

Review
of research and teaching activities
of Assoc. prof. Assen Ivanov Assenov, PhD
participant in a competition for the academic position “professor”
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appointed by an Order of the Rector of Sofia University "St. Kliment Ohridski" № RD -38-177 / 30.04.2020 as member of a Scientific jury for conducting a competition for the academic position “professor” in the field of high education 4. Natural sciences, Mathematics and informatics, professional line 4.4. Earth sciences (Biogeography and geography of soils) according to the Classifier of the fields of higher education and professional directions according to the Decree 125/24.07.2002. The competition is announced by the Department „Landscape science and environmental protection“ at the Faculty of Geology and Geography of Sofia University “St. Kliment Ohridski”, declared in State Gazette №13/03.02.2020 г. and published on the official GGF website within the required timeframe. The only candidate in the competition is Assoc. prof. Assen Ivanov Assenov, PhD, lecturer at the same faculty.

The present review was prepared on the basis of decision of the meeting of the scientific jury conducted on 21.07.2020.

The documentation submitted by the applicant meets the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (with its changes from 25.02.2020 г.), the Regulations for its implementation (State Gazette from 19.02.2019 г.) and of the Regulations on the terms and conditions for obtaining scientific degrees and holding academic positions of Sofia University “St. Kliment Ohridski” ((as amended from 27 May 2020). Technically, the documentation is neatly arranged and arranged exactly in accordance with the description in the Application for participation in the competition, which greatly facilitates the review.

Assen Assenov (born on September 17, 1970) graduated from Sofia University "Kliment Ohridski" in 1985 with a master's degree in geography. He has a PhD in the professional field 4.4. Earth Sciences since 2013 (certificate № CY2011-16 from 19.12.2013). During his professional development at the Faculty of Geology and Geography of Sofia University A. Assenov passed through all positions of Assistant (from 1st February 1986 till 16th May 1989), Senior assistant (from 16th May 1989 till 26th March 1992), Main Assistant (from 26th March 1992 till 13th March 2012) and Associated professor (since 13th March 1992 till nowadays). The last position is in the scientific specialty Biogeography and Soil Geography (Certificate № CY2012-32 from 29.11.2012), and currently A. Assenov is the head of the Department „Landscape science and environmental protection“ The total experience-period in the specialty until the submission of the documents for the competition is 34 years, 4 months and 21 days (according to the presented official reference - Certificate 149 / 22.06.2020 from "Human Resources" of Sofia University)

Assoc. Prof. A. Assenov participated in the current competition with 54 scientific papers of various volumes and nature, correctly reflected in the attached documents. All submitted materials clearly prove that his research activity is in the field of the announced competition. Sorted according to the submitted documents 8-a and 8-b, containing a List of publications for participation in this competition, the works are distributed by indicators as follows: 1) Indicator 3. Habilitation work-monograph - 1 issue; 2) Indicator 7. Scientific publications that are referenced and indexed in a world-famous database with scientific information (40 / n) - 12 issues; 3) Indicator 8. Scientific publications in non-refereed journals with scientific review or edited collective volumes (20 / n) - 37 issues; 4) Indicator 9. Published chapter of a collective monograph (10 / n) - 3 issues; 5) Indicator 20. Published university textbook - 1 issue. There is a technical inaccuracy in the presented list - in the bibliography of work with number G-8.17 the name of the Journal of BioScience & Biotechnology is omitted.

These papers were published (with only one in print) after the award of the doctoral degree and after taking the academic position of "associate professor", for which 46 scientific papers, 3 popular science articles, 5 textbooks (one of which in three editions), 5 reviews, consultations, etc. were presented. Thus, the 54 works submitted for the competition make up 48% of its total production and are 54% of all his scientific works.

Of all the works submitted for the competition, 41 (ie 76%) are in English and 13 (ie 24%) are in Bulgarian. Assoc. Prof. Assenov is a leading author in 45 (i.e. 83%) of these publications:

in 13 he is the only one, in 14 he is the first author and in 18 he is the second author. In the other 9 publications (ie 17% of the works) he is third (in 6 publications - 11%), fourth (in 2 publications - 4%) and eighth author (in 1 publication - 2%).

