

EVALUATION AND ACCREDITATION DOCUMENTS

Graduate Study Programme on Climate Change and Agriculture (PhD)

Rural Polytechnic Institute for Training and
Applied Research - Katibougou
University of Sciences, Techniques and
Technologies of Bamako

Katibougou, Mali

June 2024

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International evaluation and accreditation

EVALUATION REPORT

Graduate Study Programme on Climate Change and Agriculture (PhD)

Rural Polytechnic Institute for Training and Applied Research - Katibougou
University of Sciences, Techniques and Technologies of Bamako

Katibougou, Mali

February 2024



The WASCAL network (West African Science Centre on Climate Change and Adapted Land Use) has mandated the Hcéres to perform the evaluation of the Graduate Study Programme "Climate Change and Agriculture" (GSP - CC & AGRIC) delivered by the Rural Polytechnic Institute for Training and Applied Research (IPR/IFRA of Katibougou) of Katibougou and the University of Sciences, Techniques and Technologies of Bamako (USTTB). The evaluation is based on the "Evaluation Standards of Doctorate/PhD abroad", adopted by the Hcéres Board on January 31st, 2022. These standards are available on the Hcéres website (hceres.fr).

In the name of the expert committee¹ :

Benoit Gabrielle, President of the committee

In the name of Hcéres¹ :

Stéphane Le Boulter, Acting President

The Higher Council for Evaluation of Research and Higher Education (Hcéres) is an independent public authority. It is responsible for evaluating higher education and research institutions, research organizations, research units, and training programmes.

¹In accordance with articles R. 114-15 and R. 114-10 of the Research Code, evaluation reports are signed by the chairman of the expert committee and countersigned by the President of Hcéres.

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I. STUDY PROGRAMME IDENTITY SHEET

- Name of the Institution: Rural Polytechnic Institute for Training and Applied Research (IPR/IFRA of Katibougou) – University of Sciences, Techniques and Technologies of Bamako (USTTB)
- Programme's title: Climate Change and Agriculture (CC & AGRIC)
- Level and duration of studies: Graduate Study Programme (PhD) with a three-year target duration
- Location(s) where the facility is located: Katibougou, Mali
- Campus(es): Rural Polytechnic Institute for Training and Applied Research main campus
- Year of creation and context: 2012

The inception of this study programme is related to the national and regional recognition of Rural Polytechnic Institute for Training and Applied Research (IPR/IFRA of Katibougou, "Institut Polytechnique Rural de Formation et de Recherche Appliquée" in French) for its contribution to higher education and research in agriculture. This programme is hosted by this institute and jointly implemented with the University of Sciences, Techniques and Technologies of Bamako (USTTB). Leveraging its established reputation, IPR/IFRA of Katibougou initiated this dedicated programme in agricultural sciences when the WASCAL (West African Science Service Centre on Climate Change and Adapted Land Use) network was established in 2012.

This study programme is integrated in the framework of WASCAL, a large-scale, research-focused service centre including 11 West African countries (Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Ghana, Mali, Niger, Nigeria, Senegal, Gambia and Togo). The programme is funded by the German Federal Ministry of Education and Research (BMBF) through WASCAL. Each batch of the programme selects and admits one student from each country.

PERSON IN CHARGE OF THE PROGRAMME

- Name, first name: Prof. DIALLO, Yacouba
- Position held: Director
- Discipline: Geodetection and information technology

RESULTS OF PREVIOUS EVALUATIONS AND QUALITY SYSTEM IN PLACE

This is the first time this programme is evaluated, and it has not undergone any accreditation procedure so far. The quality assurance system of the GSP has been set up by the Internal Quality Assurance Unit (CIAQ) of IPR/IFRA of Katibougou and USTTB. The recruitment of PhD candidates and the supervision of their theses comply with the standards set by the WASCAL network.

HUMAN AND MATERIAL RESOURCES DEDICATED TO THE PROGRAMME

- An administrative and technical staff of eight persons, including a programme director and his deputy, a scientific coordinator, an IT officer, a finance officer, a secretary, a janitor and a driver
- A pedagogical team comprising approximately 30 professors from the host university, along with international lecturers and supervisors from West Africa and Germany
- Three dedicated buildings on the campus, consisting of teaching facilities (two classrooms and one computer room), administration offices, and students accommodation
- A bus to transport students and a pick-up vehicle for staff missions
- Access to the libraries of IPR, and their electronic resources

NUMBER OF STUDENTS OVER THE EXISTENCE OF THE STUDY PROGRAMME

		Batch 1 2012-2016	Batch 2 2016-2019	Batch 3 2019-2022	Batch 4 2021-2024
Year 1 to 4	Male	6	4	10	9
	Female	4	6	1	2
	Nationals	1	1	2	2
	Foreigners	9	9	9	9
	Total	10	10	11	11
Graduates	Male	6	4	7	-
	Female	4	2	1	-
	Nationals	1	0	0	-
	Foreigners	9	6	8	-
	Total	10	6	8	-

II. COMPOSITION OF THE EXPERTS PANEL

- Benoit GABRIELLE, Professor, AgroParisTech, Paris-Saclay University, Chair of the panel
- Christophe CUDENNEC, Professor, Institut Agro Rennes-Angers, Expert
- Mathilde COLAS, PhD Student, University of Technology of Troyes, Student Expert

Hcéres was represented by Pierre COURTELLEMONT, Science Advisor, and Michelle HOUPE, Head of project (Europe and International Department).

