

Groh, Arnold et al.

Research Report

AQUAHUB impact evaluation: Final assignment report

Research Reports, No. 19/2024

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**AUSTRIAN FOUNDATION FOR
DEVELOPMENT RESEARCH**

AQUAHUB Impact Evaluation
Assignment Report

ANNEXES

November 30, 2023

Annex 1: Evaluation Matrix including results and evidence	1
Annex 2: ADA Evaluation Results Assessment Form.....	11
Annex 3: Revised ToC – Theory of Change	19
Annex 4: Alumni Survey Report.....	21
Annex 5: Publication Analysis Report.....	43
Annex 6: Summaries of recommendations from anonymous questionnaires	57
Annex 7: List of interviews and workshops.....	65
Annex 8: List of consulted documents	73

ANNEX 1

EVALUATION MATRIX INCLUDING RESULTS AND EVIDENCE

Evaluation question	Indicators	Sources	Data collection methods	Results	Evidence
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Evaluation criterion: Outcome

<p>To what degree did the implementation of the LWM & AEEM master's programmes, as well as the implementation of international standards contribute to the establishment of high-quality joint-degree master's programmes for the sustainable management of freshwater ecosystems?</p>	<ul style="list-style-type: none"> • Amount of national/regional applications • Degree of master's programmes correspondence with national/regional higher education and sustainability policies and quality standards in higher education. • Amount/percentage of graduates in relevant positions in academic, public, private or CSO institutions/organisations relevant for freshwater ecosystems. 	<ul style="list-style-type: none"> • Project documents (proposals, progress reports, evaluation reports) • IPGL database • National/regional policy documents • University reports • alumni tracer study • relevant resource persons (alumni, programme managers, academic staff, employers etc.) 	<ul style="list-style-type: none"> • Systematic document analysis • online survey (alumni tracer study) • semi-structured interviews with resource persons 	<ul style="list-style-type: none"> • To a very high degree 	<ul style="list-style-type: none"> • between 2019–2023: LWM: 101–177 applications/year AEEM: 77–250 applications / year • Online survey: 98% report programme as high quality 89% employed in relevant institutions (HEST, government, private sector, intern. agency, NGO) • Interviewees and anonymous questionnaires confirm high quality of programme
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<p>To which extent did the implementation of the AEEM master's programme, the involvement of external resource persons, the network of southern and northern HEST institutions, and the web-based network platform contribute to South-South collaborations and to an enhancement of collective impact?</p>	<ul style="list-style-type: none"> • Amount of regional and international (South-South) collaborations • Amount/Percentage of regional/international applicants/students • Degree of institutionalisation of these collaborations • Intensity of academic exchange • Amount of joint (research) projects and conferences • Amount of internationally perceived papers / research findings 	<ul style="list-style-type: none"> • Project documents • University reports • Master thesis and scientific publications • Website analysis • Relevant resource persons (alumni, programme managers, academic staff, employers etc.) 	<ul style="list-style-type: none"> • Systematic document analysis • Semi-structured interviews with resource persons • Participant observations • Storytelling 	<ul style="list-style-type: none"> • To a high extent. <p>Limitations: Online Aquahub platform not effective to its full potential; Need of formalization of networking in Kenya/Uganda</p>	<ul style="list-style-type: none"> • between 2019–2022: 3–6 project applications/year • Publication analysis: Ca 50% of alumni in Kenya & Uganda, 24% in Ethiopia publish in Scopus-listed journals • Interviewees and anonymous questionnaires confirm collective impact through functioning network
<p>To what extent did the implementation of the LWM & AEEM master's programmes, the implementation of international standards, and the research, teaching & skills training of staff contribute to the provision of highly qualified graduates to the job market in order to improve the management of freshwater ecosystems?</p>	<ul style="list-style-type: none"> • Amount/percentage of graduates in relevant positions in academic, public, private or CSO institutions/organisations relevant for freshwater ecosystems. • Degree of correspondence of knowledge & skills acquired at LWM & AEEM with job requirements. 	<ul style="list-style-type: none"> • IPGL database • alumni tracer study • relevant resource persons (alumni, employers, programme managers etc.) 	<ul style="list-style-type: none"> • database assessment • online survey (alumni tracer study) • Semi-structured interviews with resource persons • Story telling 	<ul style="list-style-type: none"> • To a very high extent 	<ul style="list-style-type: none"> • Online survey: 89% employed in relevant institutions (HEST, government, private sector, intern. agency, NGO) 92% report that knowledge and skills are useful in their job • Interviewees confirm graduates' competitiveness on the job market

<p>To what extent did the implementation of the LWM & AEEM master’s programmes, the network of southern and northern HEST institutions, and the MSc research projects and publications contribute to the implementation of projects and research towards the sustainable management of freshwater ecosystems and its resources?</p>	<ul style="list-style-type: none"> • Amount of projects and research publications relevant to the sustainable management of freshwater ecosystems. • Increase/decrease of amount of projects/publications and dedicated funds over the project period. • Influence of research findings at national/regional/international level (number of citations) 	<ul style="list-style-type: none"> • IPGL database • Alumni tracer study • Scientific meta-databases • relevant resource persons (academic staff, programme managers etc.) 	<ul style="list-style-type: none"> • database assessment • online survey (alumni tracer study) • search in meta-databases • Semi-structured interviews with resource persons 	<ul style="list-style-type: none"> • To a high extent <p>Limitations: outreach to communities and policy level less than at scientific level; policy implementation challenging</p>	<ul style="list-style-type: none"> • between 2019–2022: 3–6 project applications / year • Publication analysis: Ca 50% of alumni in Kenya & Uganda, 24% in Ethiopia publish in Scopus-listed journals. Median of citations: 30 (Kenya), 77 (Uganda), 24 (Ethiopia) • Interviewees state that there are projects being implemented, but community and policy level are incipient and challenging.
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<p>To what degree did the network of northern and southern HEST institutions and the research, teaching & skills training of staff increase the capacity of Eastern African HEST institutions and strengthen them in achieving their development goals?</p>	<ul style="list-style-type: none"> • Increase/decrease in number of (academic) courses, modules, trainings offered relevant to of freshwater ecosystems and related fields at the involved institutions of over the project period. • Increase/decrease in relevant infrastructure at the involved institutions • Correspondence with national/international quality standards in higher education • Perception of increased quality of teaching, research, administration as a consequence of implemented trainings 	<ul style="list-style-type: none"> • Project documents (in particular external and internal evaluation reports) • University reports • National reports on quality of higher education institutions (if available) • relevant resource persons (academic staff, programme managers, staff of governmental agencies, alumni etc.) 	<ul style="list-style-type: none"> • Systematic document analysis • Semi-structured interviews with resource persons 	<ul style="list-style-type: none"> • To a very high degree 	<ul style="list-style-type: none"> • Interviewees confirm the contribution of IPGL courses to institution building at the involved partner institutions as well as to the establishment of the scientific field at other HEST institutions through IPGL graduates. • Interviewees confirm that scientific staff at national research institutions has increased substantially, many of which are IPGL graduates. • Interviewees confirm high quality of infrastructure and of teaching, research and administration
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<p>To what degree did the network of northern and southern HEST institutions and the dissemination of research results and outreach to stakeholders and society contribute to increasing the knowledge and awareness on sustainable management of freshwater ecosystems?</p>	<ul style="list-style-type: none"> • Perception of relevance of network, research results and outreach measures to policy makers and institutions in the field of water and resource protection. • Perception of relevance of network, research results and outreach measures to communities depending on freshwater ecosystems. 	<ul style="list-style-type: none"> • Relevant resource persons (staff of governmental agencies, institutions, members of communities, CSOs,) 	<ul style="list-style-type: none"> • Semi-structured interviews with resource persons • Story telling 	<ul style="list-style-type: none"> • Not fully assessable 	<ul style="list-style-type: none"> • Interviewees confirmed relevance of IPGL research for policy elaboration, but also reported challenging implementation. Community outreach was stated, but as incipient. • Knowledge and awareness increase in wider society strongly influenced by contextual factors and therefore not fully assessable.
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Evaluation question	Indicators	Sources	Data collection methods	Results	Evidence
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Evaluation criterion: Impact

<p>To what extent did the project outcomes (high quality joint master programmes, south-south collaborations, highly qualified graduates, relevant projects and research, increased institutional capacities) contribute to enhanced institutional capabilities supportive of the sustainable management of freshwater ecosystems and their resources in Eastern African countries as well as the emergence of a resilient and self-confident Eastern African limnology, as part of the global limnological science community, tangible in terms of the locally/regionally determination of research topics, the perception of and reference to local/regional research findings in the regional/international research community. In particular, it shall be assessed to what extent the specific limnological knowledge about subtropical and tropical conditions that has arisen in the East African limnology has strengthened the resilience awareness of the regions and to what extent a self-confident, global South-South knowledge transfer is promoted.</p>	<ul style="list-style-type: none"> • Degree of emergence of an independent Eastern African approach to tropical limnology <ul style="list-style-type: none"> ▪ Role and influence of African partners in joint management structures and in establishing research/teaching agendas ▪ Local/regional relevance of chosen research topics ▪ Influence of research findings at national /regional /international level ▪ Amount of (research) institutions relevant to the field and quality of relations to IWM/AEEM • Perception of relevance of IWM/AEEM research and projects to policy makers and communities related to freshwater ecosystems 	<ul style="list-style-type: none"> • Alumni tracer study • Scientific meta-databases • Relevant resource persons (academic staff, programme managers, staff of governmental agencies, members of community.) 	<ul style="list-style-type: none"> • online survey (alumni tracer study) • search in meta-databases • Semi-structured interviews with resource persons • Story telling 	<ul style="list-style-type: none"> • To a high extent <p>Limitations: weak degree of formalization of regional network; weak South-South cooperation beyond Eastern Africa</p>	<ul style="list-style-type: none"> • Publication analysis confirms international perception of IPGL research results • Interviewees confirm role and influence of African partners in joint management structures and in establishing agendas. • Interviewees confirm local/regional relevance of research, but also point to room for improvement as to chosen research topics with local relevance. • Interviewees confirm increasing strength of relevant institutions, but also state need for formalization of the network. • Interviewees confirm relevance of IPGL research for policymaking and communities, but also state that implementation is challenging. Cooperation with communities is incipient.
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<p>To what extent did the project outcomes (south-south collaborations, networking highly qualified graduates, relevant projects and research, increased knowledge and awareness) contribute to enhanced individual capacities supportive of the sustainable management of freshwater ecosystems and their resources in Eastern African countries as well as the emergence of a resilient and self-confident Eastern African limnology, as part of the global limnological science community, tangible in terms of the locally/regionally determination of research topics, the perception of and reference to local/regional research findings in the regional/international research community. In particular, it shall be assessed to what extent the specific limnological knowledge about subtropical and tropical conditions that has arisen in the East African limnology has strengthened the resilience awareness of the regions and to what extent a self-confident, global South-South knowledge transfer is promoted.</p>	<ul style="list-style-type: none"> • Degree of correspondence of knowledge & skills acquired at LWM & AEEM with job requirements • Role and influence of individual graduates in their employing institutions 	<ul style="list-style-type: none"> • Relevant resource persons (academic staff, programme managers, staff of governmental agencies, members of communities.) 	<ul style="list-style-type: none"> • Semi-structured interviews with resource persons • Participant observation • Story telling 	<ul style="list-style-type: none"> • To a very high extent 	<ul style="list-style-type: none"> • Interviewees confirm important role of IPGL programmes for personal advancement at professional and personal level. • Interviewees confirm impact of individual highly motivated graduates in their respective institutions.
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Annex 1

<p>To what extent did increased institutional capabilities and individual capacities contribute effectively to change processes in policy making, as well as to attitudes and practices in society that support the achievement of SDGs 2, 3, 4, 6, 12, 13, 15, and 17</p>	<ul style="list-style-type: none"> • Perception of relevance of IWM/AEEM outcomes (research findings, graduates etc.) to policy makers, academia and communities 	<ul style="list-style-type: none"> • Relevant resource persons (academic staff, programme managers, staff of governmental agencies, members of communities) 	<ul style="list-style-type: none"> • Semi-structured interviews with resource persons • Participant observation • Story telling 	<ul style="list-style-type: none"> • Not fully assessable 	<ul style="list-style-type: none"> • Change processes at the level of knowledge production can be confirmed in terms of more practical oriented teaching methods. At the level of policymaking and in wider society they could not be fully assessed due to the strong influence of contextual factors beyond the influence of Aquahub stakeholders, especially at the level of wider society.
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ANNEX 2

ADA EVALUATION RESULTS ASSESSMENT FORM

FOR THE EVALUATION MANAGER AND ADA PPM TO FILL IN (Part 1)							FOR THE EVALUATOR/S TO FILL IN (Part 2)					
ADA PP Number	ADA Organizational Unit managing the PP	PP Title	CRS Code/s	Country / Region of PP	Evaluation Manager	Project Budget	Evaluation company/ evaluator	Timing of evaluation	Completion date of evaluation	Assessment of results - key aspects	Score (choose only one answer for each aspect assessed)	Justify score. Include finding and reference page/s in evaluation report.
							ÖFSE – Austrian Foundation for Development Research	05/2022_10/2023	10/09/2023	1. The extent to which the planned output/s (as defined in the project document/logframe/ Theory of Change) has/have been achieved taking into account the causal link between inputs and outputs.	NA (Not applicable)	This question was not part of the ToRs.
										2. The extent to which the planned outcome/s (as defined in the project document/logframe/ Theory of Change) has/have been achieved taking into account the causal link between outputs and outcomes.		
										<input type="checkbox"/> To what degree did the implementation of the LWM & AEEM master's programmes, as well as the implementation of international standards contribute to the establishment of high-quality joint-degree master's programmes for the sustainable management of freshwater ecosystems?	F (Fully achieved)	Findings from qualitative (stakeholder interviews, alumni workshops) and quantitative (alumni survey) research confirm the high-quality of the joint-degree master's programmes (see Main Report/ Section 5). LWM and AEEM are high in demand (LWM: av. 129 applications, AEEM: av 125 applications) Graduates are highly competitive in terms of phd opportunities and at the job market. Although publication in academic journals is rather rare at MSc level, more LWM/AEEM students succeed in publishing research stemming from their MSc theses.

