

The External Evaluation Report of a Doctoral Study Domain

I. Introduction¹

In IOSUD – Petroleum-Gas University of Ploiești is running a multidisciplinary doctoral school. PhD area Mining, Oil and Gas to which there are 8 Phd supervisors and 49 doctoral students. All doctoral theses from April 2016 were subject to antiplagiarism verification. The basic research infrastructure in the domain of MINING, OIL AND GAS is presented at the web addresses on the website of the Oil and Gas Engineering Faculty:

<https://devel-ciurte.holisun.com/upg-ipg/cercetare#>

Doctoral Study programme can be found on the website of the Doctoral School: https://www.upg-ploiesti.ro/sites/default/files/doctorat/PLAN%20INV%20ING%20MEC_2019_20.pdf.

Unfortunately, most of the SER attached documentation was in Romanian only, and as PDF scans, so it is difficult to read these using translation software.

Disciplines and supervisors can be found on the new website of IOSUD and Doctoral School (<https://devel-ciurte.holisun.com/upg-doc/>). At web page was missing Professor PhD Eng. Mihai Pascu COLOJA, reported at SER.

The topics proposed by domain are related to industrial sector needs. Topics announced 2021 (Contributions on the non-stationary movement of natural gas in the distribution networks; Contributions on the intelligent operation of natural gas distribution networks; Modern techniques and technologies in the field of guided and horizontal drilling; Treatment of field waters in order to use them to increase the oil recovery factor) are traditional and quite overall. When meeting with supervisors, it was confirmed, that students are allowed to work in more focused directions. It is noted, that research topics are not targeting green transition and alternative energy resources research.

When meeting with alumni, they were mostly related to industry research, but also evidence of international projects and practicing as university lecturer were outlined, what is positive trend. There are also few international students, graduated successfully the domain, and making now successful career in other universities abroad (e.g. in Egypt, Cairo University).

II. Methods used

The report is based upon SER, additional materials provided, and online interviews with management representatives, scientific advisors, teachers, PhD students, alumni and employers.

III. Analysis of ARACIS's performance indicators

Domain A. INSTITUTIONAL CAPACITY

¹ Each time when applicable the information shall be presented gender-wise.



Criterion A.1. The administrative, managerial institutional structures and the financial resources

**general description of the criterion analysis.*

Standard A.1.1. The institution organizing doctoral studies (IOSUD) has implemented the effective functioning mechanisms provided for in the specific legislation on the organization of doctoral studies.

**general description of the standard analysis.*

Performance Indicator A.1.1.1. *The existence of specific regulations and their application at the level of the Doctoral School of the respective university doctoral study domain:*

(a) the internal regulations of the Doctoral School;

The IOSUD has been running doctoral school in Mining, Petroleum and Gas domain for a years, it has elaborated regulations and functional council. The set of internal regulations was covering the aspects needed. The admission process was quite clear and topics for PhD thesis were provided openly at web page. There was mechanism for appointing Doctoral advisor, however the criteria for that were loose. Council of the doctoral school was appointed. Doctoral students were contacted and in most cases tightly cooperating with industry. Doctoral students had possibility to publish internationally or participate in conferences and training. However the yearly allowance was moderate (about 560 EUR).

Recommendations: corresponding information at web page is mostly in Romanian. It is recommended to make the regulations of doctoral school available also in English. Criteria for Doctoral advisors must be strengthened – appropriate h-index, publishing activity in scientific journals and ability to bring in research projects are necessary. Also, the pool of Doctoral advisors was all over 50 years old professors. There is recommended to involve young promising scientists as Doctoral advisors as well.

The indicator is partially fulfilled.

Performance Indicator A.1.1.2. *The doctoral school' Regulation includes mandatory criteria, procedures and standards binding on the aspects specified in Article 17, paragraph (5) of the Government Decision No. 681/2011 on the approval of the Code of Doctoral Studies with subsequent amendments and additions.*

There is functional doctoral school. The doctoral school council consists of 9 members.

Recommendations: The documentation regarding doctoral school management is recommended to be available also in English.

The indicator is fulfilled.

Standard A.1.2. The IOSUD has the logistical resources necessary to carry out the doctoral studies' mission.