III. EVALUATION PROCESS

DESCRIPTION OF THE ONLINE VISIT

- Date: April 13th, 2023
- Organisation of the visit: before the visit took place, the self-assessment report and many appendices had been received by the experts. The on-line visit took place over one day, according to a schedule agreed between Wascal Centre and the experts' panel. Once written by the panel chair, the report was submitted to all panel members for review.
- Cooperation of the institution to be accredited: perfect cooperation by all stakeholders
- Any problems: no problems identified

PEOPLE MET

Hour (Bamako Time)	People met
08:30 – 10:00 am	Director of IPR/IFRA of Katibougou, Rector of USTTB and WASCAL-CC & AGRIC management team: Presentation of the programme & discussion
11:00 am – 12:00 am	A panel of PhD supervisors and course instructors
12:00 am – 01:00 pm	A panel of PhD students
01:30 – 02:30 pm	A panel of alumni, employers and other professional partners
02:30 – 03:00 pm	Head of the Quality Assurance Unit of IPR/IFRA of Katibougou

Around 35 participants were met during the online visit.

IV. OVERALL PRESENTATION

Since its inception in 2012, the WASCAL (West African Science Service Centre on Climate Change and Adapted Land Use) network aims to provide climate change solutions through capacity building. By educating future scientists, WASCAL strives to help West African countries to develop suitable management strategies.

Funded by the German Federal Ministry of Education and Research (BMBF), WASCAL aims at strengthening the research infrastructure and capacity in West Africa related to climate change by leveraging the expertise of eleven West African countries and Germany. Each country hosts at least one programme. As a general pattern, each batch of each programme trains 11 students, representing the 11 partner countries.

The WASCAL graduate study programme on climate change and agriculture (GSP - CC & AGRIC) is operated by the Rural Polytechnic Institute for Training and Applied Research of Katibougou, known as the "*Institut polytechnique rural de formation et de recherche appliquée*" (IPR/IFRA of Katibougou) in French. This initiative operates in partnership with the University of Sciences, Techniques and Technologies of Bamako (USTTB), which grants PhD degrees through the Postgraduate School of Sciences and Technologies of Mali, known as the "*École Doctorale des Sciences et Technologies du Mali*" (EDSTM), in French. Given the vulnerability of African agriculture to shifting climatic conditions, the objectives of the graduate study programme are as follows:

1. train highly qualified experts in Mali and other West African countries (with the appropriate infrastructure and equipment) to anticipate the effects of climate change, notably by improving scientific knowledge on the interactions between agriculture and climate,
2. define and implement strategies to adapt and mitigate the adverse effects of climate change on agriculture,
3. strengthen synergies among West African universities by harnessing collective expertise and directing research efforts based on local capacities, and
4. strengthen the partnership between West African universities and German universities. The GSP - CC & AGRIC currently involves national training and research institutions in Mali, as well as several universities from West Africa and Germany.

PRESENTATION OF THE PROGRAMME SELF-ASSESSMENT APPROACH

At the request of WASCAL management, the GSP - CC & AGRIC of IPR/IFRA of Katibougou in partnership with USTTB is undergoing an external evaluation by Hcéres with a view to applying for accreditation. The GSP management team was responsible for drafting the self-evaluation report, with contributions from the pedagogical team, alumni and potential employers, and PhD students. The Internal Quality Assurance Unit (CIAQ) of IPR/IFRA of Katibougou supported collecting and analysing the data necessary for the report. The GSP is overseen by one of the national Postgraduate Schools of Mali, EDSTM, and in compliance with its rules.

V. EVALUATION REPORT

FIELD 1. DOCTORAL POLICY

The WASCAL Graduate Study Programme on Climate Change and Agriculture (GSP - CC & AGRIC) focuses on the unique and critical regional issue of sustainable agriculture in a changing climate. It is hosted by IPR/IFRA of Katibougou, a renowned national and regional institution in higher education and agricultural research, whose priorities are fully aligned with the objectives of the WASCAL project. The fact that the programme is located in a region featuring diverse agricultural systems and contexts further justifies its integration into the WASCAL network, as it provides ample opportunities for field visits and incorporates relevant references and examples into the initial training semester. The GSP matches well with the organisational and strategic framework of IPR/IFRA and the EDSTM. This doctoral training serves as a logical progression from the Master's programme on Climate Change and Agriculture offered by IPR/IFRA.