										<input type="checkbox"/> To which extent did the implementation of the AEEM master's programme, the involvement of external resource persons, the network of southern and northern HEST institutions, and the web-based network platform contribute to South-South collaborations and to an enhancement of collective impact?	L (Largely achieved)	<p>Important network effects are visible in project applications (three to six/year) and scientific publishing (between 9 and 40 publications/year throughout the last three years) resulting from the network. In Kenya and Uganda stakeholders repeatedly expressed the desire for stronger institutionalisation of networking. In Ethiopia, the national association EFASA association has excellent results. The web-based Aquahub platform has increased the number of its members considerably to 420 since its launch in 2020. However, interviews and questionnaires pointed to varied patterns of use among alumni and stakeholders with little knowledge about and limited use of the platform. There is still room to improve the platform's networking effect.</p>
										<input type="checkbox"/> To what extent did the implementation of the LWM & AEEM master's programmes, the implementation of international standards, and the research, teaching & skills training of staff contribute to the provision of highly qualified graduates to the job market in order to improve the management of freshwater ecosystems?	F (Fully achieved)	<p>LWM & AEEM graduates are highly competitive on the job market and in phd openings. The analysis of the IPGL database confirms that a high number of alumni have employment in highly relevant positions (universities, research institutions, public entities). There is less employment, in the formal private and NGO sectors, but this is mainly due to restricted employment opportunities.</p>
										<input type="checkbox"/> To what extent did the implementation of the LWM master's programme, the network of southern and northern HEST institutions, and the MSc research projects and publications contribute to the implementation of projects and research towards the sustainable management of freshwater ecosystems and its resources?	L (Largely achieved)	<p>There are many projects ongoing, mostly at research levels. Projects at community level are less pronounced, but increasing. Implementation, especially at policy level, has proven to be more difficult to influence, because this level is impacted by a multitude of factors often beyond the reach of Aquahub stakeholders.</p>

									<input type="checkbox"/> To what degree did the network of northern and southern HEST institutions and the research, teaching & skills training of staff increase the capacity of Eastern African HEST institutions and strengthen them in achieving their development goals?	F (Fully achieved)	Capacity development among partner institutions has been substantial, especially at the involved research institutions in Kenya, Uganda and Ethiopia, tangible e.g. in terms of an increase in the number of scientific staff and facilities. There are also important spillovers in terms of establishing the scientific field at some universities through the employment of IPGL graduates.
									<input type="checkbox"/> To what degree did the network of northern and southern HEST institutions and the dissemination of research results and outreach to stakeholders and society contribute to increasing the knowledge and awareness on sustainable management of freshwater ecosystems?	NAS (not assessed)	A solid assessment of this research question was not possible, because there are too many context factors influencing the level of knowledge and awareness in society at large. Impact can be confirmed indirectly through the solid establishment of the scientific field in all three countries. Therefore, an increase in knowledge and awareness within the academia is highly plausible. However, this is impossible to assess in terms of the wider society. In all three countries, but especially in Uganda there is a high impact at the level of policy elaboration since some IPGL graduates have been working in ministries. Policy implementation has proved to be uncertain, however, and beyond the reach of Aquahub stakeholders. Cooperation with communities is increasing, but needs to be further developed in quantity and quality.

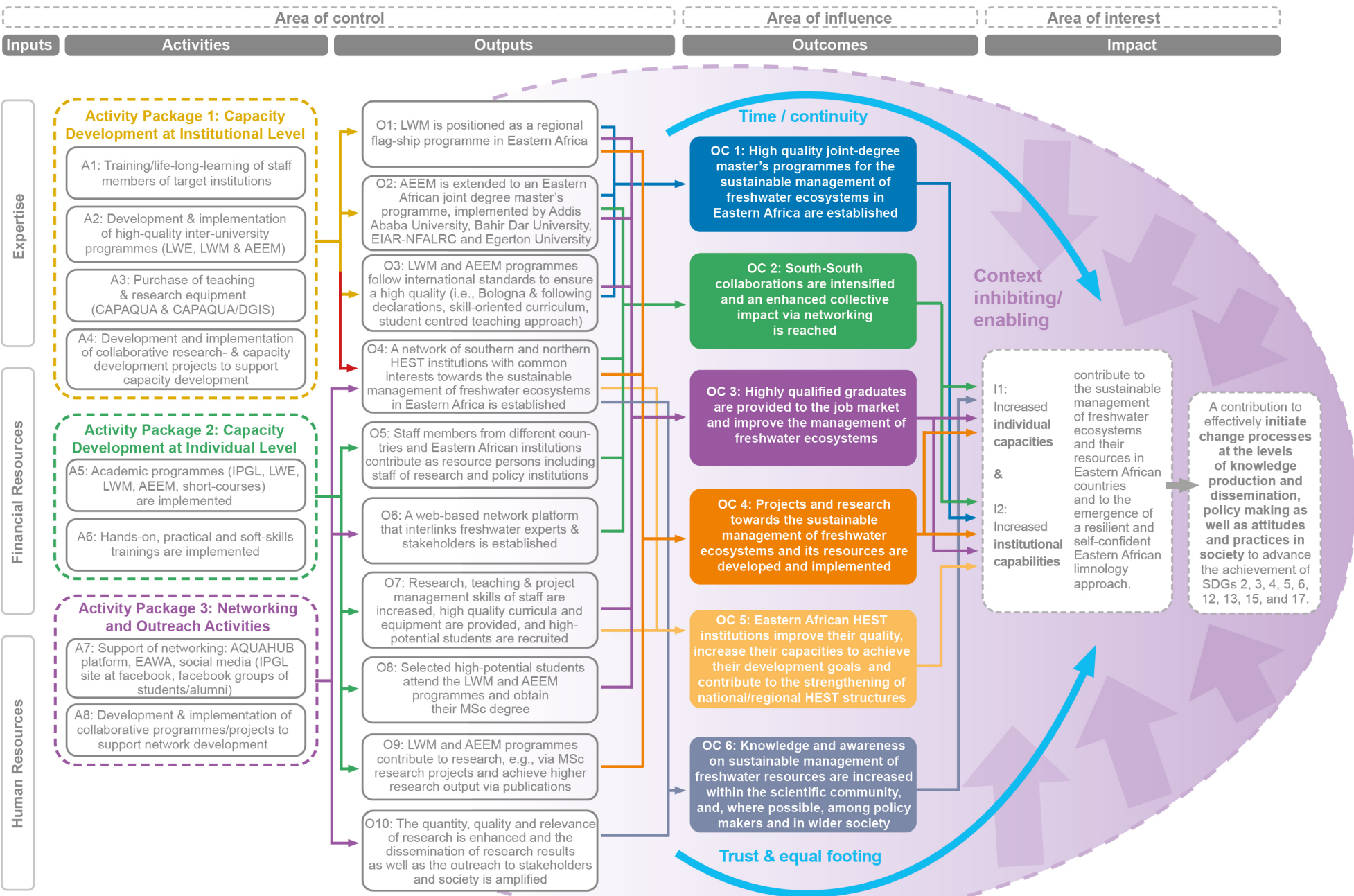
										<p>3. The extent to which the PP contributed to the objectives at impact level (as defined in the project document/logframe/ ToC).</p>		
										<p><input type="checkbox"/> To what extent did the project outcomes (high quality joint master programmes, south-south collaborations, highly qualified graduates, relevant projects and research, increased institutional capacities) contribute to enhanced institutional capabilities supportive of the sustainable management of freshwater ecosystems and their resources in Eastern African countries as well as the emergence of a resilient and self-confident Eastern African limnology, as part of the global limnological science community, tangible in terms of the locally/regionally determination of research topics, the perception of and reference to local/regional research findings in the regional/international research community. In particular, it shall be assessed to what extent the specific limnological knowledge about subtropical and tropical conditions that has arisen in the East African limnology has strengthened the resilience awareness of the regions and to what extent a self-confident, global South-South knowledge transfer is promoted.</p>	<p>P (Partly achieved)</p>	<p>Enhanced institutional capabilities are tangible in terms of successfully established HEST capacities in the field of freshwater ecosystems in all three countries, within the involved institutions and in other institutions. In this sense the Eastern African limnological community has been assessed as a resilient and self-confident part of the global limnological community. However, there is still unmet potential in terms of formalised regional structures as well as South-South cooperation and exchange.</p>

									<input type="checkbox"/> To what extent did the project outcomes (south-south collaborations, networking highly qualified graduates, relevant projects and research, increased knowledge and awareness) contribute to enhanced individual capacities supportive of the sustainable management of freshwater ecosystems and their resources in Eastern African countries as well as the emergence of a resilient and self-confident Eastern African limnology, as part of the global limnological science community, tangible in terms of the locally/regionally determination of research topics, the perception of and reference to local/regional research findings in the regional/international research community. In particular, it shall be assessed to what extent the specific limnological knowledge about subtropical and tropical conditions that has arisen in the East African limnology has strengthened the resilience awareness of the regions and to what extent a self-confident, global South - South knowledge transfer is promoted	F (Fully achieved)	<p>Individual scientific capacities at the highest level of the involved lectures and researchers can be confirmed in terms of their scientific output as visible in the publication analysis. Almost all alumni confirmed the outstanding impact their IPGL programme experience had on their personal development.</p>
									<input type="checkbox"/> To what extent did increased institutional capabilities and individual capacities contribute effectively to change processes at the level of knowledge production and dissemination, in policymaking, as well as to attitudes and practices in society to foster sustainable development?	NAS (not assessed)	<p>A solid assessment of this question was not possible due to the strong influence of contextual factors beyond the influence of Aquahub stakeholders, especially at the level of wider society. Change processes at the level of knowledge production can be confirmed in terms of more practical oriented teaching methods. At the level of policymaking and in wider society the above restrictions apply.</p>

										<p>4. The extent to which the outputs, outcomes and impact achieved contributed to results related to the relevant cross-cutting issues. Please add a justification for each relevant cross-cutting issue.</p>	<p>NA (Not applicable)</p>	<p>This question was not part of the ToRs.</p>
										<p>5. Have the right approaches – with a view to implementing ADA's overarching principles – been adopted to ensure results achievement?</p>	<p>NA (Not applicable)</p>	<p>This question was not part of the ToRs.</p>

ANNEX 3

REVISED ToC – THEORY OF CHANGE



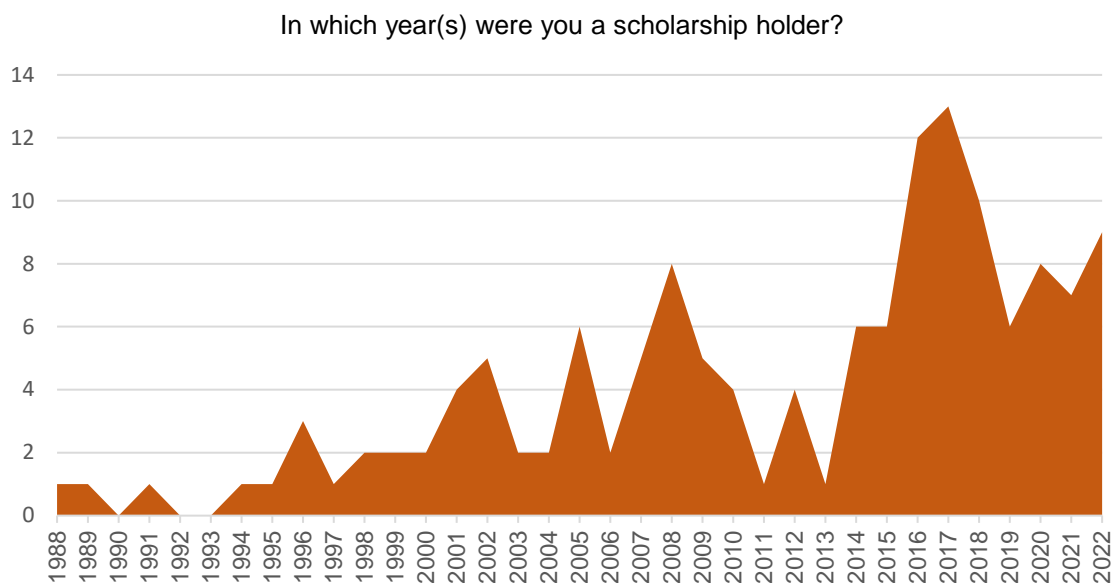
ANNEX 4

ALUMNI SURVEY REPORT

The questionnaire was elaborated using the Limesurvey application and sent out on 10/17/2022 to a total of 370 participants who had attended an IPGL programme. The questionnaire was completed by 132 people by 7/11/2022. This corresponds to a response rate of about 28%.

The survey contains a total of 27 questions. The results are presented below.

Question 1: In which year(s) were you a scholarship holder? Please add the places where your limnology training took place.

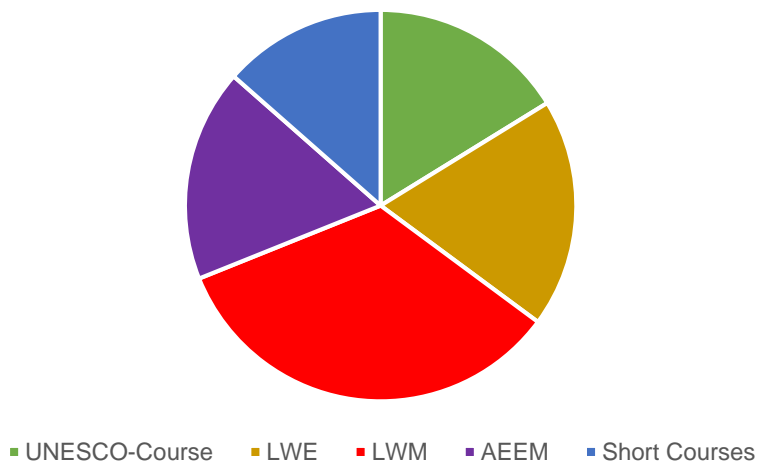


The graph shows the distribution of participants by the year in which they took an IPGL course. On the x-axis is the year when the participant attended an IPGL course. The y-axis shows the number of participants who took an IPGL course in that year and filled in the questionnaire.