In view of the period of publication of the works for the competition, 2012-2020, it can be stated that the average annual publication activity of the candidate is 6 publications per year, the largest being the number of publications in 2016 (13 in total). I would like to emphasize that with the great teaching and administrative employment of Assoc. Prof. Assenov, this is a high activity that deserves a positive assessment. It is also important that in this competition he participates not only with scientific articles, but also with a monograph (430 pages) and a university textbook (928 pages), dedicated to biogeography, which are the result of many years work. The presented textbook is not just a summary of previous information, but contains original reasoned theses and personal opinions, and also presents an assessment of the natural capital of each biogeographical region based on ecosystem services - one of the hottest topics in modern interdisciplinary research.

According to the attached list, in addition to the presented monograph (1), textbook (1) and chapters of published monographs (3), most scientific papers are reports published as full text (23) in scientific journals or are articles in scientific journals (26) as the distribution of the submitted articles in scientific journals is as follows: 1 is in *One Ecosystem* (Scopus – **Q1** - <https://www.scimagojr.com/journalsearch.php?q=21100905834&tip=sid&clean=0>; Publons & WOS - <https://publons.com/journal/32608/one-ecosystem/>); 2 are in *Comptes Rendus de L'Academie Bulgare des Sciences* (WOS - <https://mjl.clarivate.com/search-results>, Scopus - **Q2**; <https://www.scimagojr.com/journalsearch.php?q=31728&tip=sid&clean=0>), 1 is in *Phytocoenologia* (WOS - <https://mjl.clarivate.com/search-results>, Scopus - **Q2**; <https://www.scimagojr.com/journalsearch.php?q=16536&tip=sid>), 1 is in *Chemistry: Bulgarian Journal of Science Education* (**Q4**, indexed in Scopus in the period периода 2006-2017; <https://www.scimagojr.com/journalsearch.php?q=4000148801&tip=sid>; Publons - <https://publons.com/journal/283979/chemistry-bulgarian-journal-of-science-education-e/>), 1 is in *Ecologia Balkanica* (WOS - <https://mjl.clarivate.com/search-results>; Scopus – **Q4**; <https://www.scimagojr.com/journalsearch.php?q=21100853547&tip=sid&clean=0>), 1 is in *Journal of BioScience & Biotechnology* (WOS, <https://mjl.clarivate.com/search-results>), 3 are in *European Journal of Sustainable Development* (currently in Scopus & Emerging Sources Citation Index WOS - <https://ecsdev.org/publications/ejsd>; <https://mjl.clarivate.com/search-results>); 1 is in

Bulletin of L.N. Gumilyov Eurasian National University. Chemistry. Geography. Ecology Series (Publons - <https://publons.com/journal/244981/bulletin-of-the-ln-gumilyov-eurasian-national-univ/>), 10 are in the Annual of the Sofia University, GGF, Book 2-Geography, and 1 is in the Annual of the Sofia University, BF, Book 2 – Botany, 1 is in *Problems of Geography*, 1 is in *Ankara University Journal of Environmental Sciences*, 1 is in *Journal of the Bulgarian Geographical Society*, and 1 is in *Eastern Academic Journal*. According to the above data, 5 of the candidate's articles have been published in some of the world's most prestigious magazines with quartiles from Q1 to Q4. I will note here that publications G-7.07, G-7.08 and G-09 were published in the European journal of sustainable development before it was on the list of indexed journals of SCOPUS and WOS and, although the inclusion of the journal itself in section 'G. Indicator 7. Scientific publications that are referenced and indexed in a world-famous database with scientific information 40 / n “may be possible, due to the years of publication, it is more correct to reduce the indicated points to: for G-7.07 from 6.7 to 3.3 points, for G-7.08 – from 10 to 5 points, and for G-7.09 – from 8 to 4 points.

In addition to articles in scientific journals, Scopus refers to G-7.03 and G-7.04 publications (<https://www.scopus.com/authid/detail.uri?authorId=55753620400>) and therefore I consider it correct to reflect these chapters in monographs in the section “Indicator 7. Scientific publications that are referenced and indexed in a world-famous database with scientific information (40 / n)”.

The candidate in the competition also has an identification number in the prestigious World Orcid Base <http://orcid.org/0000-0002-7899-3562>, related to Scopus and WOS.