Performance Indicator A.1.2.1. *The existence and effectiveness of an appropriate IT system to keep track of doctoral students and their academic background.*

The IT system was not checked in place, but doctoral students were informed about their status and case studies regarding process of allowing thesis to defence were present.



Recommendations: it is recommended to make doctoral thesis or their abstracts available also through web

The indicator is fulfilled.

Performance Indicator A.1.2.2. *The existence and use of an appropriate software program and evidence of its use to verify the percentage of similarity in all doctoral theses.*

Means for plagiarism detection are present, doctoral students were aware of sistemantiplagiat.ro possibilities. Presented similarity reports in Annex A111 were as approve of working system. Actually it is positive worth to mention, that the implemented system works well with Romanian literature besides English ones.

Recommendations: None

The indicator is fulfilled.

Standard A.1.3. The IOSUD makes sure that financial resources are used optimally, and the revenues obtained from doctoral studies are supplemented through additional funding besides governmental funding.

**general description of the standard analysis.*

Performance Indicator A.1.3.1. *Existence of at least one research or institutional / human resources development grant under implementation at the time of submission of the internal evaluation file, per doctoral study domain under evaluation, or existence of at least 2 research or institutional development / human resources grant for the doctoral study domain, obtained by doctoral thesis advisors operating in the evaluated domain within the past 5 years. The grants address relevant themes for the respective domain and, as a rule, are engaging doctoral students.*

Grants have been available for advisors.

Recommendations: The reported grants are mostly from 2015-2016. Currently advisors need to search research funding, it is advisable to have a dedicated funding for domain, to be spreaded by Doctoral School Council.

The indicator is fulfilled.

Performance Indicator *A.1.3.2. *The percentage of doctoral students active at the time of the evaluation, who for at least six months receive additional funding sources besides government funding, through scholarships awarded by individual persons or by legal entities, or who are financially supported through research or institutional / human resources development grants is not less than 20%.*

As reported in SER, the indicator is filled, being 45%

Recommendations: None

The indicator is fulfilled.

Performance Indicator *A.1.3.3.² *At least 10% of the total amount of doctoral grants obtained by the university through institutional contracts and of tuition fees collected from the doctoral students enrolled*

² The indicators marked with an asterisk (*) hold a special status, referring exclusively to the evaluation of doctoral studies domains, as per Article 12 from the annex No.1 of the Order of the minister of education No. 3651/12.04.2021 approving the Methodology for evaluating university doctoral studies and the system of criteria, standards and performance indicators used in the evaluation. In case they are not met, the Agency extends a period of maximum 3 years to IOSUD to correct the respective deficiencies.



in the paid tuition system is used to reimburse professional training expenses of doctoral students (attending conferences, summer schools, training, programs abroad, publication of specialty papers or other specific forms of dissemination etc.).

As reported in SER, the indicator was not filled, being 1,2%

Recommendations: The pool of scientific advisors need to be enlarged, bringing in scientifically active researchers. Also, at national level, the funding possibilities to the domain sector is recommended to enlarge.

The indicator is not fulfilled.

Criterion A.2. Research infrastructure

**general description of the criterion analysis.*

Standard A.2.1. The IOSUD has a modern research infrastructure to support the conduct of doctoral studies' specific activities.

**general description of the standard analysis.*

Performance Indicator A.2.1.1. The venues and the material equipment available to the doctoral school enable the research activities in the evaluated domain to be carried out, in line with the assumed mission and objectives (computers, specific software, equipment, laboratory equipment, library, access to international databases etc.). The research infrastructure and the provision of research services are presented to the public through a specific platform. The research infrastructure described above, which was purchased and developed within the past 5 years will be presented distinctly.

According to SER there are modern ICT enabled resources available. Also interviews with PhD students confirmed, that corresponding digital accesses to research literature, but also possibilities to use research labs at university and partnering enterprises were granted.

Recommendations: None

The indicator is fulfilled.

Criterion A.3. Quality of Human Resources

**general description of the criterion analysis.*

Standard A.3.1. At the level of each domain there are sufficient qualified staff to ensure the conduct of doctoral study program.