Question 2: Which degree/certificate did you get upon completion of the course?

Answer	Count	Percentage
UNESCO-Course	24	18,18%
LWE	28	21,21%
LWM	50	37,88%
AEEM	26	19,70%
Short Courses	20	15,15%

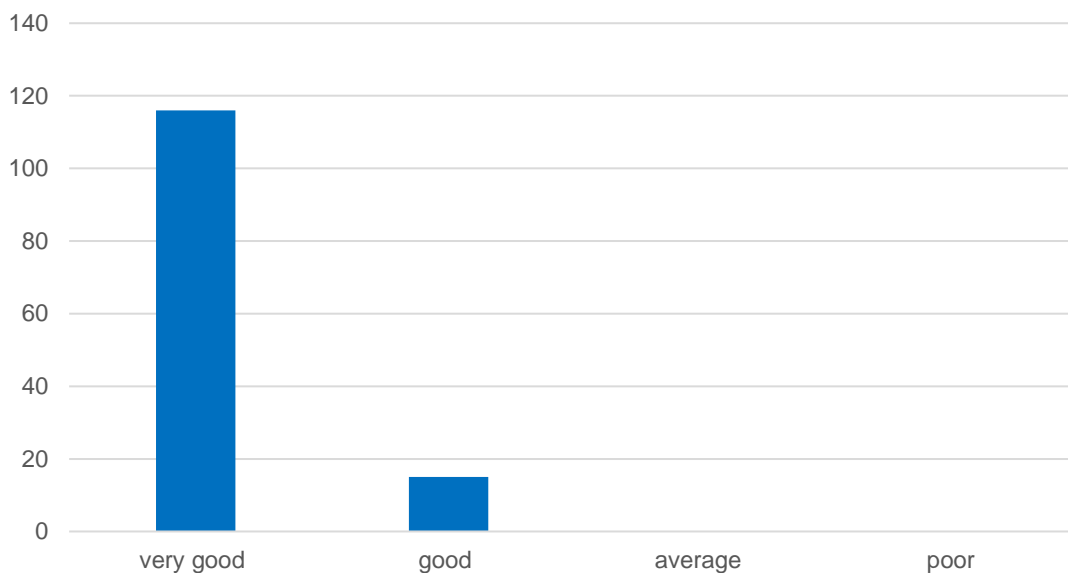
Which degree/certificate did you get upon completion of the course?



Question 3: How do you evaluate the course(s) in general?

Answer	Count	Percentage
very good	116	87,88%
good	15	11,36%
average	0	0,00%
poor	0	0,00%

How do you evaluate the course(s) in general?

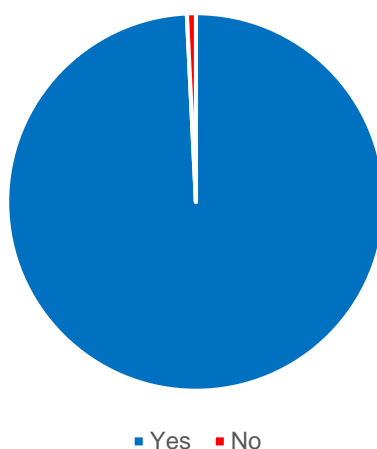


Question 4: Did the course(s) meet your expectations?

Please comment why it did/did not meet your expectations.

Answer	Count	Percentage
Yes	129	97,73%
No	1	0,76%
Comments	95	71,97%
No answer	2	1,52%

Did the course(s) meet your expectations? Please comment why it did/did not meet your expectations.

**Comments**

Numerous participants describe in the comments that they perceived the courses as interesting, motivating and informative. Likewise, it was frequently mentioned that the skills and knowledge acquired in the courses were and are helpful both in employment and in practice. The design and structure of the courses also met with a positive response.

Critical voices had wished for more handling of software. Three participants argued that training in GIS programs would have been a useful addition. One participant criticized the lack of equipment, such as high quality microscopes.

Question 5: Please indicate strengths and weaknesses of your training course**Strengths:**

The strengths of the courses were commented on in detail, resulting in a positive overall picture. The competence of the professors was mentioned remarkably often, the structure of the courses was also praised in many cases. The coordination of the programmes was praised for the most part, although shortcomings were also mentioned in isolated cases.

Furthermore, many course participants rated the high practical part as very positive. The international character of the courses was also highlighted as a strength.

Weaknesses:

Although many of the comments focused on the strengths of the courses, by far the most frequently cited weakness was the amount of content combined with the short amount of time to internalize it. Some participants felt pressured by this, and some recommended breaks between the country modules. There was also a renewed desire for training on software programs, especially GIS programs. One participant commented on high costs while relatively poor service quality in the Kenyan semester.

The following table lists the most frequently mentioned strengths and weaknesses:

Strengths

- Competent Professors
- Good structure of the courses
- Mostly good coordination
- Strong practical part
- International character

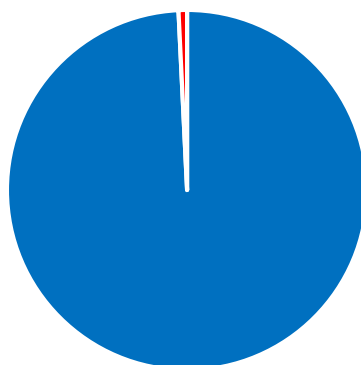
Weaknesses

- Too much content with too little time
- Too little use of software
- Little independence

**Question 6: Would you describe the course as "High Quality Education"?
Please comment your choice in consideration of your definition
of "High Quality Education".**

Answer	Count	Percentage
Yes	130	98,48%
No	1	0,76%
Comments	101	76,52%

Would you describe the course as "High Quality Education"?



■ Yes ■ No

Comments and Critics regarding „High Quality Education“

The almost complete classification of IPGL programs as "High Quality Education" is also evident in the comments. The most frequent argument for this is the experience and competence of the lecturers in the courses offered. Many participants described the courses as all-embracing and very close to real-life issues and problems. Likewise, the design and structure of the programs were rated as "High Quality". Several participants felt that the international character and the exchange associated with it was an important feature. Some participants emphasized the high practical content as an important factor. For other participants, the international recognition of the certificates was also an important criterion.

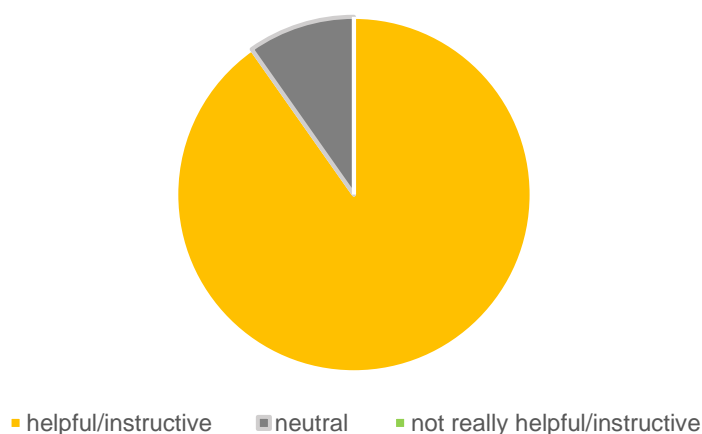
Again, the big amount of content and little time was mentioned in the comments. The following table shows the most common arguments.

- High competence of the lecturers
- Design and structure of the programmes
- High practical content
- Broad and all-embracing content
- Strong relation to „real world situations“
- Helpful for job/career
- International exchange
- International recognition of the certificates
- Confidence boosting

Question 7: How do you rate having studied abroad? Please describe your benefits and difficulties regarding your experience.

Answer	Count	Percentage
helpful/instructive	111	84,09%
neutral	12	9,09%
not really helpful/instructive	0	0,00%
Comments	92	69,70%
No answer	9	6,82%

How do you rate having studied abroad? Please describe your benefits and difficulties regarding your experience.



The diagram shows that a large majority of the participants have a positive view of their experiences regarding studying abroad, few have a neutral reference to it, but no one has bad associations.

In the comments, many alumni describe in particular the social exchange as the greatest gain. Often, international networks have been formed through the courses, which still exist after graduation and within contact is maintained. Likewise, many participants appreciate the possibility to interact with other cultures over a longer period of time. Also, many participants associated their time abroad with access to high-tech research items and facilities.

In terms of difficulties, few participants cited adjustment difficulties. These were then caused by cultural and language differences. High living costs were also mentioned. In addition, two participants complained about homesickness.

The following table lists the most mentioned benefits and difficulties

Benefits	Difficulties
- Making international contacts	- Cultural difficulties
- Cultural exchange	- Language difficulties
- Access to high-tech research	- Homesickness

Question 8: Where are you currently employed? Please also indicate your job title.

An overwhelming majority are employed at university institutions. Of these, the majority are researchers, and a somewhat smaller number works as lecturers. Some are currently doing their doctorate and are therefore also employed by universities.

The next largest group is employed by ministries or other government institutions. The small rest of participants are in the private sector, self-employed or unemployed.

Thirteen participants stated they were just doing their doctorates. It is striking that only one of these participants is doing his PhD in East Africa. The other twelve found a place at BOKU, in Japan, in the USA, Sweden or China.

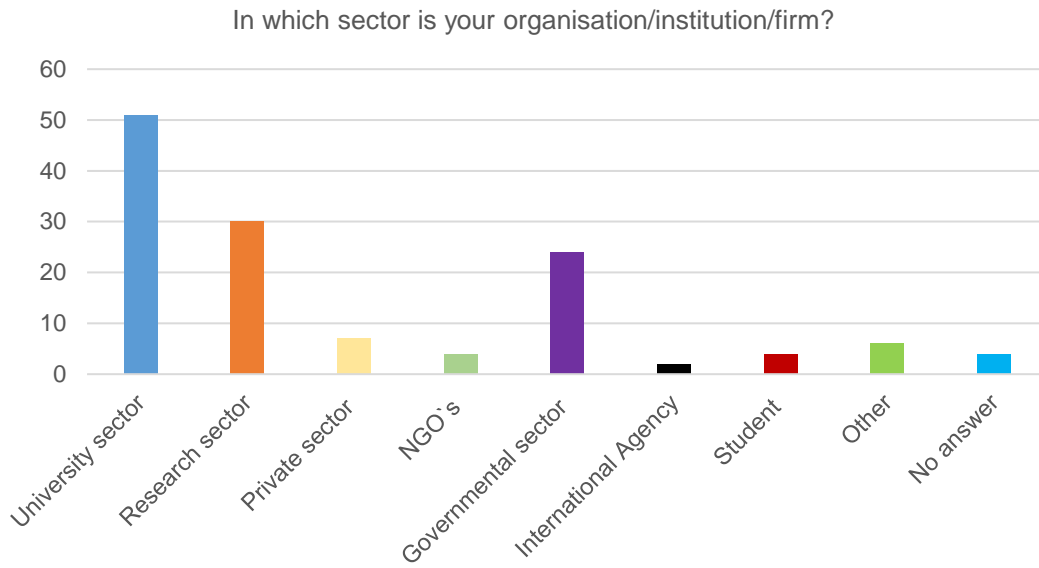
Six participants work full time or half time as consultants or experts in a field of limnology.

Also, six participants are currently not employed.

For reasons of confidentiality, the names of respondents' workplaces as indicated in the responses are not included in this report.

Question 9: In which sector is your organisation/institution/firm?

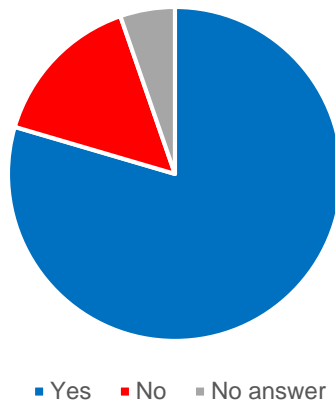
Answer	Count	Percentage
University sector	51	38,64%
Research sector	30	22,73%
Private sector	7	5,30%
NGO`s	4	3,03%
Governmental sector	24	18,18%
International Agency	2	1,52%
Student	4	3,03%
Other	6	4,55%
No answer	4	3,03%
Not displayed	0	0,00%



Question 10: Was your IPGL/IWM/AEEM experience helpful to get the job?

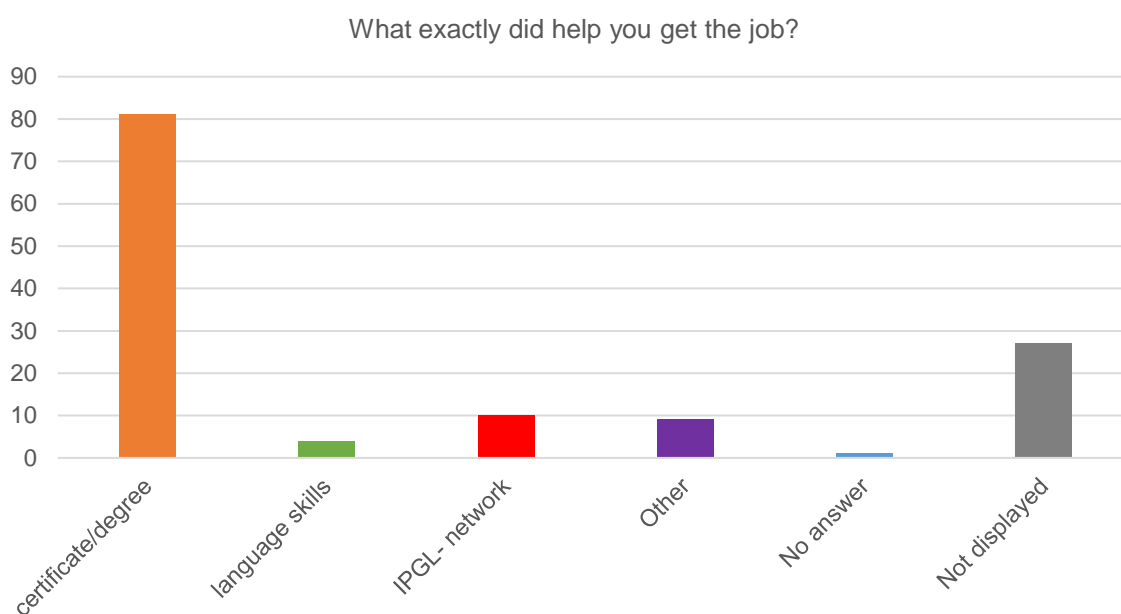
Answer	Count	Percentage
Yes	105	79,55%
No	20	15,15%
No answer	7	5,30%

Was your IPGL/IWM/AEEM experience helpful to get the job?