The GSP relies on a formal partnership between IPR/IFRA of Katibougou and USTTB, outlined in a comprehensive agreement. While IPR/IFRA of Katibougou provides the material, human, scientific, and structural resources needed to run the programme on its campus, USTTB facilitates its recognition through the EDSTM Postgraduate School, for which it serves as the administrative supervisor. The EDSTM brings together various programmes offered in different national higher education institutions to consolidate resources to science and technology. Additionally, it issues the final diploma for the GSP, among other programmes.

Students enrolled in the GSP benefit from a topical campus with ad hoc facilities and peer support groups throughout both their initial training semester and the final dissertation writing phase. The GSP scope of agriculture encompasses animal husbandry and forestry, reflecting its broad disciplinary spectrum. This continuum is complemented by courses on climate change, which contributes to the multidisciplinary nature of the programme. The GSP is also aligned with the multidisciplinary approach of the WASCAL network through its thematic contribution to sustainable agriculture.

Students are recruited from all countries within the WASCAL network, with the exception of Cape Verde, where there is a lack of suitable Master's programmes. All laureates possess a background in agronomy (agriculture, animal husbandry, forestry) while their background in agro-meteorology and climate change issues varies.

The expertise and origin of professors and advisory board members enable the consideration of both scientific and socioeconomic factors, to a certain extent. The GSP relies on academic partners from several Western African and German research centres, who are involved in either the initial training semester or serve on the Advisory Board and as members of the team of PhD supervisors. Its partnership with the WASCAL Competence Centre in Ouagadougou in Burkina Faso is also substantial. The self-assessment report highlights the involvement of socioeconomic partners, particularly from the agricultural production sector, in the programme through courses and scientific events related to sustainable agriculture. However, this aspect is not elaborated upon in detail. While partnerships with socioeconomic stakeholders are facilitated by the broader network of IPR/IFRA, it is suggested that they be made more explicit and expanded to engage additional partners. This would strengthen the science-society interface of the GSP.

Students' mobility is systematically encouraged during the research period. The possibility of a three to six-month mobility in Germany or another country exists, yet certain processes need implementation to facilitate such mobility. Currently, students must independently explore and negotiate this option, which can result in a loss of time for their fieldwork phase. A consolidation of the policy and support for international mobility is needed.

The grouping of eight PhD defences on 6th and 19th May 2023, as inferred from recently available PhD manuscripts on the website, may have presented opportunities for high-level scientific days or workshops on the Katibougou campus if advertised as such. However, the minimum duration of each defence (three hours) is not conducive to such a format. The eight dissertations defended in May 2023 were publicly available and indicated that the panels involved a diverse array of high-level members, primarily from Mali.

The documents available to the experts committee allowed for an assessment of the quality of the dissertations defended in May 2023 and the publications produced by the GSP students. Many students valorised their work by publishing at least one journal article, sometimes in high-impact journals. This very good publication rate confirms the effectiveness of incentivising and providing training for article writing. However, the outcomes of this policy vary, as some students are high publishers (up to 16 and 10 publications for some alumni, from their PhD itself and beyond) versus no-publishers. This latter includes students from the delayed PhDs of the second batch and members of batch 3, some of whom graduated in May 2023. This variability raises concerns about the ability of all GSP students to produce scientific publications.

To conclude, the GSP - CC & AGRIC addresses highly relevant societal and scientific challenges. The programme adopts a broad approach to agriculture and fosters a multidisciplinary angle which is highly suitable to address sustainable agriculture amidst climate change. Hosted by IPR/IFRA of Katibougou, the programme aligns well with the thematic expertise of this institution, while its affiliation with EDSTM ensures recognition within Mali and the wider WASCAL network. Supported by national and international experts from key academic and scientific partners, the GSP would benefit from stronger and more explicit links with socioeconomic stakeholders to enhance the relevance of its research and training. The success of its publication policy is variable across students, with a commendable publication rate. Consolidating policy and support for international mobility are necessary to facilitate the visit of students abroad, which would leave more time dedicated to fieldwork.

FIELD 2: TRAINING, HOSTING AND SUPERVISION ARRANGEMENTS FOR DOCTORAL STUDENTS

The recruitment process within the GSP is synchronised with other programmes under the WASCAL framework, adhering to its established standards. Selection criteria are advertised on the GSP's website, while the call for applications is disseminated through each WASCAL centre. In each WASCAL country, three candidates are shortlisted, and the final selection is made by a committee of experts the GSP. The fact that almost all countries are represented in successive batches attests to the effectiveness of this regional selection process. Candidate recruitment is also carried out in accordance with EDSTM regulations.

