood hazard and risk assessment and the application of drain analysis models in cases of river overflow (C8_2, D8_12, D8_15, D8_24) have been examined. An innovative approach has been developed to assess the impact of climate change associated with an increase in the quantity and intensity of downpours on river run-offs in case of arrivals ((C8_2, D8_12).

Of a contributing nature is the development of a system for monitoring high-mountain ecosystems and assessing their ecological status, in which Assoc.Prof. Nedkov participates (C4_12, C4_17, G8_10, G8_11), as well as studies of glacial and periglacial relief in connection with clarification of the paleogeographical development of high-mountainous territories (C4_4, D8_5).

I accept all scientific contributions of the applicant specified in the report.

4. Critical remarks

To the submitted materials of the competition as a whole, I do not have any significant critical notes. Some technical inaccuracies noted above are admitted in the calculation of the points of publications in Group C and D. These inaccuracies are of a purely technical nature and in no way change the applicant's coverage of the requirements of the competition for the academic position of "Professor".

5. Personal impressions

I know Assoc. Prof. Dr. S. Nedkov a long time ago. I can definitely say that he has broad interests and culture in the field of landscape science and ecology, with a taste for modern scientific problems. That makes him an erudite and good scientist. He is also a good and helpful colleague.

CONCLUSION

The documents and materials submitted by Assoc. Prof. Dr. Stoyan Tsvetanov Nedkov **fully meet** all the requirements of the Law on Development of Academic Staff in the Republic of Bulgaria (LDASRB), the Regulations for implementation of the LDASRB and the respective Regulations of NIGGG-BAS.

The candidate in the competition has presented a significant number of scientific papers with a contribution to current scientific problems published in referenced and indexed journals, including such with impact factor or Impact rank. In the research works of the applicant there are original scientific and applied contributions that have received appropriate international recognition. The points gained by the groups of indicators by the candidate far exceed the minimum requirements for the academic position "Professor". The scientific qualifications of Assoc. Prof. Stoyan Nedkov is **undoubted**.

After familiarization with the materials and scientific papers presented in the competition, analysis of their significance and the scientific and applied contributions contained therein, I have every reason to conclude that the scientific and applied activities of the candidate Assoc. Prof. Dr. Stoyan Nedkov meets the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria and the relevant regulations, and gives me reasons to express a completely positive attitude (**YES**), suggesting to the esteemed Scientific Jury to support the choice **Assoc. Prof. Dr. Stoyan Tsvetanov Nedkov** to hold the academic position "**Professor**" in Scientific Field 4. Natural Sciences, Mathematics and Informatics, Professional Direction – 4.4. Earth Sciences, Scientific Specialty - Physical Geography, Landscape Science and GIS.

25.09.2020

Reviewer:.....

/Prof. Dr. Nesho Chipev/