Question 11: What exactly did help you get the job?

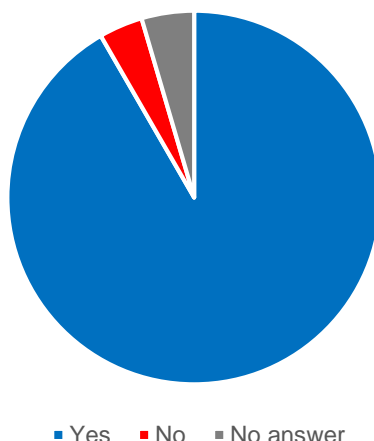
Answer	Count	Percentage
certificate/degree	81	61,36%
language skills	4	3,03%
IPGL- network	10	7,58%
Other	9	6,82%
No answer	1	0,76%
Not displayed	27	20,45%



Question 12: Are you able to apply the skills, knowledge and experience that you have acquired during the IPGL training in your job? Please comment if this is not the case.

Answer	Count	Percentage
Yes	121	91,67%
No	5	3,79%
Comments	55	41,67%
No answer	6	4,55%

Are you able to apply the skills, knowledge and experience that you have acquired during the IPGL training in your current job?



Comments

Only two participants commented in the way that they are NOT able to apply the skills, knowledge and experience acquired during the IPGL training. Both of them mentioned the lack of equipment, laboratory infrastructure and funding in the organisations they currently work at.

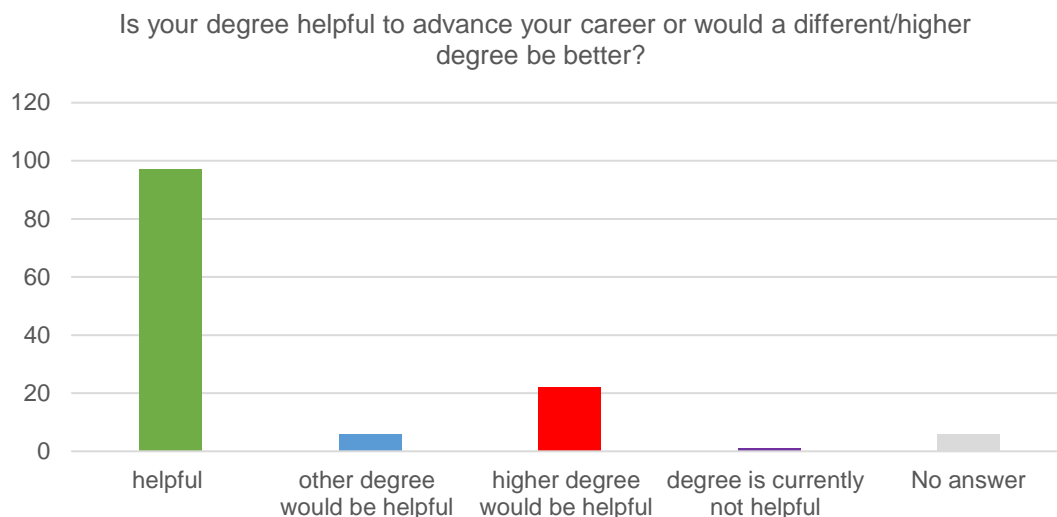
Many participants described, in which activity, project or sector they can apply the skills, knowledge and experiences acquired during the IPGL training.

Often times participants mentioned that the the IPGL experience is very helpful in academic activities like teaching, research or writing publications.

But also in other activities mostly related to water quality testing, to fishery or fish farming - the IPGL impact is praised.

Question 13: Is your degree helpful to advance your career or would a different/higher degree be better?

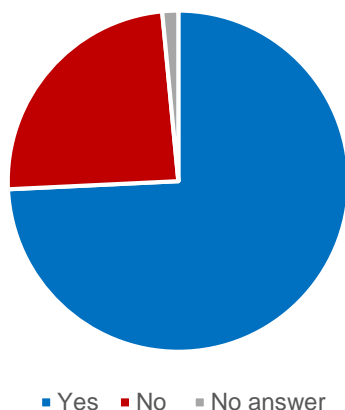
Answer	Count	Percentage
helpful	97	73,48%
other degree would be helpful	6	4,55%
higher degree would be helpful	22	16,67%
degree is currently not helpful	1	0,76%
No answer	6	4,55%



Question 14: Do you have any former professional experience?

Answer	Count	Percentage
Yes	98	74,24%
No	32	24,24%
No answer	2	1,52%

Do you have any former professional experience?



Question 15: What kind of former professional experience do you have?

Answer	94	71,21%
No answer	4	3,03%
Not displayed	34	25,76%

Categories of the most common former experiences

In this question, it is noticeable that almost all answers in the extended circle can be assigned to Limnology. Especially "Fishery and Aquaculture" are two keywords that are often related to the former profession (25 participants). For example, some participants worked on fish farms or in fish farm management - others were scientifically involved in Aquaculture and Fishery and worked in laboratories and/or institutions such as the National Fisheries Research Organization.

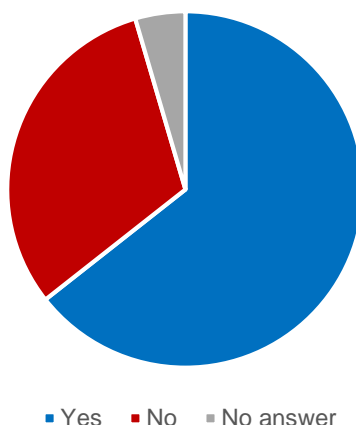
Another group can be classified as "Hygiene/Wastemanagment/Sanitation".

The final group are participants who cannot be categorized by their responses

Question 16: Apart from your employment, are you active in any other organisation, where you can apply your skills

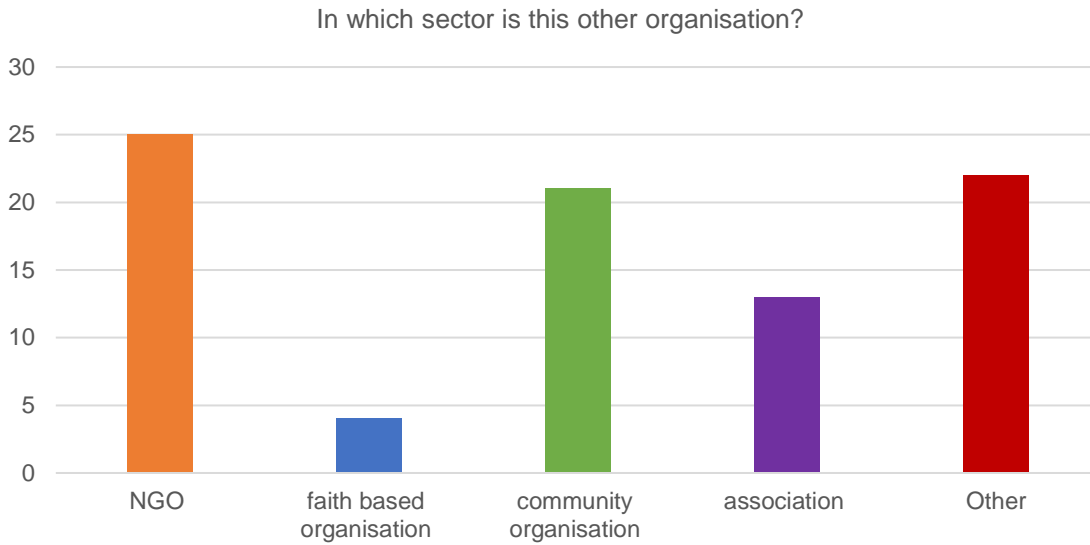
Answer	Count	Percentage
Yes	85	64,39%
No	41	31,06%
No answer	6	4,55%

Apart from you employment, are your active in any other organisation, where you can apply your skills?



Question 17: In which sector is this other organisation?

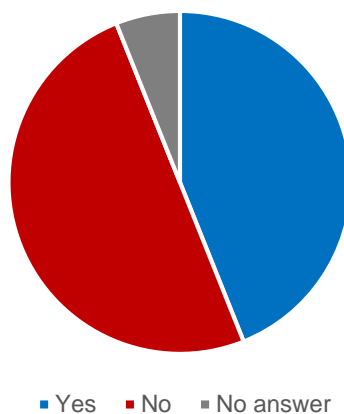
Answer	Count	Percentage
NGO	25	18,94%
faith based organisation	4	3,03%
community organisation	21	15,91%
association	13	9,85%
Other	22	16,67%
No answer	0	0,00%
Not displayed	47	35,61%



Question 18: Did you publish any research paper based on your thesis and/or the work you have done during your IPGL training? If yes, please indicate the paper title(s) and the journal(s)

Answer	Count	Percentage
Yes	58	43,94%
No	66	50,00%
Comments	60	45,45%
No answer	8	6,06%

Did you publish any research paper based on your thesis and/or the work you have done during your IPGL training? If yes, please indicate the paper title(s) and the journal(s).



Scientific field of the papers

The scientific works indicated by the participants can be categorized in four research fields:

The first and largest body of work examines the interaction of inland fisheries or fish farms and water quality. The majority of these studies evaluate various measures to reduce the impact of fish farms on aquatic ecology and thereby improve fish farming.

The second largest part of the work falls in the area of sanitation and wastewater disposal. Here, mostly with the help of methods and findings from microbiology, influences of wastewater and the associated input of bacteria are investigated.

The third part examines water quality away from the first two research fields of "food security" and "hygiene". For example, the concentrations of heavy metals are determined or the relationship between zooplankton dynamics and water ecological quality factors is determined.

The last and smallest field of research can be assigned to the area of extended climate research. Thus, this research aims to provide insights regarding the relationship between land use/water use and greenhouse gas emissions.

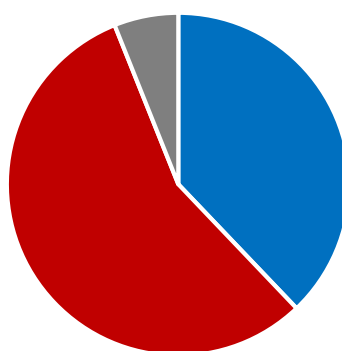
This work has been published in numerous International and National Journals, which are listed below (list not complete).

- School of Forestry, Environmental and Geographical Science (SFECS) Collection
- Ethiopian Journal of Biological Science AAU II
- MDPI Open Access Journal (Sustainability)
- Official Journal of the International Lake Environment Committee (ILEC)
- Parasitology Research Journal
- African Journal of Aquatic Science II
- International Journal of Fisheries and Aquatic Studies
- PLOS ONE
- International Journal of Zoology and Animal Biology
- Aquaculture Research
- Marine and Freshwater Research
- Journal of Livestock Research for Rural Development
- Journal of food and Nutritional science research II
- Journal of Water, Sanitation and Hygiene for development II
- Journal of Environmental Science and Water Resources
- Egerton Journal of Science and Technology
- African Journal of Ecology III H Index 57
- Ethiopian Journal of Science III
- Journal of Microbiology and Biotechnology
- Springer Netherlands
- MDPI Open Access
- Journal of Environmental Science and Technology
- Water science and technology
- Journal of Environment Pollution and Human Health
- Journal of Biology, Agriculture and Healthcare
- African Journal of Biological Sciences
- Water Research
- International Journal of Biodiversity and Conservation
- Journal of Tropical Microbiology and Biotechnology
- Science of the Total Environment
- Scientific Africa

Question 19: Did you cooperate with any research projects based on your thesis and/or the work you have done during your IPGL training? If yes, please indicate the project title and corresponding institutions.

Answer	Count	Percentage
Yes	50	37,88%
No	74	56,06%
Comments	53	40,15%
No answer	8	6,06%

Did you cooperate with any research projects based on your thesis and/or the work you have done during your IPGL training? If yes, please indicate the project title and corresponding institutions.



■ Yes ■ No ■ No answer

Research Projects

Most of the projects are in the area of "food security" – above all concerning inland fisheries/aquaculture. Likewise, numerous projects can be assigned to the area of hygiene/sanitation" as well as health. Occasionally, participants take part in projects in the field of "extended" climate research.

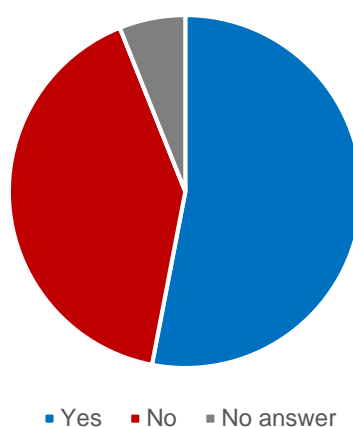
For reasons of confidentiality, only the organisations participating in the projects as indicated in the survey are listed below.