**general description of the standard analysis.*

Performance Indicator A.3.1.1. Minimum three doctoral thesis advisors within that doctoral domain, and at least 50% of them (but no less than three) meet the minimum standards of the National Council for Attestation of University Degrees, Diplomas and Certificates (CNATDCU) in force at the time when the evaluation is carried out, which standards are required and mandatory for obtaining the enabling certification.

In alphabetical order, the PhD leaders according to SER are:

1. Professor habil.PhD Eng. Mihai ALBULESCU; h-index 4, complies with the CNADTCU criteria, 66 years old

2. Professor habil.PhD Eng. Florinel DINU; h-index 4, complies with the CNADTCU criteria, 60 years old



3. **Professor habil.PhD Eng. Maria STOICESCU; h-index 2, complies with the CNADTCU criteria, 66 years old**

4. **Professor PhD Eng. Lazăr AVRAM; h-index6, complies with the CNADTCU criteria 66 years old**

5. **Professor PhD Eng. Mihai Pascu COLOJA; h-index1, retired from the Petroleum - Gas University in Ploiesti, 68 years old**

6. **Professor PhD Eng. Florea MINESCU; h-index 5, complies with the CNADTCU criteria, 66 years old**

7. **Professor PhD Eng.Iulian NISTOR; h-index 1, retired from the Petroleum - Gas University in Ploiesti, 70 years old**

8. **Associate Professor PhD Eng. Timur CHIȘ. h-index 1, (also an associate of Ovidius University in Constanta, complies with the CNADTCU criteria, 56 years old**

Recommendations: the indicator is corresponding to requirements, but some scientific advisors are not active in science and have low h-index, so the pool of advisors need to be enlarged

The indicator is fulfilled.

Performance Indicator *A.3.1.2. At least 50% of all doctoral advisors have a full-time employment contract for an indefinite period with the IOSUD.

There altogether 4 tenured professors.

Recommendations: despite tenured position, the research visibility of some professors are relatively low

The indicator is fulfilled.

Performance Indicator A.3.1.3. The study subjects in the education program based on advanced higher education studies pertaining to the doctoral domain are taught by teaching staff or researchers who are doctoral thesis advisors / certified doctoral thesis advisors, professors / CS I or lecturer / CS II, with proved expertise in the field of the study subjects they teach, or other specialists in the field who meet the standards established by the institution in relation with the aforementioned teaching and research functions, as provided by the law.

There was proven record of expertise of lecturers at the doctoral study programme.

Recommendations: surprisingly advisors are not teaching any courses in doctoral study domain, but study plan is filled by other people. It is recommended, that study program includes also subjects taught by scientific advisors.

The indicator is fulfilled/.

Performance Indicator *A.3.1.4. The percentage of doctoral thesis advisors who concomitantly coordinate more than 8 doctoral students, but no more than 12, who are themselves studying in doctoral programs³ does not exceed 20%.

There were 2 heavily loaded advisors, and having 10 or 13 PhD students is too much. I

³ 3 years for the doctoral university studies with the duration stipulated at Article 159, paragraph (3), respectively 4 years for the doctoral university studies with the duration stipulated at Article 174, paragraph (3) of the Law of national education No.1/2011 with subsequent amendments and additions, with additional extension periods approved as per Article 39, paragraph (3) of the Code of doctoral studies approved by the GD No. 681/2011 with subsequent amendments and additions.



Recommendations: It is recommended to Doctoral School Council to regulate upper limit of doctoral students, if doctoral advisor takes 2 new students every year, then 6 students could be manageable.

The indicator is fulfilled.

Standard A.3.2. The Doctoral advisors within the domain are carrying out a scientific activity visible at international level.

**general description of the standard analysis.*

Performance Indicator A.3.2.1. At least 50% of the doctoral thesis advisors in the evaluated domain have at least 5 Web of Science- or ERIH-indexed publications in magazines of impact, or other achievements of relevant significance for that domain, including international-level contributions that indicate progress in scientific research - development - innovation for the evaluated domain. The aforementioned doctoral thesis advisors enjoy international awareness within the past five years, consisting of: membership on scientific boards of international publications and conferences; membership on boards of international professional associations; guests in conferences or expert groups working abroad, or membership on doctoral defense commissions at universities abroad or co-leading with universities abroad. For Arts and Sports and Physical Education Sciences, doctoral thesis advisors shall prove their international visibility within the past five years by their membership on the boards of professional associations, membership in organizing committees of arts events and international competitions, membership on juries or umpire teams in artistic events or international competitions.