The GSP - CC & AGRIC was unable to begin operations during the initial overall batch of WASCAL due to national circumstances. Thus, batches 1 and 2 correspond to batches 2 and 3 of the general WASCAL synchronisation (with 10 students each from 10 countries). Currently, the GSP is conducting batches 3 and 4, which equates to batches 4 and 5 in the WASCAL framework. Each of these batches comprises 11 students from 10 countries, with an additional two students from Mali included due to the challenges in recruiting a student from Cape Verde.

The programme begins with a four-month language course, which is a common requirement for all WASCAL students. For instance, Francophones students undergo English courses in Ghana, while Anglophones students participate in French courses in Togo. Alumni and current PhD candidates suggested during the panel visit that grouping students based on their initial proficiency could enhance the effectiveness of these refresher courses. The initial semester of courses comprises nineteen modules in English, with most modules awarding one credit and some two. The self-evaluation report states that there may be an excessive number of modules. The list of modules provided in this report indicates comprehensive coverage but lack a specific order of priority or logical sequence. Examples of the course schedule for January-September 2020 and December 2021-May 2022 for batches 3 and 4 reveal that course sequencing is contingent upon the availability of teachers. The Covid pandemic caused a delay in the semester for batch 3, while batch 4 resumed regular activities. During the Covid period, there was a switch transition to online courses. Batches 3 and 4 involved the same professors overall, with a large diversity of academic backgrounds from Mali, other African countries and Germany, as well as from CGIAR ("Consultative group on international agriculture research" a global partnership engaged in research about food security). During the visit, teachers acknowledged the efficient logistical organisation of the GSP. However, they noted a lack of comprehensive framing of their module, particularly in terms of the rationale and learning progression, as well as limited quality feedback.

A thorough revision and redesign of the training programme are necessary to enhance its quality and align it with advancements in climate change science. Drawing from accumulated experience, prioritising modules ranging from basic to advanced levels should facilitate the identification of an optimal sequencing to maximise students' learning progression and assimilation. Elective modules could also be introduced at the beginning of the semester to cope with the diversity of students' backgrounds and allow them to catch up on some essential concepts. Using digital resources or flipped pedagogy, building on lessons learnt from the Covid pandemic, could be fostered, as alongside promoting collaborative group work. The revision should address emerging topics, such as smart farming (addressed by several ongoing PhD projects) or the water-energy-food-environment Nexus approach. Other topics include downscaling, agro-pedo-hydromet-climate modelling, uncertainty analysis and communication, and new experimental and digital techniques. Incorporating case studies and short-term agronomic observations from a climate change perspective presents challenges. Methodological competencies and skills are essential to effectively collect and manage data, harmonise modelling and foresight approaches, differentiate drivers of change, and identify feedback loops, all of which are important in agricultural systems.

Practical works are not explicit in the course descriptions, whereas they are essential to acquire specific skills (such as data collection and management, measurement techniques, sampling, logistical organisation). These skills are crucial for developing a feasible research project that can be independently implemented in the field. Such practical work should be fostered in the revision. Access to experimental facilities on the IPR/IFRA of Katibougou campus, the availability of one bus and one driver within the programme, and the diversity of easy-

to-reach farming systems around Katibougou should allow for more practical work throughout the semester. This approach would enable students to gain a deep understanding of the real challenges faced by stakeholders in addressing climate change and related issues. Ultimately, GSP students will be better positioned to frame their research project from a broader societal and professional perspective.

Students refine their research projects and methodologies during the initial semester through dedicated sessions on proposal development. At the end of the semester, just before the departure to their fieldwork, a committee evaluates the projects, methodologies and Gantt charts. Each student is assigned one supervisor from the programme, one from their respective field country, and potentially one mentor from Germany (although this arrangement is difficult to systematise). Supervisors regularly assess student's progress every trimester. During the panel visit, both students and alumni expressed overall satisfaction with this maturation process. The student supervision procedures comply with both WASCAL standards and the criteria of EDSTM.

Nevertheless, the efficiency of the co-supervision scheme is heterogeneous depending on the topic, the partnership, the country, the security, and Internet access conditions on the field. The use of digital tools facilitates co-supervision. However, concerns arise due to delays in the completion and defence of several students' theses (notably, four students from batch 2 were still in progress), raising strong concern about the efficiency of certain co-supervisions and of the mitigation measures taken by the GSP management team. Further, while some alumni have produced high-quality articles based on their PhD research, not all have so, as indicated by the list of publications.

Accessing or collecting data poses a significant challenge to students. They typically gather experimental data over a maximum of two years, contingent upon the synchronisation of their arrival and operational conditions in the field. The duration of growing seasons, couple with inter-annual climate variability, results in a narrow time window and limited representativeness of observations regarding the timeframe of climate change. Alternatively, PhD candidates can rely on pre-existing data, the accessibility of which entails lengthy negotiations with no assurance of success. In both cases, the committee involved in proposal development plays a crucial role in ensuring the feasibility of students' projects regarding data collection and their relevance to research objectives.