Organisation	Number of mentions
Helsinki University, located in Kenia	
University of Bern	
Kyombo University, Kampala	
ADC	
University of Helsinki	
European Comission	3
Addis Abeba University	
International Livestock Research Institute	
National Fisheries and Aquatic Life Research Center (NFALRC)	
WWF	
The National Fisheries Resources Research Institute (NaFIRRI)	2
Global Water for Sustainability	
UNICEF	
Global Challenges Research Fund (GCRF)	
USAID	
EAC (East African Community)	
World Bank	
KMFRI	2
TaFIRI	
BOKU (IHG) Institut für Zoologie	
Austrian Academy of Sciences ENKI public benefit cooperation	
Alma Mater Studiorum - Università di Bologna	
Moi University	
Egerton University	
Department of Fisheries Resources Uganda	
Ethiopian Institute of Agricultural Research	
Government of the Democratic Republic of Congo (DRC)	
Government of Uganda	
Nile Basin Initiative (NBI)	
Nile Equatorial Lakes Subsidiary Action Program (NELSAP)	
Global Environment Facility (GEF)	
WOTRO/DGIS Science for Global Development Programme	

Question 20: Did any formal or informal cooperation with academic or any other institutions/individuals emerge out of your participation in the IPGL training courses? If yes, please indicate.

Answer	Count	Percentage
Yes	70	53,03%
No	54	40,91%
Comments	51	38,64%
No answer	8	6,06%

Did any formal or informal cooperation with academic or any other institutions/individuals emerge out of your participation in the IPGL training courses? If yes, please indicate.



Comments

The cooperations that have been established can first be classified thematically. Once again, fisheries and aquaculture play a major role in the majority of the collaborations. Likewise, some limnology cooperations without reference to fisheries have been established or participate in such. Isolated cooperations can be classified in the area of "drinking water supply" and environmental animal protection.

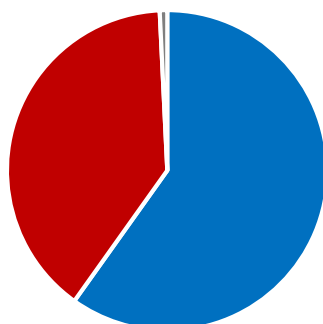
The institutions supporting or carrying these collaborations are either universities or non-university research centers, with university institutions predominating.

Some participants indicated the participation in the IPGL courses as cooperation.

Question 21: Are you a member of AQUAHUB Knowledge and Networking Platform?

Answer	Count	Percentage
Yes	79	59,85%
No	52	39,39%
No answer	1	0,76%

Are you a member of AQUAHUB Knowledge and Networking Platform?



■ Yes ■ No ■ No answer

Question 22: What are your experiences with the AQUAHUB Knowledge and Networking Platform? Please give us your thoughts on how to make it more meaningful and attractive.

Answer	70	53,03%
No answer	9	6,82%
Not displayed	53	40,15%

Most comments are words of praise about the Aquahub platform. But also constructive suggestions are made.

Arguments for positive experience with AQUAHUB-platform

- Good place for networking
- Source of scientific knowledge
- Dissemination of scientific work
- Job opportunities
- Information about further education (scholarship, fellowships, courses...)

Suggestions to make it more meaningful and attractive

- Adding discussion forums
- Updating the platform more frequently
- Link to social media and communication tools like whatsapp/telegram
- PhD Links get posted
- Expansion into a global network
- Possibility to organize conferences

Question 23: What would make it more attractive for you becoming a member of the the AQUAHUB Knowledge and Networking Platform?

Answer	45	34,09%
No answer	7	5,30%
Not displayed	80	60,61%

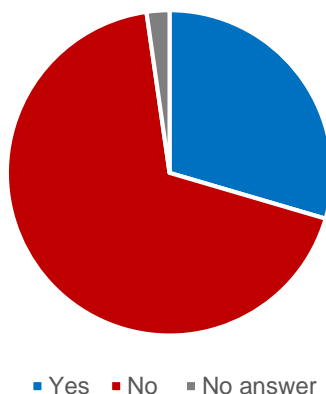
The responses reveal that numerous people are not aware of the existence of the AQUAHUB platform. Likewise, many participants stated that they had heard about it, but did not know exactly what the goal of the platform was and what its benefits would be if they joined. Furthermore, some participants named services that would encourage them to join, which already exist. For example, they mentioned that the possibility of networking or knowledge exchange would motivate them to join.

From the answers it can be concluded that there is a lack of information about the platform.

Question 24: Were you a member of the Eastern African Water Association?

Answer	Count	Percentage
Yes	39	29,55%
No	90	68,18%
No answer	3	2,27%

Were you a member of the Eastern African Water Association?



Question 25: What/How was your experience with the EAWA?

Answer	Count	Percentage
Answer	35	26,52%
No answer	4	3,03%
Not displayed	93	70,45%

Comments

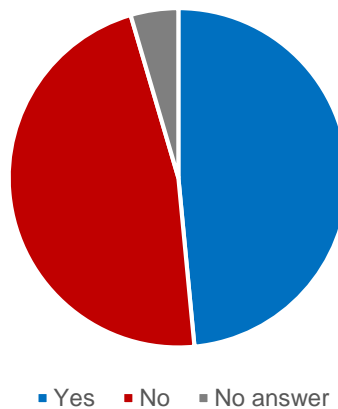
Experiences with EAWA vary widely. Many participants reported that EAWA was a good platform to network and exchange ideas with other researchers. It was appreciated that this exchange took place between IPGL alumni as well as with external researchers from East Africa.

However, about half of the comments were critical. For example, the platform was described as too inactive and poorly organized, which in turn led to motivational problems among members.

Question 26: Are there any opportunities for further education in limnology that you are aware of? Please indicate what kind of further education could be useful to you.

Answer	Count	Percentage
Yes	64	48,48%
No	62	46,97%
Comments	80	60,615
No answer	6	4,555

Are there any opportunities for further education in limnology that you are aware of? Please indicate what kind of further education could be useful to you.



Comments

Only a few answers were given to the sub-question about "further education that you are aware of". One participant mentioned the APPEAR program as a further education opportunity - also different scholarships were mentioned including the DAAD-Scholarship, Scholarship of Wagening University or the Phd-scholarship of the Boku.

A large part of the answers referred to the second question. Many participants expressed the wish to obtain a doctorate, but had difficulties achieving that goal. Thus, there were several appeals for the IPGL program to be expanded to include an opportunity to earn a doctorate. Also criticized was a lack of continuing education opportunities after the "Short Courses."

Some participants used the question to indicate what content would be beneficial to their continuing education. The most frequently mentioned topics were:

- climate research- modeling
- data science
- Micropollution

Question 27: Do you have any suggestions for improvement?

Answer	116	87,88%
No answer	16	12,12%

Some participants used the last question to express their gratitude and appealed to continue the work.

Many comments, however, included constructive suggestions to improve the IPGL program.

The most frequent comment was related to the proposal to expand the IPGL program with a PhD program. For example, again many participants stated that they wanted to do a PhD but had difficulty finding an opportunity for it.

The second most mentioned comments are regarding the time pressure experienced during the courses. It was emphasized several times, as in question 5, that it would be useful to extend the time period for the content taught.

Similar to the first item with desires for PhD courses, the next largest group of comments can be categorized as "after the IPGL." Numerous comments described that assistance, in job placement, internships, or access to collaborations would be useful. Also, several participants suggest that initial placement steps in this direction would already be possible and useful during the courses. For this reason, among others, some participants also suggest improving the alumni network.

Suggestions were also formulated in terms of topics. Some participants would like to see more topics on climate change taught in the courses.

In the following table, the most frequent suggestions are mentioned first:

- Adding a PhD course
- More time for the content taught
- Support for job search/internship search/collaboration search
- Support for publication of scholarly work
- Improve alumni network
- Funding for scientific projects
- Expand the program
- Refresher Courses

Following suggestions were mentioned only once:

- More topics Africa related
- Support in housing in Austria
- Alumni share their experiences in the courses
- Two participants mentioned unequal treatment towards students from Uganda and Ethiopia in Kenya

ANNEX 5

PUBLICATION ANALYSIS REPORT

The purpose of this publication analysis is to assess the scientific impact of the IPGL alumni's publications at international level. Before starting the analysis, intensive consultations were carried out between the evaluation team and the IPGL office members. Additionally, methodological issues were discussed in a consultative meeting with BOKU research information system experts Horst Mayer and Anna Hinkl as well as with BOKU quality manager Thomas Guggenberger. In this meeting, held on March 30, 2023, BOKU experts advised the evaluation team that it might be problematic to assess the scientific impact in terms of relevance and quality of African researcher by means of databases which are programmed according to Western academic standards. The high cost of access to these databases and to the journals listed therein can probably not be afforded by African institutions. Hence, these databases will most probably not realistically reflect the actual publication activity of IPGL alumni. Rather, scientific output by IPGL alumni might be published to a greater extent in regional journals, which does not necessarily diminish their relevance.

It was therefore agreed between the IPGL management and the evaluation team to consider the below outlined databased publication analysis as but one aspect of responding to the wider research question of alumni's scientific impact at regional and international level. This databased analysis has been complemented by qualitative research carried out in interviews and workshops during the field trips to Kenya, Uganda and Ethiopia. For an extensive discussion of the overall findings see section 5.

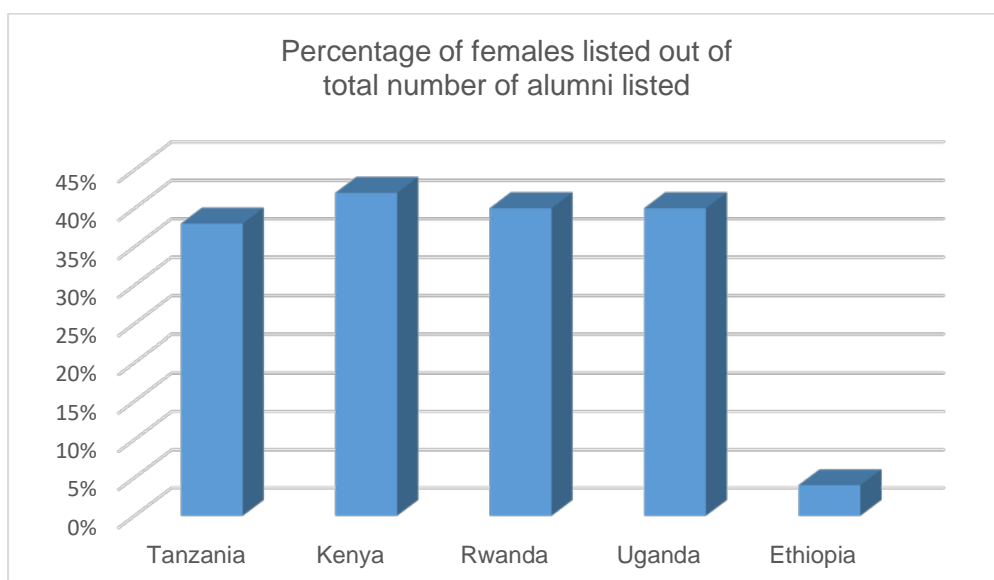
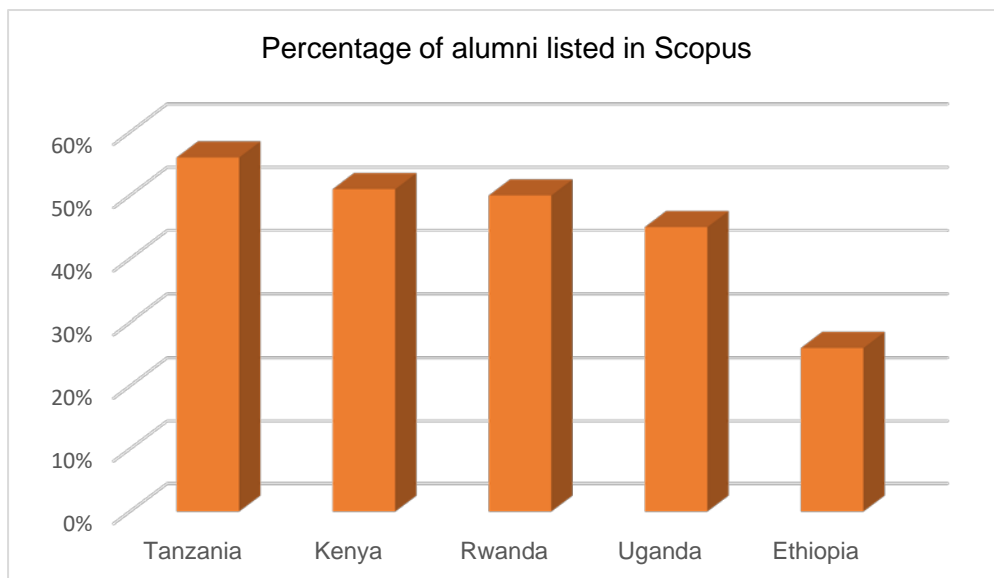
The following analysis was carried out using the web-based databank Scopus. The following search criteria were applied to the totality of IPGL alumni from Kenya, Uganda, Ethiopia, Tanzania, Rwanda, Burundi and Sudan:

- percentage of alumni included in Scopus, listed per country
- percentage of female alumni as of all alumni listed in Scopus, per country
- number of publications, citations and H-index per alumni and country

All indications (except percentage of total alumni per country) refer only to the group of alumni listed in Scopus. Due to technical constraints, queries of citations were confined to the time range 2008 – 2023 and cleared from self-citations. All queries were carried out between April 4 and 25, 2023 and updated between June 19 and 22, 2023. Results as of matching alumni were double-checked by the IPGL-office.

There were no matches for alumni from Burundi and Sudan. For the remaining countries, the following percentage of alumni are listed in Scopus.