The list of publications was analysed in SER, however the main problem is still low scientific visibility reflected in h-index.

Recommendations: the publishing activity in recent ears was in some advisors relatively low, there should be additional motivation system at university or faculty level, giving prize money for those, publishing in Scopus indexed journals.

The indicator is partially fulfilled.

Performance Indicator *A.3.2.2. At least 50% of the doctoral thesis advisors in a specific doctoral study domain continue to be active in their scientific field, and acquire at least 25% of the score requested by the minimal CNATDCU standards in force at the time of the evaluation, which are required and mandatory for acquiring their enabling certificate, based on their scientific results within the past five years.

There was provided evidence in SER regarding publishing activity.

Recommendations: There are 5 professors outlined for their current research activity, it is advised to support publishing in high quality journals to increase also scientific visibility and h-index..

The indicator is fulfilled.

Domain B. EDUCATIONAL EFFECTIVENESS

**general description of domain analysis.*

Criterion B.1. The number, quality and diversity of candidates enrolled for the admission contest

**general description of the criterion analysis.*



Standard B.1.1. The institution organizing doctoral studies has the capacity to attract candidates from outside the higher education institution or a number of candidates exceeding the number of seats available.

**general description of the standard analysis.*

Performance Indicator *B.1.1.1. The ratio between the number of graduates of masters' programs of other higher education institutions, national or foreign, who have enrolled for the doctoral admission contest within the past five years and the number of seats funded by the state budget, put out through contest within the doctoral domain is at least 0.2 or the ratio between the number of candidates within the past five years and the number of seats funded by the state budget put out through contest within the doctoral studies domain is at least 1,2.

There was evident from SER that 27% of PhD students were acquired from other universities. However the number of admitted students in recent years has been rapidly decreasing.

Recommendations: The Domain should be advertised more widely also abroad.

The indicator is fulfilled.

Standard B.1.2 Candidates admitted to doctoral studies demonstrate academic, research and professional performance.

**general description of the standard analysis.*

Performance Indicator *B.1.2.1. Admission to doctoral study programs is based on selection criteria including: previous academic, research and professional performance, their interest for scientific or arts/sports research, publications in the domain and a proposal for a research subject. Interviewing the candidate is compulsory, as part of the admission procedure.

The indicator was missing in SER, however during interviews with students and search on the web page become evident, that the admission was announced publicly at webpage

Recommendations: the admission was announced publicly at webpage

The indicator is fulfilled/ .

Performance Indicator B.1.2.2. The expelling rate, including renouncement / dropping out of doctoral students 3, respectively 4, years after admission⁴ does not exceed 30%.

The dropout rate was relatively low.

Recommendations: The dropout rate is well maintained, however the bigger problem is low enrollment in last two years, what is recommended to be improved.

The indicator is fulfilled.

Criterion B.2. The content of doctoral programs

**general description of the criterion analysis.*

⁴ 3 years for the doctoral university studies with the duration stipulated at Article 159, paragraph (3), respectively 4 years for the doctoral university studies with the duration stipulated at Article 174, paragraph (3) of the Law of national education No. 1/2011 with subsequent amendments and additions.



Standard B.2.1. The training program based on advanced university studies is appropriate to improve doctoral students' research skills and to strengthen ethical behavior in science.

**general description of the standard analysis.*

Performance Indicator B.2.1.1. The training program based on advanced academic studies includes at least 3 disciplines relevant to the scientific research training of doctoral students; at least one of these disciplines is intended to study in-depth the research methodology and/or the statistical data processing.

The study program is solid. There was a course for data processing, a course for DoE, and a course for overall research

Recommendations: Doctoral advisors are not involved in teaching at all, so their high qualification is not spread to doctoral students. The study plan does not include teaching practice. It is recommended to include teaching as optional study program part to educate PhD students to be involved in academic teaching. Also, there is currently no doctoral seminar, allowing students to make presentations internally, and to discuss topics inside doctoral school.