From a material perspective, students benefit from dedicated facilities on campus for teaching, administration, housing, and logistics, which facilitates their work. They also receive a fixed lump sum for their research and mobility expenses. However, the research budget per student varies from year to year. Some batches have received more funding than others, while research costs have not decreased over the years. As funding sometimes proves insufficient, a degree of flexibility would prove beneficial to accommodate the specific field cases, especially when costly chemical analyses are required. Also, not all students get to visit Germany, and addressing this disparity could enhance the international experience, skills, and capacities of graduates.

The GSP encourages the production of scientific publications, as this is a strict requirement for the defence within the regulations established by the Postgraduate School EDSTM.

The training, hosting, and supervision arrangements are well designed and compliant with the WASCAL standards, striking a good balance between the GSP local team and external partners. A thorough revision of the training programme is needed to strengthen critical methodological competencies and address emerging topics. The process of maturation and validating the research project is clearly outlined during the training semester. Several students face difficulties with their fieldwork or thesis supervision, resulting in significant delays in defending their PhD. It is essential to prioritise closer, tailored support from both supervisors and the management team to address these issues effectively. Funding for student research would benefit from greater flexibility according to the requirements of their fieldwork. To this end, provisional budgets could be outlined in their research protocol to allow for necessary adjustments.

FIELD 3: THE ATTRACTIVENESS, PERFORMANCE AND RELEVANCE OF THE DOCTORATE

The number of applicants to the GSP - CC & AGRIC was only reported for its fourth batch, with 101 candidates from 10 WASCAL countries and a skewed gender ratio (20% of women). No analysis of the overall applicants' cohorts was provided nor planned. A quantitative approach to the programme's attractiveness remains to be done. The application form highlights the encouragement for female candidates to apply.

Regarding the GSP's achievements, the duration of the research work and the overall PhD often takes longer than the expected duration:

- Batch 1, the ten students have graduated.
- Batch 2, six students have graduated, one have abandoned and three are still in progress of graduating.
- Batch 3, eight students defended their PhD in May 2023. The three other students from batch 3 are conducting or finishing their research activities

- Batch 4, the 11 students are conducting or finishing their research activities.

While EDSTM allows a max of two semesters of extension if there is a valid justification, the situations of "late students", particularly from batch 2, are not precisely assessed. The conditions and rules for enrolling in after the three years, and the solutions for mitigating the lack of funding, need to be clearly defined.

Regarding job-market integration, the self-evaluation report lists the positions held by 13 out of the 20 GSP graduates (as of April 2023). They demonstrate an excellent integration into academia and research in regional institutions, in alignment with the CC & AGRIC profile and some of its objectives. The fact that all graduates work in the academic sector is understandable, knowing the dearth of specialists in academic and scientific institutions. However, WASCAL also targets job-market integration into the private sector, administrations, international organisations or NGOs. A more thorough survey and analysis of the graduates' career paths is warranted, particularly regarding the competencies needed by a broader range of potential employers.

During the evaluation panel visit, some alumni acknowledged the good quality of the CC & AGRIC programme they underwent and confirmed its growing reputation within the academic community, as well as among other employers and potential applicants. However, they expressed limited knowledge about other alumni, showing a lack of networking post-graduation. Having the alumni involved in the revision and redesign of the training curriculum, interacting with the future batches of students for the design and development of their research projects, and helping with their job search, should be prioritised to further enhance the GSP and its network.

The GSP management team could leverage its partnerships with socioeconomic stakeholders in Mali, the WASCAL Competence Centre, and its broader network of supervisors and alumni to gather professional insights and integrate them into the revised training programme. This process would increase the societal and scientific relevance of the GSP.

To conclude, the GSP attracted around 100 candidates to its latest batch, which is substantial considering only 11 spots were available. However, its gender ratio is skewed and no quantitative analyses of the programme's attractiveness have been done. Some PhD candidates experience severe delays with the completion of their PhD, and their situation is not fully addressed. Graduates successfully found jobs in the academic sector, although expansion to other sectors could be considered to enhance the impact of the GSP - CC & AGRIC.

FIELD 4: MANAGEMENT AND CONTINUOUS IMPROVEMENT OF THE DOCTORATE

IPR/IFRA of Katibougou has a policy for quality assurance in general, with a strong focus on Master's programmes. The GSP - CC & AGRIC also aligns with the quality framework of the national Postgraduate School EDSTM. As we have seen, the student recruitment and supervision processes meet the standards set by both EDSTM and WASCAL. However, to date, the Quality Assurance Office has not conducted any analysis or provided support regarding the applicants' cohorts or the career path of graduates. Addressing this gap should be a priority for the GSP management to maintain or enhance the programme's attractiveness and ensure alignment with WASCAL's overarching objectives in capacity-building. Inconsistencies in the exact composition of student batches have been observed across the documents issued by the GSP management, leading to discrepancies in numbers and profiles. This lack of coherent data on student cohorts requires immediate attention and should be rectified through more rigorous monitoring practices.