According to the Reference for the citations of the works of the candidate in the competition, they are 80, distributed as follows: 1) Indicator 10. Citations or reviews in scientific journals, referenced and indexed in world-famous databases with scientific information or in monographs and collective volumes (5 points each) - a total of 22 citations per 10 papers (110 points); 2) Indicator 11. Cited monographs and collective volumes with scientific review (3 points each) - a total of 16 citations per 11 papers (48 points); 3) Indicator 12. Citation or review in unreferenced journals with scientific review (2 points each) - a total of 42 citations per 17 papers (84 points). Here an adjustment is needed in relation to citation 7 of work 1 in Indicator 12 – the citation is in the journal *Lazaroa*, referenced and indexed with impact factor (IF) in WOS and SJR in Scopus, where it is of rank Q3 and should therefore be referred to Indicator 10 as citation 6 to work 2. In addition, the monograph number B-1 included in the publications of the competition is reviewed

by Prof. D. Ivanov in Volume 103 of the Annual of Sofia University, BF, Book 2-Botany, pp. 100-101, which should be added to Indicator 12 with 2 points. Thus, **the total number of citations and points becomes higher - 81 with 247 points** instead of the presented 80 citations and 242 points. The found citations are evidence of the high quality of the scientific production and the recognizability of Assoc. Prof. A. Assenov. This can be seen from his Google Scholar profil, where his coefficient is $h=5$ (https://scholar.google.com/citations?user=cb3P_Q8AAAAJ&hl=en).

As far as all submitted scientific papers have been reviewed, I would not like to repeat this process and therefore I will focus on the contributions of the only candidate in the competition. The reference for them is made in principle in accordance with the results reflected in the presented works and is divided into 5 parts by scientific directions according to the views of the candidate. I fully accept the contributions on the merits, recognizing that there are other possibilities for structuring them and that the five groups of contributions are in fact closely linked to each other. Due to the limited scope of the review, I will not repeat all the contributions presented, before that I would like to emphasize that most of the results obtained are original (including many are the result of own field research), complement and enrich existing knowledge, and very little some are of a confirmatory nature. The candidate's contributions are of theoretical and applied significance.

The first group of contributions mentioned by the author is related to the development and improvement of approaches to biogeographical regionalization, which includes work with quantitative indicators for validation of biogeographical boundaries (works V.3-1, G.7-06, G.7-09, G.7-10, G.7-12, G.8-03, G.8-04, G.8-06, G.8-08, G.8-16, G.8-27, G.8-28, G.8-29, G.8-34, G.9-02). This includes not only theoretical aspects of zoning with a combination of homologous and analogous approaches, a critical review of phylogeography, etc., but also phytosociological and purely floristic contributions, which are essential for the identification and conservation of both conserved species and of the general biodiversity of Bulgaria and of protected natural territories in the country. Therefore, in close connection with this group of contributions, it is logical that the author mentioned as the 5th group of contributions in connection with the study of the different hierarchical levels of biodiversity (works G.7-01, G.7-08, G.8-18, G.8-22, G.8-23, G.8-32, G.8-33, G.8-35, E.20-1). From a botanical point of view, of particular interest here is the argumentative thesis for the separation of a separate biome of Laurel forests and shrubs *Laurilignosa*, and not its remaining as a separate part of the biome of achlorophyllous forests and shrubs *Durilignosa* (V.3-1), the motivated denial of the inverse location of the beech and oak forests in Strandzha (E.20-1),

the discussion of the naturalness of the steppe grass communities in the karst fields of the mountains of Western Bulgaria (E.20-1). Last but not least, it is important to present new chorological data for the Mesta river valley, incl. for three species from the Red Book of the Republic of Bulgaria - *Adiantum capillus-veneris* L., *Chondrilla urumoffii* Degen, *Micromeria juliana* (L.) Benth. ex Rchb. and discovery in the area of the new species for the Bulgarian flora *Persicaria salicifolia* (Brouss. ex Willd.) Assenov (G.7-01), the assessment of the interaction of the localities of the invasive and conservation-significant species of the mountain Mala Planina (G.7-08) in the context of its purposefully studied landscape biodiversity and differentiated 103 landscape units (G.8-18, G. 8-33). In connection with the zoning of the vegetation of Bulgaria, a significant contribution of the author is the redefinition of the phytocoenological taxa, established on a dominant principle to syntaxons already known for the country (E.20-1). I would especially like to emphasize the role of the author in the creation of the Balkan Plant Database (G.7-06), in which, in addition to phytosociological descriptions, there is a detailed overview of research at the local, regional and Eastern European level. This regional database includes 9,580 descriptions of vegetation from six countries on the Balkan Peninsula (Albania, Bosnia and Herzegovina, Bulgaria, Kosovo, Montenegro and Serbia), most of which (78%) are georeferenced. The database includes digitized information from literature sources (79%) and unpublished data (21%).