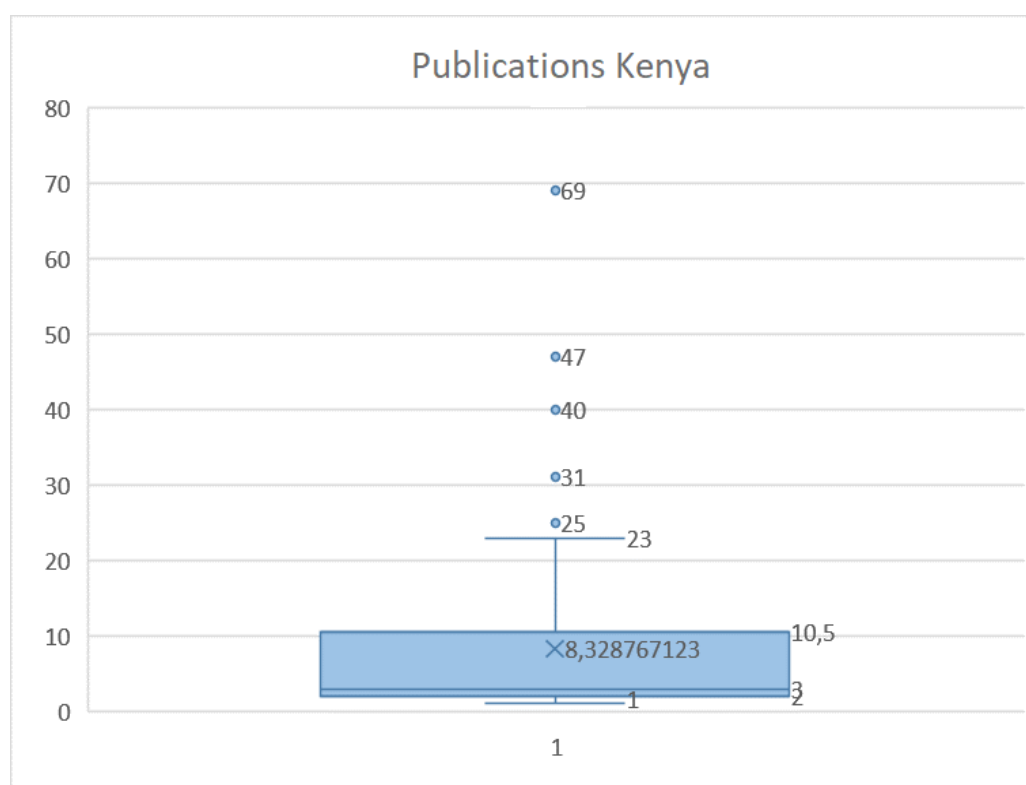
Country	Tanzania	Kenya	Rwanda	Uganda	Ethiopia
Percentage of alumni listed in Scopus	56%	51%	50%	45%	26%
Percentage of females listed out of total number of alumni listed	38%	42%	40%	40%	4%



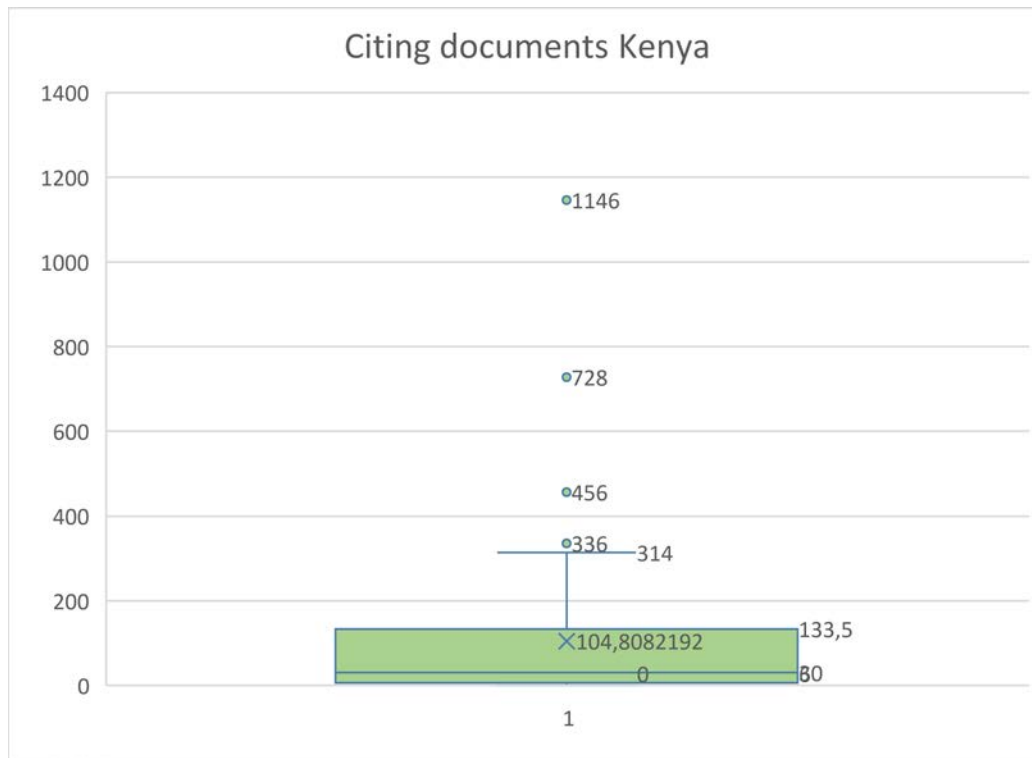
Kenya

Out of a total of 142 alumni, 72 were found on Scopus (30 women and 42 men).

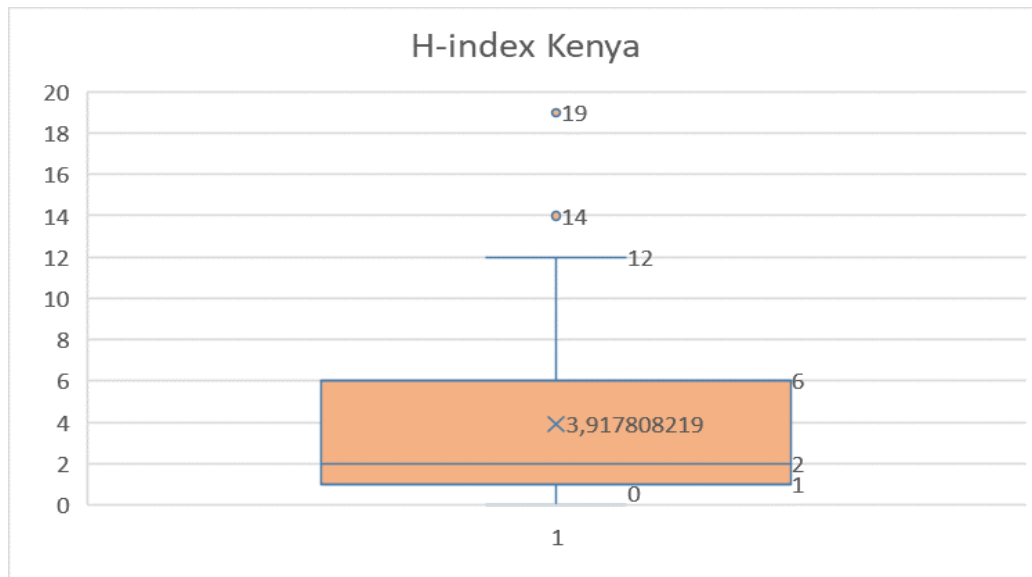
Total Number of Alumni	142	Highest number of publications	69	Number of female alumni listed in Scopus	30
Number of matches in Scopus	72	Highest number of citing documents	1492	Number of male alumni listed in Scopus	42
Percentage	51%	Highest h-index	19	Percentage of females listed out of total nr alumni listed	42%



Jude M. Mathooko is the alumnus with the highest number of publications (69). The median value is around 3 publications. The majority of alumni listed in Scopus have authored between 1 and 10 publications.



Jude M. Mathooko is equally the alumnus with the highest number of citing documents (1146). The median is 30 documents.

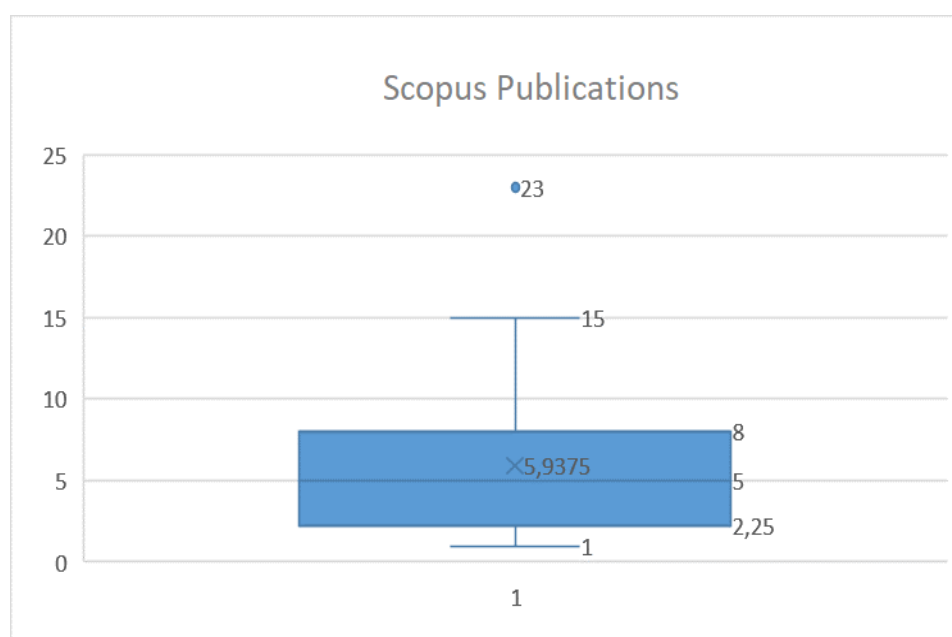


The highest H-index value is 19 (J.M. Mathooko and Kenneth R. M. Mavuti). The majority of listed alumni have an H-index between 0-6, the median being around 2.

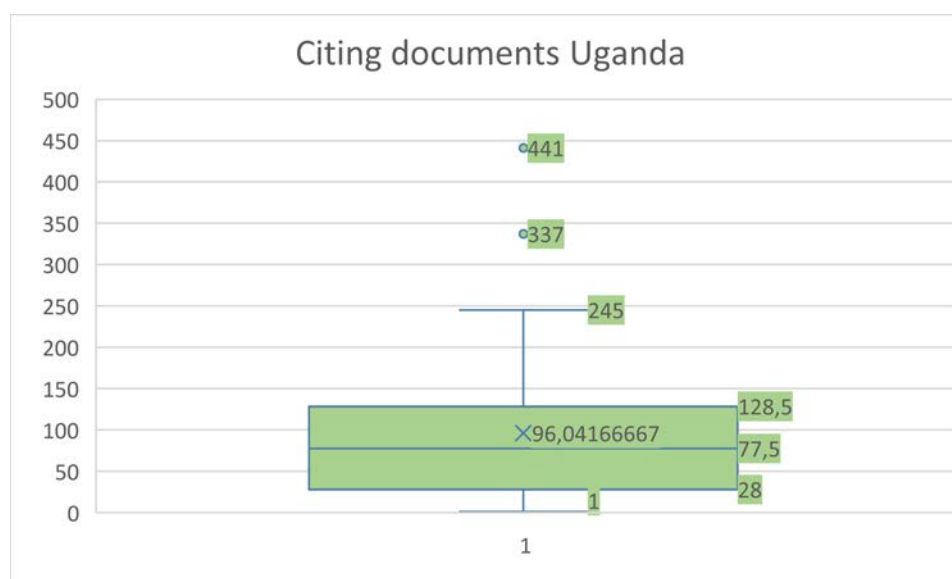
Uganda

Out of a total of 108 alumni, 48 are listed in Scopus (19 women and 29 men).

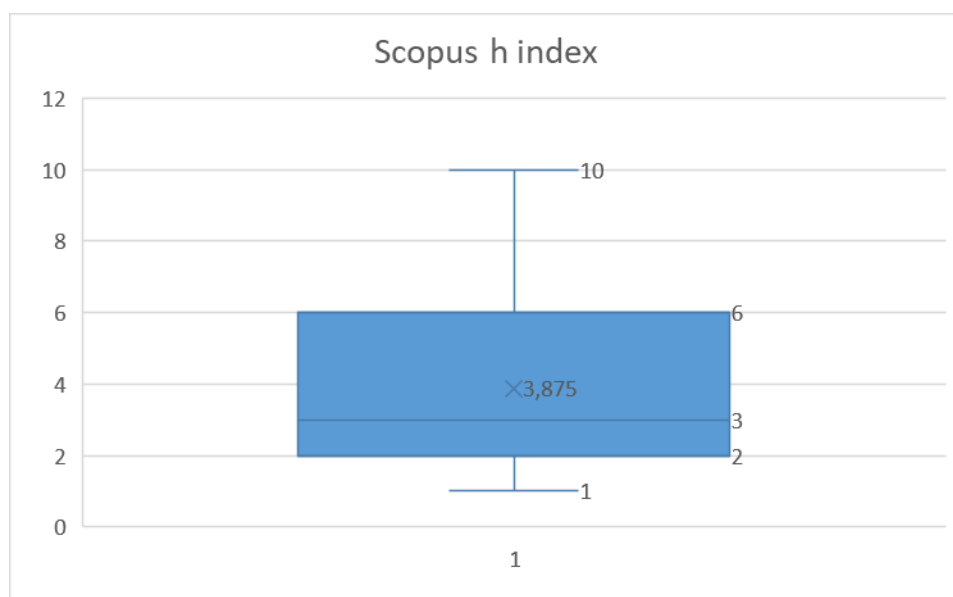
Total Number of Alumni	108	Highest number of publications	23	Number of female alumni listed in Scopus	19
Number of matches in Scopus	48	Highest number of citing documents	441	Number of male alumni listed in Scopus	29
Percentage	44%	highest h-index	10	Percentage of females listed out of total nr alumni listed	40%



The maximum number of publications is 23 (William Okello), the median being 5.



The highest number of citing documents is 441 (Rose Mary Mugidde), the median being 77.