The CC & AGRIC programme receives guidance from an Advisory Board (AB), which convenes annually and comprises international experts along with GSP professors. Their collective experience offers valuable insights into the programme operations. It has been noted that course evaluations by students are not consistently conducted, often initiated by individual professors rather than being systematically organised. To ensure comprehensive monitoring of programme quality and facilitate continuous improvement, it is recommended that this evaluation process be formalised at the GSP level with the guidance of the AB. There is no explicit mechanism in place for student mediation in the case of issues arising, nor is there a mechanism for student representation in GSP governance.

A competency portfolio approach could be developed with students during the programme, as an appendix to PhD dissertations. This would foster a fully reflexive approach by students and facilitate their interactions with supervisors, data providers, and future employers.

Setting up a digital library to house all PhD dissertations, related publications, and competency portfolios could greatly enhance the tracking of research outcomes, foster interactions between the management team and students, and streamline knowledge management processes. Such a platform would also simplify the sharing of materials with new students.

While capacity building and in-house training for the GPS staff are mentioned in general terms in the self-evaluation report, they were not substantiated during the panel visit.

To conclude, the GSP - CC & AGRIC benefits from the quality assurance system of its host university and should leverage it to improve the quality of its training programme, analyse applications, and monitor the career paths of its graduates. The Advisory Board should take a more proactive approach in this regard, involving representatives of the PhD candidates. Capacity-building measures could also be considered to improve the skills of professors and supervisors.

VI. CONCLUSION

The WASCAL GSP - CC & AGRIC addresses highly relevant societal and scientific challenges, and has produced so far good to excellent research outcomes, albeit with variances among PhD candidates. Its affiliation with IPR/IFRA of Katibougou is consistent with the institution's thematic strengths and its specialised campus, providing conducive environments for field visits across diverse agricultural contexts. Although the synopsis of the initial training programme remains relevant, an in-depth revision is warranted to capitalise on insights from previous batches and identify areas for enhancement. Priority should be given to incorporating emerging data analysis methodologies and best practices, as well as refining the modelling chain from process analysis to equation coding. The articulation between experimental case studies that cover short periods and the long-term challenges posed by climate change should be carefully considered. Addressing prolonged delays in publication and thesis defence among some students is imperative, necessitating improvements in project design, co-supervision arrangements, and the final writing phase.

STRENGTHS

In general, for the WASCAL network

- A well-structured international network of partner universities ensuring high-quality recruitment of PhD students on an international level, and fostering capacity-building across West Africa on climate change
- A thematic focus on a cross-cutting topic with high societal and scientific relevance to West Africa, in line with well-established needs for public and private decision-making as well as research and higher education
- An efficient foreign languages and inter-cultural training
- An organisation with adequate support in terms of financial means, human resources, and infrastructure
- A well-formalised and documented framework governs the selection, hosting, and supervision of PhD candidates
- The support of a WASCAL regional Competence Centre which centralises data collected by PhD candidates enabling researchers to leverage valuable insights

Specific points to GSP - CC & AGRIC

- A topical programme addressing sustainable agriculture in a changing climate, aligning with regional priorities and societal needs in West Africa
- A programme benefiting from the strong academic background of IPR/IFRA of Katibougou on agriculture, connected to a Master's degree and taking advantage of a theme-based campus with access to a diversity of agricultural situations
- A very good record of scientific publications in high-level international journals
- A diverse, multidisciplinary and well-structured academic and supervision team involving partners from national institutions, international universities, and research centres
- A highly visible programme attracting a large number of candidates from the West Africa region

WEAKNESSES

- A training programme which could be improved to address emerging topics, include more field visits and practical work, and cater to the diverse backgrounds of students
- A scheduling of courses which is not optimal for students' progression
- A lack of formalisation of links with the socioeconomic stakeholders involved in the programme
- A co-supervision scheme with variable efficiency, which can generate severe delays in the finalisation of PhDs
- A lack of monitoring of applications and of graduates' career paths, and of quality assurance processes in general

RECOMMENDATIONS FOR THE INSTITUTION

- Provide closer, tailored support to PhD candidates from supervisors and the GSP management team to mitigate delays in thesis completion
- Revise the initial six-month training programme with input from all stakeholders (professors, socioeconomic partners, students, alumni and others) to emphasise emerging topics, include more field visits and practical work, and offer a modular approach
- Strengthen partnerships with socioeconomic stakeholders to foster the science-practice interface in the research project design phase, throughout the programme and in the job-market integration of alumni
- Consider flexible funding for the students' fieldwork, with provisional estimates of research costs included into the maturation and validation of the research protocol (similar other WASCAL programmes)
- Introduce a policy to support international mobility, facilitating visits abroad and allowing more time for fieldwork
- Deploy a quality assurance system to monitor applications, increase the attractiveness of the programme especially among women, and survey the career paths of graduates
- Define a consistent and effective publication policy, and improve support to PhD candidates in the publication process
- Provide more support to students regarding the issue of data collection or access, with the help of the WASCAL Competence Centre in particular
- Encourage the training and foster the career development of teachers and supervisors.