The work with this type of information is logically connected with the 4th group of contributions indicated by the author, namely "landscape-ecological studies and development of landscape maps" (works G.7-02, G.7-03, G.8-11, G.8-12, G.8-13, G.8-20, G.8-21, G.8-25). I would also include here the works G.8-22, G.8-23 and G.8-32, including a comparative analysis of the data on the land cover Corine Land Cover. The mapping of the ecosystems of Mala Planina according to the MAES typology can also be included here (G.8-27). Among the three groups of contributions described, there are also those of a methodological nature, which in my opinion could be separated into a special sub-item, which was partly done by the author for the second group of contributions (works) G.7-03, G.8-01, G.8-17, G.8-19, G.8-26, G.8-27). These are, for example, the contributions in the works with numbers G.7-06, G.7-09, G.7-10, G.8-03, G.8-04, G.8-06, G.8-08, G.8-16, G.8-27, G.8-28, G.9-02, in which innovative approaches for valuation of natural capital in a given municipality are offered, motivating the need to conduct research on the territory of municipalities as the smallest spatial structure in Bulgaria, where the principles of sustainable development can be applied. This includes the approach of integrating the diversity of habitats as

a criterion for increasing the objectivity of spatial analysis in landscape research of different types, which allows the development of landscape indicators for the degree of anthropogenic load and the design of adaptive forms of agricultural planning (G.8-22, G.8-23). Closely related to the methodological developments with the participation of the author is the use of the hemerobiid index in the proposed new approach for landscape research in mountain areas and the creation of analytical databases for assessment of landscape structure and functions for adaptive management of mountain areas (G.8 -12) and the introduction in Bulgarian science of Sierpinski's fractal with placing ecosystem services in its middle (G.7-02). In connection with the methodology are the contributions from the third section, cited by the author, related to "development of an original model for comparability of protected areas of the ecological network Natura 2000 in Bulgaria in the border areas with neighboring countries" (papers G.8-04, G.8-06, G.8-07, G.8-09, G.8-10, G.8-14, G.8-24, G.9-01), which will undoubtedly contribute to changes in practice of zoology in the region. Thus, these contributions can be classified as practical and of public importance. In connection with this type of research is the proof of the existence of an independent low mountain Peritsa in the protected area "Dolna Mesta" (G.8-06).

The materials for the competition present a list of published abstracts of 20 participations in scientific forums (symposia, conferences and seminars): 8 international and 12 national, 7 of which with international participation. Of these participations, 5 are independent and 15 are in teams, which (as in scientific papers) confirms the skills and competencies of Assoc. Prof. A. Assenov for teamwork. The presentations of the scientific forums definitely complement the idea of the candidate's research achievements and his scientific activity.

The professional skills of Assoc. Prof. A. Assenov are confirmed by his work as an expert, researcher and academic mentor in 11 projects (after the habilitation as an associate professor): two international, three national, four funded by NSF-SU and two for Student Internships funded by the European Operational Program "Science and Education for Smart Growth" (EOP SESRG). The work on all these projects is correctly approved with contracts and certificates.

The overall image of Assoc. Prof. A. Assenov as a candidate for the academic position of "professor" would be presented incompletely without an assessment of his teaching work. This extremely important activity is left especially for the end of the review, so that its great role in the professional life of the candidate can be outlined. In the documentation on the competition is attached a reference from the department "Educational activities" of Sofia University, showing its

high total employment, varying in the last 5 years from 725.5 to 1149.7 hours per year, ie. 1189.36 hours per year! Of this total employment, the auditorium (classroom) part is an average of 534 hours per year of auditorium employment, reaching 675 hours of auditorium annual employment! I emphasize these figures because only one university lecturer can imagine how much work and effort is behind this workload, which seriously exceeds the annual norms of 270 hours of classroom employment and 360 hours of total employment. Assoc. Prof. Assenov lectures in all educational degrees and forms of education (full-time and part-time) in the following subjects, divided by specialties: 1) specialty Geography - Biogeography, Biogeography of Bulgaria and Protected natural sites in Bulgaria; 2) specialty Geography and Biology and specialty History and Geography - Soil Geography and General Biogeography and Natural Geography of the Continents; 3) specialty Regional Development and Policy - Environment and Natural Resources, Forest Resources Management in Bulgaria; 4) in the master's program Landscape Ecology and Natural Capital - Natural Capital, Methods for assessment of ecosystem / landscape services, Habitat diversity.