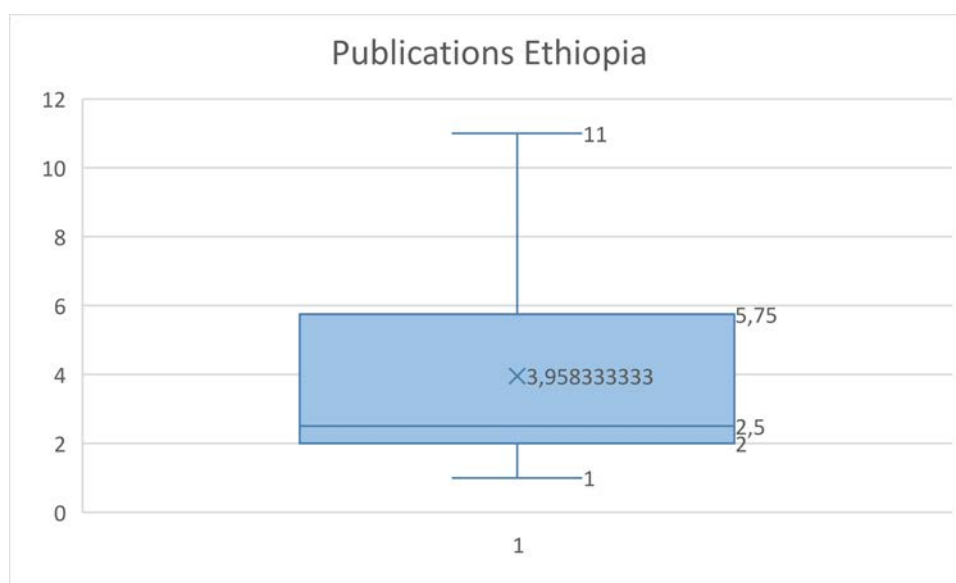


The highest h-index is 10 (Boniface Makanga), the median being 3.

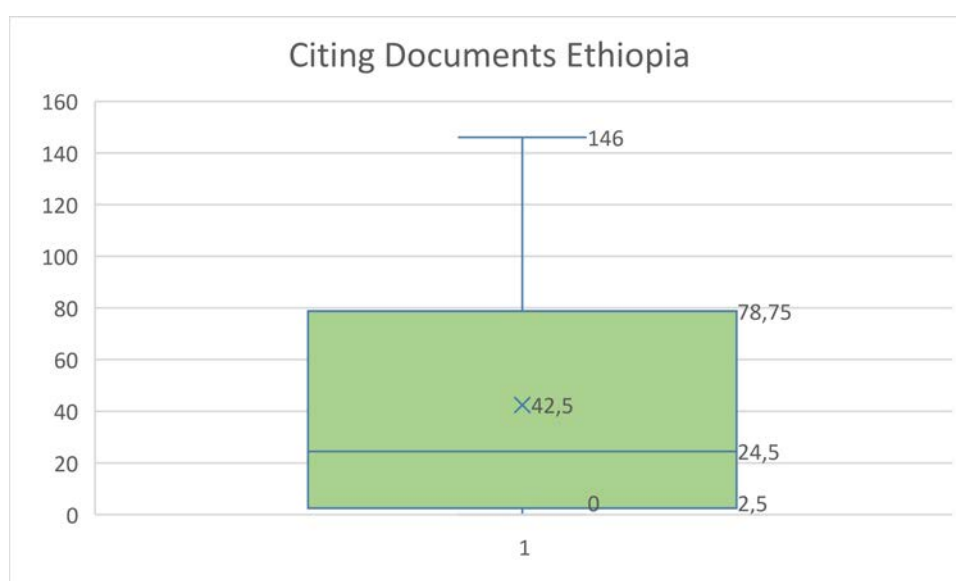
Ethiopia

Out of a total of 90 alumni, 24 are listed in Scopus (1 woman and 23 men).

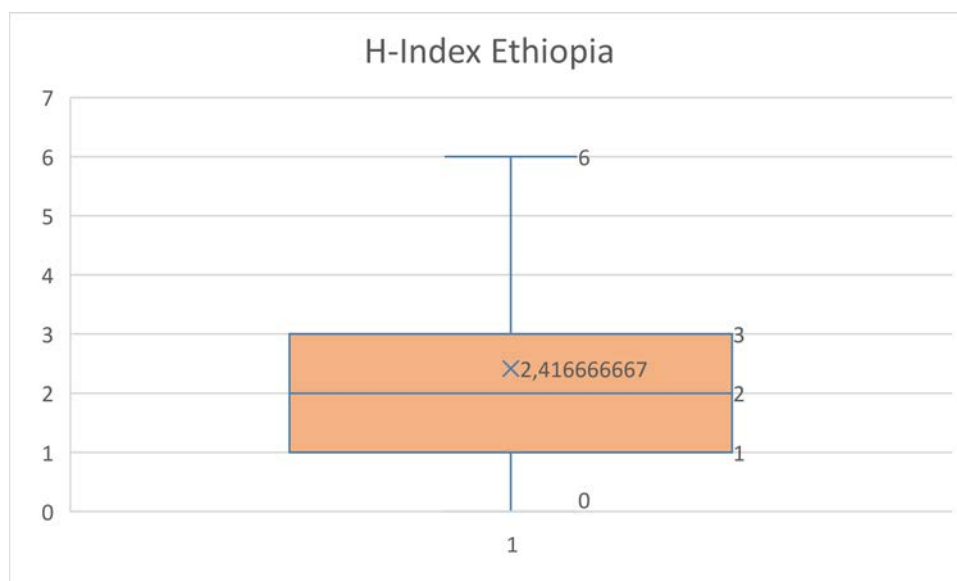
Total Number of Alumni	90	Highest number of publications	11	Number of female alumni listed in Scopus	1
Number of matches in Scopus	24	Highest number of citing documents	146	Number of male alumni listed in Scopus	23
Percentage	26,7%	highest h-index	6	Percentage of females listed out of total nr alumni listed	4%



20 out of the 24 alumni listed in Scopus have authored between 1 and 6 publications. The remaining four have between 4 and 11 publications (Aschalew Lakew and Baye Sitotaw). The median amounts to 2.



The highest number of citing documents is 146 (Fasil Degefu), the median being 24.

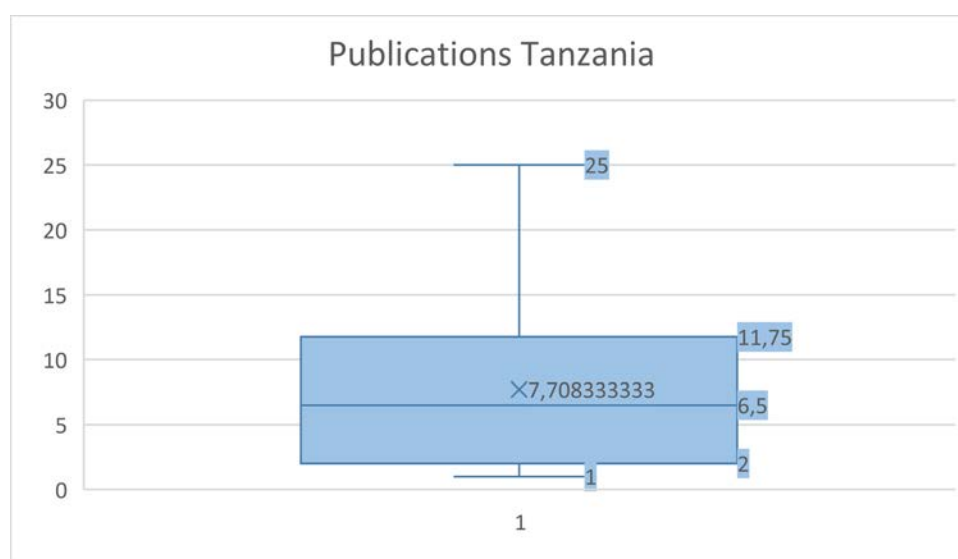


Three alumni have an h-index of 6. (D. Tadesse, G. Yemer, A. Haile). The median h-index is 2.

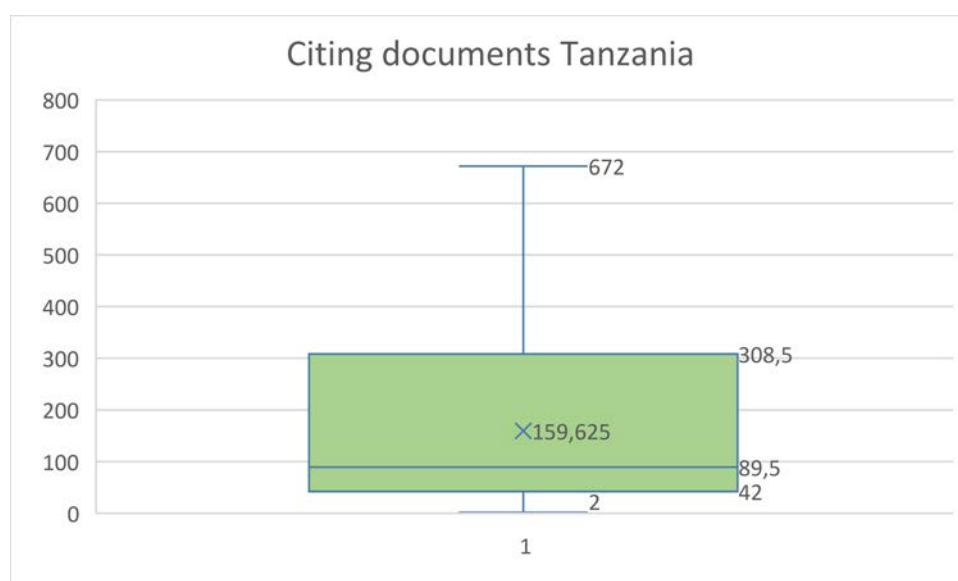
Tanzania

Out of a total of 45 alumni, 24 are listed in Scopus (9 woman and 15 men).

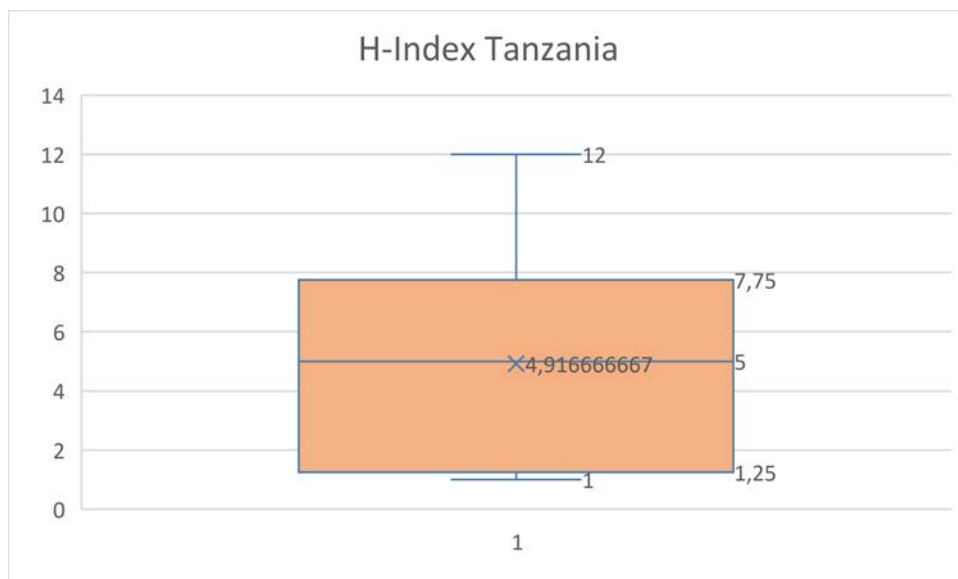
Total Number of Alumni	45	Highest number of publications	25	Number of female alumni listed in Scopus	9
Number of matches in Scopus	24	Highest number of citing documents	672	Number of male alumni listed in Scopus	15
Percentage	53%	highest h-index	12	Percentage of females listed out of total nr alumni listed	38%



18 out of a total of 24 alumni have authored between 1 and 11 publications. The remaining 6 rank between 12 and 18 publications, the highest number being 25 (Mwita Marwa Mangora).



The highest number of citing documents is 672 (Mugassa Rubindamayugi), the median being around 89.

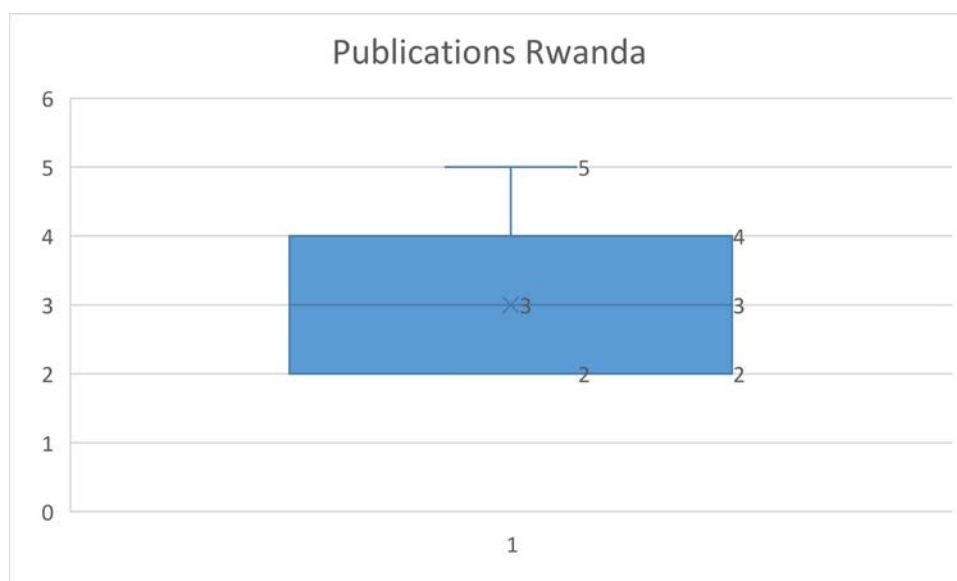


The highest h-index is 12 (Raphael Mwalyosi), the median being 5.