VII. OBSERVATIONS OF THE INSTITUTION

MINISTÈRE DE L'ENSEIGNEMENT SUPÉRIEUR ET DE LA
RECHERCHE SCIENTIFIQUE

RÉPUBLIQUE DU MALI
Un Peuple -Un But -Une Foi



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April 2nd, 2024

Firstly, I would like to thank your evaluation committee for the report on our program, however may I notice that the evaluation process took a long time. Secondly there is sometime an email contact issue, for instance it has not been easy to share with our first documents related to the self-evaluation.

Please consider the following observations related to the submitted evaluation report.

FIELD 1 : DOCTORAL POLICY

- Two rooms are generally used for final defense and two students defend per day for each room. We think with this method there is enough time (about 4 hours) for each jury for a PhD defense.
- About mobility of students (visit in Germany) there is a representative from German side to facilitate contacts with German research institutions through WASCAL HQ in Ghana. In addition, students of the GSP CC & AGRIC have opportunities to discuss scientific visit through a) contacts developed during coursework, as some of the modules are taught by German partners, b) the alumni. As such, there is not a major time consuming to find a German advisor which could affect student's field research.

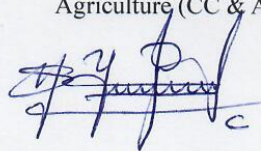
FIELD 2: TRAINING, HOSTING AND SUPERVISION ARRANGEMENTS FOR DOCTORAL STUDENTS

- During the implementation of courses, some modules have prerequisites. A schedule is established allowing CC & AGRIC students to take first these prerequisites modules. Also, the coursework semester has always started with the module on climate change and climate system for a better background harmonization. Modules with theoretical and application parts have always been scheduled to start with the theory followed by the applications. It is the case of courses related to modelling.
- In the CC & AGRIC programme, the supervisory team is constituted of a main supervisor, one or two co-supervisors. The German advisor which is not mandatory depends on the topics and the opportunity for a scientific visit in Germany.

FIELD 3: THE ATTRACTIVENESS, PERFORMANCE AND RELEVANCE OF THE DOCTORATE

- About the possibility of extension after the three years of the CC & AGRIC PhD programme, the graduate school EDSTM policies allow students to register for two additional semesters after submission of a request justified by the student main supervisor. The extension request should be approved by WASCAL Mali and EDSTM.

Director for WASCAL program Climate Change and
Agriculture (CC & AGRIC)



Prof. Yacouba DIALLO

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ACCREDITATION DECISION

Graduate Study Programme (PhD) of WASCAL on Climate Change and Agriculture

Rural Polytechnic Institute for Training and
Applied Research of Katibougou (IPR/IFRA)

University of Sciences, Techniques and
Technologies of Bamako

Mali

June 2024

SCOPE OF THE ACCREDITATION GRANTED BY HCÉRES

HCÉRES has based its evaluation process on a set of objectives that study programmes must pursue to ensure recognised quality within France and Europe. These objectives are divided up into four accreditation criteria.

The Accreditation Commission issues an opinion about the accreditation of the study programme after examining the file. The Hcéres President takes the decision based on the Commission's opinion and the final evaluation report of the programme. This accreditation decision, taken in plenary session, is the result of a collegial and reasoned process.

The decision issued by Hcéres regarding the accreditation of the study programme corresponds to the awarding of a label to the evaluated entity.

This decision is independent of the accreditations carried out by the French State and therefore does not entail recognition in France of the institution or the diplomas delivered by it.

Decision No. EI-2024-27 on the accreditation of the WASCAL Graduate Study Programme (PhD) on Climate Change and Agriculture delivered by the Rural Polytechnic Institute for Training and Applied Research of Katibougou (IPR/IFRA) & University of Sciences, Techniques and Technologies of Bamako, Mali

The President of the High Council for the Evaluation of Research and Higher Education,

Considering the Research Code, in particular Articles L. 114-3-1 to L. 114-3-6;

Considering the Board's deliberation of 29th September 2022 on the accreditation criteria for a doctorate/PhD abroad;

Considering the Decision No. 2023-9 of 16th March 2023 on the international accreditation procedure of the High Council for the Evaluation of Research and Higher Education;

Considering the agreement DEL_20220407 of 12th May 2022 - for the evaluation/accreditation of seven training courses, delivered by training and research centres affiliated to the WASCAL network in seven sub-Saharan African countries;