In addition, since 2012, Assoc. Prof. Assenov has been the research supervisor of 7 graduates, one successfully defended a doctoral student and currently has one enrolled doctoral student, and twice he is also a mentor of one doctoral student. He participated in examination commissions of state examinations and defended diploma works. As far as the submitted documents refer to a competition for the academic position of "professor" at a university, I especially emphasize this teaching and organizational activity of the candidate, which takes a lot of time and effort and should be very, very highly appreciated. I would like to note that not all habilitated teachers in our country have proven such high performance in their competitions.

I have many years of personal impressions of Assoc. Prof. Dr. A. Assenov, with whom we collaborate as editors-in-chief of the Annual of Sofia University and I can say that he is a responsible researcher and an extremely correct colleague. His high professionalism combined with his well-known goodwill make him both a sought-after and respected member of scientific juries for the award of scientific titles and academic positions, and a valuable reviewer of scientific articles.

Also important is the great administrative and organizational activity of Assoc. Prof. Assenov as Head of Department, Editor-in-Chief of the Annual of Sofia University, GGF, Book 2 - Geography and Editor-in-Chief of Biodiversity of Rila National Park, as a member of scientific organizations - Bulgarian Geographical Society and Union of Scientists in Bulgaria - Biology

Section. I appreciate this time-consuming side of the various activities of the candidate for the academic position of "professor".

As a result of all the above, it can be argued that according to the scientometric indicators for minimum requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations for its implementation the candidate's points are a total of 1156.22 instead of the indicated 1163 as a result of minimal changes only in indicators G (7, 8) and D (10, 12):

| Group of indeces | Index | Number | Points |
|-------------------------|---|---------------|----------------|
| A | Indicator 1. Dissertation work for awarding the PhD degree | 1 | 50 |
| V | 3. Monography | 1 | 100 |
| G | 7. Scientific publications that are referenced and indexed in a world-famous database with scientific information (40 / n) | 9 | 126,98 |
| | 8. Scientific publications in non-refereed journals with scientific review or edited collective volumes (20 / n) | 40 | 436,24 |
| | 9. 9. Published chapter of a collective monograph (10 / n) | 3 | 16 |
| | Total for index G: | 52 | 579,22 |
| Д | 10. Citations or reviews in scientific journals, referenced and indexed in world-famous databases with scientific information or in monographs and collective volumes (5 points each) | 23 | 115 |
| | 11. Cited monographs and collective volumes which are scientifically reviewed (3 points each) | 16 | 48 |
| | 12. Citation or reviews in non-indexed or referred journals with scientific review (2 points each) | 42 | 84 |
| | Total for index D: | 81 | 247 |
| E | 14. Supervising of a successfully defended PhD student (40/n) | 2 | 80 |
| | 15. Participation in a national scientific or educational project (10 points each) | 2 | 20 |
| | 15. Participation in an international scientific or educational project (20 points each) | 2 | 40 |
| | 20. Published university textbook... (40/n) | 1 | 40 |
| | Total for index E: | | 180 |
| | Total for indeces A, V, G, D and E: | | 1156,22 |

Based on the submitted competition materials and my excellent personal impressions, I believe that the teaching experience, qualities and skills and research achievements of Assoc. Prof. Dr. Assen Ivanov Assenov are sufficient grounds for his election to the academic position of "professor" in higher education line 4 Natural sciences, mathematics and informatics, professional field 4.4. Earth Sciences (Biogeography and Soil Geography) in the Department „Landscape science and environmental protection“ at the Faculty of Geology and Geography of Sofia University “St. Kliment Ohridski”. Therefore, having in mind that all scientometric indicators and submitted documents are in accordance with the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations for its implementation, as well as with the Regulations of Sofia University "St. Kliment Ohridski " I allow myself to give a positive assessment of the presented materials and to recommend to the respected members of the Scientific Jury to support this choice.

30.08.2020 г.

Signature:

/Prof. M. P.Stoyneva, DrSc, PhD/