The indicator is fulfilled

Performance Indicator B.2.1.2. At least one discipline is dedicated to Ethics and Intellectual Property in scientific research or there are well-defined topics on these subjects within a discipline taught in the doctoral program.

There were corresponding courses regarding ethics included: Ethics and academic integrity / Drumeanu Adrian Catalin. Regarding Intellectual Property there was Management of research-development-innovation projects / Nae Ion, Petrescu Marius.

Recommendations: None

The indicator is fulfilled

Performance Indicator B.2.1.3. The IOSUD has mechanisms to ensure that the academic training program based on advanced university studies addresses „the learning outcomes”, specifying the knowledge, skills, responsibility and autonomy that doctoral students should acquire after completing each discipline or through the research activities⁵.

The Learning Outcomes were defined, however this study program did not include modern values regarding twin transition

Recommendations: The study program could be modernised towards twin transition (digital and green) being involved in learning outcomes.

The indicator is fulfilled

Performance Indicator B.2.1.4. All along the duration of the doctoral training, doctoral students in the domain receive counselling/guidance from functional guidance commissions, which is reflected in written guidance and feedback or regular meeting.

Written feedback was not confirmed in meetings with students. Also there is no doctoral seminar in study program foreseen.

⁵ Or by what the graduate should know, understand and to be able to do, according to the provisions of the Methodology of 17 March 2017 regarding inscription and registration of higher education qualifications in the National Register of Qualifications in Higher Education (RNCIS) approved by the Order No.3475/2017 with subsequent amendments and additions.



Recommendations: PhD students regular seminars should be included into study program to grant better feedback to their progress.

The indicator is partially fulfilled.

Performance Indicator B.2.1.5. For a doctoral study domain, the ratio between the number of doctoral students and the number of teaching staff/researchers providing doctoral guidance must not exceed 3:1.

In SER the number of PhD supervisors was changing very suddenly. In practice, some professors have extensive overload, and there are professors counted in already retired (emeritus) or not particularly active in publishing.

Recommendations: The number of active supervisors must be increased, also there is need for young generation taking over and learning from current scientific advisors soon in retirement

The indicator is partially fulfilled.

Criterion B.3. The results of doctoral studies and procedures for their evaluation.

**general description of the criterion analysis.*

Standard B.3.1. Doctoral students capitalize on the research through presentations at scientific conferences, scientific publications, technological transfer, patents, products and service orders.

**general description of the standard analysis.*

Performance Indicator B.3.1.1. For the evaluated domain, the evaluation commission will be provided with at least one paper or some other relevant contribution per doctoral student who has obtained a doctor's title within the past 5 years. From this list, the members of the evaluation commission shall randomly select 5 such papers / relevant contributions per doctoral study domain for review. At least 3 selected papers must contain significant original contributions in the respective domain.

There was evidence of successful defence with quality contents, doctoral students had at least 3 scientific publications by the moment of thesis defence achieved

Recommendations: None

The indicator is fulfilled.

Performance Indicator *B.3.1.2. The ratio between the number of presentations of doctoral students who completed their doctoral studies within the evaluated period (past 5 years), including posters, exhibitions made at prestigious international events (organized in the country or abroad) and the number of doctoral students who have completed their doctoral studies within the evaluated period (past 5 years) is at least 1.

This indicator was below the standard.

Recommendations: PhD students should be more involved in high level conferences, as currently only every third doctoral student has value presentation per year. Also the number of defended students in 5 years is low and should be increased.

The indicator is not fulfilled.

Standard B.3.2. The Doctoral School engages a significant number of external scientific specialists in the commissions for public defense of doctoral theses in the analyzed domain.



**general description of the standard analysis.*

Performance Indicator *B.3.2.1. *The number of doctoral theses allocated to one specialist coming from a higher education institution, other than the evaluated IOSUD should not exceed two (2) in a year for the theses coordinated by the same doctoral thesis advisor.*

The number of defence committee members having overload was in allowed limits (2),.

Recommendations: None

The indicator is fulfilled.