Considering the opinion issued by the Accreditation Commission on 25th April 2024;

Decides:

Article 1

Noting that the Graduate Study Programme on Climate Change and Agriculture delivered by the Rural Polytechnic Institute for Training and Applied Research of Katibougou (IPR/IFRA) & University of Sciences, Techniques and Technologies of Bamako, in Mali, meets the four accreditation criteria, voted by the Board of the High Council on 29th September 2022, as follows:

ACCREDITATION CRITERION 1: DOCTORAL POLICY

The Graduate Study Programme on Climate Change and Agriculture addresses highly relevant societal and scientific challenges. The programme adopts a broad approach to agriculture and fosters a multidisciplinary angle which is highly suitable to address sustainable agriculture amidst climate change. Hosted by the *Institut polytechnique rural de formation et de recherche appliquée* of Katibougou, the programme aligns well with the thematic expertise of this institution, while its affiliation with the *École Doctorale des Sciences et Technologies du Mali* ensures recognition within Mali and the wider WASCAL network. Supported by national and international experts from key academic and scientific partners, the GSP would benefit from stronger and more explicit links with socioeconomic stakeholders to enhance the relevance of its research and training. The success of its publication policy is variable across students, with a commendable publication rate. Consolidating policy and support for international mobility are necessary to facilitate the visit of students abroad, which would leave more time dedicated to fieldwork.

ACCREDITATION CRITERION 2: TRAINING, HOSTING AND SUPERVISION ARRANGEMENTS FOR DOCTORAL STUDENTS

The training, hosting, and supervision arrangements are well designed and compliant with the WASCAL standards, striking a good balance between the GSP local team and external partners. A thorough revision of the training programme is needed to strengthen critical methodological competencies and address emerging topics. The process of maturation and validating the research project is clearly outlined during the training semester. Several students face difficulties with their fieldwork or thesis supervision, resulting in significant delays in defending their PhD. It is essential to prioritise closer, tailored support from both supervisors and the management team to address these issues effectively. Funding for student research would benefit from greater flexibility according to the requirements of their fieldwork. To this end, provisional budgets could be outlined in their research protocol to allow for necessary adjustments.

ACCREDITATION CRITERION 3: ATTRACTIVENESS, PERFORMANCE AND RELEVANCE OF THE DOCTORAL PROGRAMME

The Graduate Study Programme on Climate Change and Agriculture attracted around 100 candidates to its latest batch, which is substantial considering only 11 spots were available. However, its gender ratio is skewed and no quantitative analyses of the programme's attractiveness have been done. Some PhD candidates experience severe delays with the completion of their PhD, and their situation is not fully addressed. Graduates successfully found jobs in the academic sector, although expansion to other sectors could be considered to enhance the impact of the GSP – CC & AGRIC.

ACCREDITATION CRITERION 4: MANAGEMENT AND CONTINUOUS IMPROVEMENT OF THE DOCTORAL PROGRAMME

The Graduate Study Programme on Climate Change and Agriculture benefits from the quality assurance system of its host university and should leverage it to improve the quality of its training programme, analyse applications, and monitor the career paths of its graduates. The Advisory Board should take a more proactive approach in this regard, involving representatives of the PhD candidates. Capacity-building measures could also be considered to improve the skills of professors and supervisors.

Article 2

The WASCAL Graduate Study Programme on Climate Change and Agriculture delivered by the Rural Polytechnic Institute for Training and at the Applied Research of Katibougou (IPR/IFRA) & University of Sciences, Techniques and Technologies of Bamako, in Mali, is accredited for a period of three years, which may be extended for two years, subject to a follow-up that may include an on-site visit.

Article 3

The decision is accompanied by the following recommendations and comments:

- Provide closer, tailored support to PhD candidates from supervisors and the GSP management team to mitigate delays in thesis completion
- Revise the initial six-month training programme with input from all stakeholders (professors, socioeconomic partners, students, alumni and others) to emphasise emerging topics, include more field visits and practical work, and offer a modular approach
- Strengthen partnerships with socioeconomic stakeholders to foster the science-practice interface in the research project design phase, throughout the programme and in the job-market integration of alumni
- Consider flexible funding for the students' fieldwork, with provisional estimates of research costs included into the maturation and validation of the research protocol (similar other WASCAL programmes)
- Introduce a policy to support international mobility, facilitating visits abroad and allowing more time for fieldwork
- Deploy a quality assurance system to monitor applications, increase the attractiveness of the programme especially among women, and survey the career paths of graduates
- Define a consistent and effective publication policy, and improve support to PhD candidates in the publication process
- Provide more support to students regarding the issue of data collection or access, with the help of the WASCAL Competence Centre in particular
- Encourage the training and foster the career development of teachers and supervisors.



Article 4

This decision will be published on the Hcéres website.

Paris, 14th June 2024.

The acting President
signed
Stéphane LE BOULER

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