Performance Indicator *B.3.2.2. *The ratio between the doctoral theses allocated to one scientific specialist coming from a higher education institution, other than the institution where the defense on the doctoral thesis is organized, and the number of doctoral theses presented in the same doctoral study domain in the doctoral school should not exceed 0.3, considering the past five years. Only those doctoral study domains in which minimum ten doctoral theses have been presented within the past five years should be analyzed.*

Recommendations: The scientific referee was in 61% cases the same, the pool of referees needs to be increased.

The indicator is not fulfilled.

Domain C. QUALITY MANAGEMENT

**general description of domain analysis.*

Criterion C.1. Existence and periodic implementation of the internal quality assurance system

**general description of the criterion analysis.*

Standard C.1.1. There are an institutional framework and procedures in place and relevant internal quality assurance policies, applied for monitoring the internal quality assurance.

**general description of the standard analysis.*

Performance Indicator C.1.1.1. *The Doctoral school in the respective university study domain shall demonstrate the continuous development of the evaluation process and its internal quality assurance following a procedure developed and applied at the level of the IOSUD, the following assessed criteria being mandatory:*

The thesis defence procedure is well organised. The responsible committee members are appointed according university regulations, and the procedure is available at web page <https://www.upg-ploiesti.ro/ro/info-doctorat>

Recommendations: Thesis are recommended also to be made available as full text (currently only 3-pages abstracts are published in web)..

The indicator is fulfilled.

Performance Indicator *C.1.1.2. *Mechanisms are implemented during the stage of the doctoral study program to enable feedback from doctoral students allowing to identify their needs, as well as their overall level of satisfaction with the doctoral study program in order to ensure continuous improvement of the*



academic and administrative processes. Following the analysis of the results, there is evidence that an action plan was drafted and implemented.

The number of students is not so high, the students have several supervisors and co-supervisors and the feedback is gathered directly. There are anonymous questionnaires available.

Recommendations: None

The indicator is fulfilled.

Criterion C.2. Transparency of information and accessibility of learning resources

**general description of the criterion analysis.*

Standard C.2.1. Information of interest to doctoral students, future candidates and public interest information is available for electronic format consultation.

**general description of the standard analysis.*

Performance Indicator C.2.1.1. *The IOSUD publishes on the website of the organizing institution, in compliance with the general regulations on data protection, information such as:*

The info feed regarding domain in web platform was well described in SER, and it is also really representative in everyday use, as tested by evaluator and confirmed by PhD students during interviews.

Recommendations: the information regarding doctoral study regulation is not available in English, this should be enhanced for international visibility. It is recommended also to publish all doctoral thesis openly (unless these are under special agreements of industrial partners).

The indicator is fulfilled.

Standard C.2.2. The IOSUD/The Doctoral School provides doctoral students with access to the resources needed for conducting doctoral studies.

**general description of the standard analysis.*

Performance Indicator C.2.2.1. *All doctoral students have free access to one platform providing academic databases relevant to the doctoral studies domain of their thesis.*

The students have access to national academic database Anelis Plus, making available restricted services as ScienceDirect, Thomson Reuters etc

Recommendations: None

The indicator is fulfilled.

Performance Indicator C.2.2.2. *Each doctoral student shall have access, upon request, to an electronic system for verifying the degree of similarity with other existing scientific or artistic works.*

-The access to digital resources/libraries is granted. In meeting with evaluators the PhD students were aware of plagiarism checking tools and the availability of sistemantiplagiat digital tool.

Recommendations: None

The indicator is fulfilled.



Performance Indicator C.2.2.3. All doctoral students have access to scientific research laboratories or other facilities depending on the specific domain/domains within the Doctoral School, according to internal order procedures.

The access to mining, oil and gas research infrastructure provided by university is appropriate.

Recommendations: The infrastructure is conventional and needs to be updated considering twin transition (green and digital) trends in EU research programmes.

The indicator is fulfilled.

Criterion C.3. Internationalization

**general description of the criterion analysis.*

Standard C.3.1. There is a strategy in place and it is applied to enhance the internationalization of doctoral studies.

**general description of the standard analysis.*

Performance Indicator *C.3.1.1. IOSUD, for every evaluated domain, has concluded mobility agreements with universities abroad, with research institutes, with companies working in the field of study, aimed at the mobility of doctoral students and academic staff (e.g., ERASMUS agreements for the doctoral studies). At least 35% of the doctoral students have completed a training course abroad or other mobility forms such as attending international scientific conferences. IOSUD drafts and applies policies and measures aiming at increasing the number of doctoral students participating at mobility periods abroad, up to at least 20%, which is the target at the level of the European Higher Education Area.

There are mobility tools through Erasmus + measure well used for mobility. However, only 20% of students have experience of international mobility.

Recommendations: There was evidence of involving industrial students into doctoral study domain. However, in meeting with evaluators most of the doctoral students were not comfortable in English. It is recommended to underline Academic English as a part of doctoral study program.

The indicator is partially fulfilled.

Performance Indicator C.3.1.2. In the evaluated doctoral study domain, support is granted, including financial support, to the organization of doctoral studies in international co-tutelage or invitation of leading experts to deliver courses/lectures for doctoral students.

There was evidence of invited top specialists.

Recommendations: PhD students are not all comfortable in academic English. Having some course in English taught by invited lecturer would help in internationalisation. Also, in study plan Academic English could be an optional subject.

The indicator is fulfilled.

Performance Indicator C.3.1.3. The internationalization of activities carried out during the doctoral studies is supported by IOSUD through concrete measures (e.g., by participating in educational fairs to attract international doctoral students; by including international experts in guidance committees or doctoral committees etc.).

There was evidence regarding internationalization activities,



Recommendations: *The support per doctoral student per year is set, but it is recommended to increase it for visiting also conferences located farer countries.*

The indicator is fulfilled.

IV. SWOT Analysis

<p><u>Strengths:</u></p> <p>Strong support and interest from local enterprises, municipalities, scientific community. Successful alumni advanced after graduation both in national and international career Need of local economy Reltively large pool of PhD students and interest to the topics proposed by study program</p>	<p><u>Weaknesses:</u></p> <p>Pool of supervisors is limited, several supervisors retiring soon, age cap 26-50 not involved Poor knowledge of English amongst supervisos and PhD students Low h-indexes in several supervisors, mostly due low level international publishing Few EU projects supporting R&D</p>
<p><u>Opportunities:</u></p> <p>Lots of active alumni not directly involved in academia yet Topic of green economy/energy opens new oportunities in EU</p>	<p><u>Threats:</u></p> <p>Without young scientists in supervisors pool the study program ends up in few years Without modernising the study program towards twin transition (green&digital) the interest of young generation towards study program ends up (there is evidence of decreasing number of admitted PhD students in recent years)</p>

V. Overview of judgments awarded and of the recommendations

No.	Type of indicator (*, C)	Performance indicator	Judgment	Recommendations
1	C	B2.1.5	Pool of supervisors is limited, several supervisors retiring soon, age cap 26-50 not involved	Strategic involvement new generation researchers

2	*	C.3.1.1	Poor knowledge of English amongst supervisors and PhD students	Improvement of study program to involve courses taught in English.
3	C	A.3.2.1	Low h-indexes in several supervisors, mostly due low level international publishing	Development of motivation system to prize publishing in high quality journals
4	C	A.1.1.1	Few EU projects supporting R&D	Supporting EU applications writing at institutional level by science department.

The recommendations contained in the report shall be resumed in the indicators' analysis. Other general recommendations may be made that do not fit within a particular indicator.

VERY IMPORTANT!!! – Each identified weakness must be correlated with at least one recommendation to improve the situation!

VI. Conclusions and general recommendations

Several important issues raised during the evaluation are resumed and some general conclusions are drawn on the quality of the education provided within the doctoral study domain under review; the Experts' Panel also presents general assessments about the institution. Other general recommendation may also be presented, which cannot be related to a specific indicator and have not been presented at point V.

A decision is proposed, together with the reasons for granting it (if the Experts' Panel members do not reach a consensus, each of them can propose and argue his/her own decision).

Overall, the SER report was well composed and structured. The meetings with counterparts were all in positive mood, supportive to the domain and the field's future. Some remarks made here and propositions are made to support the development and keeping up the quality of higher education PhD domain.