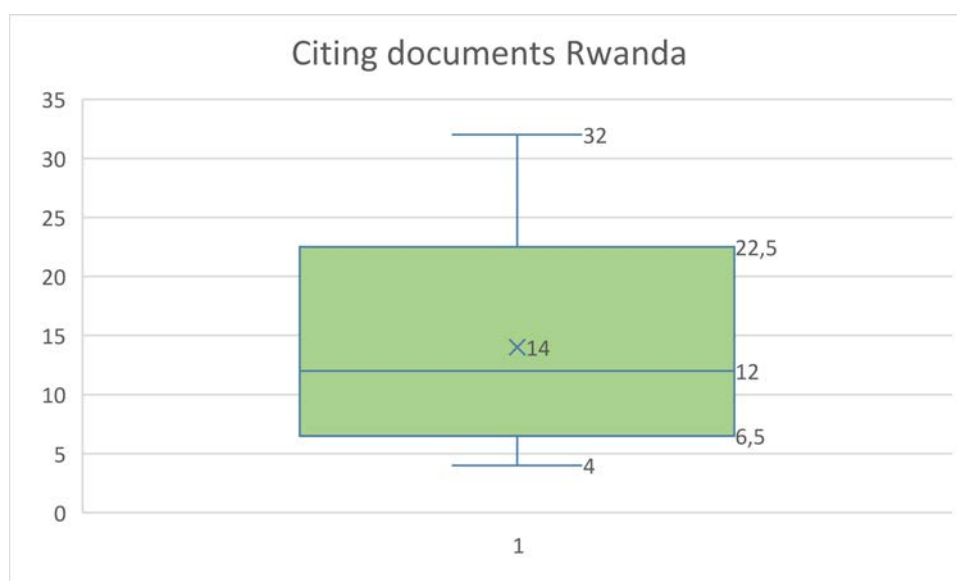
Rwanda

Out of a total of 10 alumni, 5 are listed in Scopus (2 woman and 3 men).

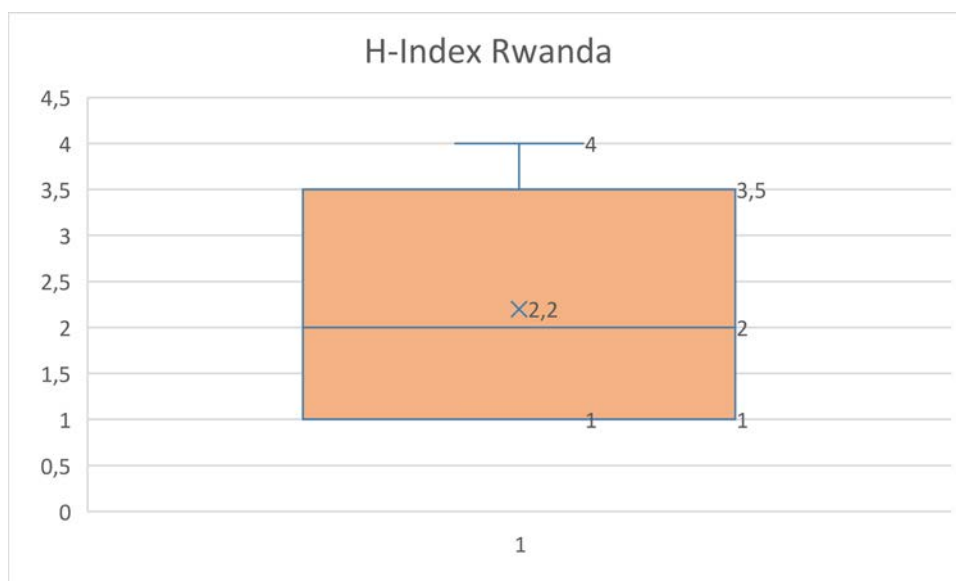
Total Number of Alumni	10	Highest number of publications	5	Number of female alumni listed in Scopus	2
Number of matches in Scopus	5	Highest number of citing documents	32	Number of male alumni listed in Scopus	3
Percentage	50%	Highest h-index	4	Percentage of females listed out of total nr alumni listed	40%



The alumni listed in Scopus have authored between 2 and 5 publications, the highest number being 5 (Marcellin Rutegwa).



The highest number of citing documents is 32 (Marcellin Rutegwa), the median being around 12.



The highest H-index is 4 (Marcellin Rutegwa), while the median amounts to 2.

Interpretation of findings

The above analysis depicts that in the three countries of investigation (except Ethiopia), plus Tanzania and Rwanda, around 50 percent of the alumni are listed in the prestigious database Scopus, which proves that their publications are perceived and cited within the international scientific community. It has to be noted that the publication activity of alumni is in reality much bigger, since Scopus does not reference many local and regional journals, which may however be of significance at local and regional level.

As for gender distribution, female representation in Scopus is lower than male in all countries. However, in most countries the percentage of female alumni listed in Scopus is considerably high and proves the positive impact of the programme on female participation in research and science.

A case apart is Ethiopia. The percentage of alumni listed in Scopus is lower than that of the other countries (26.7%) as is the total number of publications and citing documents. At the level of gender distribution, only one female alumna is listed in Scopus. The reasons for these different publication patterns in Ethiopia might have to do with the more recent establishment of the AEEM programme with regard to its predecessors.

ANNEX 6

SUMMARIES OF RECOMMENDATIONS FROM ANONYMOUS QUESTIONNAIRES

In the following, we have collected the recommendations for improvement retrieved from the anonymous questionnaires distributed during the following alumni workshops:

- 1) Nairobi, May 2nd 2023, Kampala, May 5th, 2023, Kampala, May 6th, 2023
- 2) Addis Abeba, June 28th, 2023

The below tables include only suggestions, not the whole statements as retrieved from the questionnaires. Topically similar suggestions have been summarised. In these cases, numbers in the column on the right side indicate the number of alumni stating the same or a similar topic. Illegible statements could not be considered. It is worth noting that many alumni highlighted their satisfaction with the course (with or without adding suggestions for improvements) and their gratefulness towards the organisers.

1) Nairobi, May 2nd 2023

Kampala, May 5th, 2023 / Kampala, May 6th, 2023

Question 5: Do you have any suggestions on how the programme could be improved to better prepare graduates for their jobs?

Topic	Number of mentions
More time for research. Six months not sufficient	3
Course extension to 24 months	
Additional time may be needed for the tropical module in Africa	2
Students should be encouraged to publish their research in peer reviewed journals	
Practical time for limnology and limnochemistry module should be increased	
Introduce an optional session for students on mental health awareness	
Add an aspect on work – life balance	
Course on project management and leadership	3
Include course on policy development and leadership	
Include a course on governance and management	
Train participants on self/entrepreneurial skills	
Research being carried out should focus on developmental emerging issues.	
Eliminate repeated units in different institutions	
Liaise with relevant organisations locally and internationally for internships or voluntary work.	
Course on remote sensing and GIS	
More field-based courses	
Support to more students to take up the course	
Inclusion of Environmental Impact Assessment Training, practical components and GIS training	
All the module coordinators are just from one institution. It is important to include more institutions	
The management of the course in Africa be broadened.	
Incorporate lecturers from Africa into the program	
Near the end of the course work, students normally have an idea on which project they will undertake. The students should thus be allowed to choose a few course works that will help them undertake their project (e.g. bioinformatics).	
More funding to allow more participants	
If extended to African universities, these should be facilitated with field and laboratory equipment	
Refresher courses in limnology	
Continuation of invitation of those eminent professors in the limnology background	
Increase funding towards research and development after graduation	
Students should carry out research from their home countries with supervision from alumni where possible	
Address new challenges in water resources like pollutants. Need to expose the students to up to date equipment or assessment approaches for emerging issues.	
The course should regularly be reviewed to reflect the trending issues such as climate change and green technology.	
In some countries (Uganda) the curriculum has been reviewed and there is need to harmonize.	

Question 7: What are your suggestions to improve AQUAHUB or any other form of alumni network/professional association to make it meaningful and attractive?

Topic	Number of mentions
Introduce a subscription button on the site where interested members can get notification posts on email. Email notification can easily alert members on new posts.	
This meeting was a good start. Nothing beats physical meetings and sharing of experiences.	
Refresher courses can also work to bring people together	3
Addition of other thematic clusters to accommodate a wide range of research being done in the aquatic aquaculture field.	
Regular meetings (virtual/physical) for alumni network.	2
Having a website (AQUAHUB) alone is not enough in attracting a wide range of alumni. Consider other social media platforms with structured membership to help network.	
Motivate members to share their ideas and opportunities through the platform	
Encourage physical workshops geared towards making the AQUAHUB meaningful	
Having joint team to write proposals for projects	
Include a component on research projects	
Establishment of an Aquahub fund with special focus on collaborative research	
Have annual Aquahub meetings	
Each country to register it as a professional body	2
Create a discussion section where people get to discuss different topics and ideas	
Form a management team involving several institutions.	
Communications twice a month rather than once.	
Make the registration process easier.	
Shorten the process of posting in the platform	
Develop an app that can be installed on the phone for easy access	
The structure could be improved to have an active executive board or a scientific panel that would actively direct the activities	
Come together in form of refresher courses, then also collaborate for big research	
Sending out communications whenever they are there.	
Advertise widely	
Get representatives in all countries	
Expand on the administration of the platform – the south partners can nominate a person from each institution to contribute to uploading the information.	
Need to come up with a journal to publish original research works	
Having networking sessions at least once with the alumni, either virtual or in person	
Circulate newsletters to members as a reminder of ongoing activities.	

Question 8: Do you have any suggestions for improvement?

Topic	Number of mentions
Introduce phd programme	
Refresher courses	2
More finance should be provided to support more upcoming researchers.	
Egerton's laboratory to be more equipped.	
Legislation course at BOKU should come first	
Support EAWA as a regional professional body for limnologists in Eastern Africa. Such support will promote regional cooperation of the alumni	
Aquahub could establish various grants including research and mobility to Austrian and local host institutions	
Increase time to 24 months	
Increase allowance to reflect cost of living	
Reception in the Netherlands to be improved as many students get lost in the airport.	
Extend the training to all countries with water bodies.	
Meeting at least once a year by e.g. organising conferenced to present papers or research	
Forming collaborations in research	
Exchanging or also forming journal to publish work.	
Strengthen alumni association further by having members registered	
Incorporate a course on water and wastewater treatment to cater for alumni working in the water supply sector.	

2) Addis Abeba, June 28th, 2023

Question 6: Do you have any suggestions on how the programme could be improved to better prepare graduates for their jobs?

Topic	Number of mentions
Programme wonderful, but please connect the graduates with the area to employ directly; there should be job opportunities at each coordinating organisation	
Link with other universities (e.g. Vienna)	
More time allocated for the programme	
Improve facilities at Bahir Dar	
Link with institutions who provide employment opportunities	
Students should work on the real problems of their country	
Upgrade infrastructure	
More practical aspects in the programme	4
Start PhD programme	6
Scale up, not just freshwater, for instance also public health aspects, waste water for irrigation	
Each and every activity in the programme should be as per the proposal of the project	
Remove redundancies	
Open opportunities for graduates with water bottling companies (in addition to universities and research institutes)	
Internships	
Practical session from AAU and BDU should be improved	
Allocate enough budget for research	
Expand network with higher education institutes and organisations involved in aquatic science	
Provide advanced software skills (e.g. R, SPSS, EIS)	2
Mobilise resources for research projects	

Question 9: What are your suggestions to improve AQUAHUB and/or EFASA

Topic	Number of mentions
Participate young graduates and the experienced ecologists share their experience through workshops, different websites	
Publication of papers related with water and fisheries	
Use indigenous knowledge	
It would be good if the [EFASA] conference is highly emphasized on prioritizing environmental solutions	
Ensuring the presence of reliable financial source for EFASA	
Both: must create their own financing source (their own project, consultancy work)	
Increase the visibility of both via advertisement	
Creating and developing practical training demonstration	
It would be nice if the registration platform is friendly for AQUAHUB	
Carry out annual conference in collaboration	
Add more members	
Better organized	
It should be multi-disciplinary, practical oriented, goal-oriented, incorporate aquafarmers	
Training opportunity that may help how to advance research skills	
Both of them should focus on research publications, project coordination among alumni members, funding opportunities and capacity building issues	
They have to work on incorporating all responsible bodies and create common understanding throughout the country region	
Integrate them together and help members to integrate for research	
Apart from serving as an information exchange platform, it would be much more impactful if the programme is engaging itself to solve some of the key challengers in the field of aquatic ecosystem by helping the alumni with fund	
Participation from other countries in EFASA	
EFASA: experience sharing with other countries once a year	
EFASA: recruit website manager	
EFASA: regularly update website	
EFASA: free/transparent posting of relevant papers, news	
EFASA: do some work in high schools to share knowledge with young students	
more conferences in which new members could be better informed of the cause of EFASA	
AQUAHUB: link to open source & fund, papers, scholarships, timely release of posts	
AQUAHUB: more funding opportunity news	
AQUAHUB: provide alerting emails	

**Question 10: Do you have any suggestions for improvement of the AEEM Programme?
Would you like to share any other comments with us?**

Topic	Number of mentions
Upgrade to PhD programme	11
Support search for employment	
Increase practical training section in quantity and quality (more modern lab equipment, field facilities)	3
Improve practical sessions at AAU and BDU	
Lab facilities should be provided to all institutions equally	
The research topics the students address should align with the thematic problem of the infrastructure (focus on the challenges of society)	2
Research for MSc thesis can be done in collaboration with governmental institutes and NGO, it helps to increase its future importance to government and NGO sector, and increases the influence of the programme	
Increase stipends	4
Provide adequate research funding	2
Provide publication incentives to motivate members/students to publish their research	
Duration should be 2 years	
Increase participation of female students	
Courses should be updated	
Focus on developing students/staffs which are already working in the area	
Remove redundancies	
Extend stay at NFALRC, Sebeta, as too much is given in a short time	
Instead of taking exams, I believe students should do or work on a project which can show the knowledge they attained	
All institutions should give attention to the management and students should accomplish according to schedule	
Advisable to share experiences on a quarterly basis regarding the performance of the program within the university	
The curriculum is nice – full implementation is essential	
Increase international collaboration	

ANNEX 7

LIST OF INTERVIEWS AND WORKSHOPS

Interviews

Interview Nr.	Name	Function/Position	Institution	Date of Interview	Location
Austria					
1	Sabine Wanzenböck	Former IPGL Staff	Formerly Austrian Academy of Science (ÖAW)	07.11.2022	online
2	Elisabeth Förg	Former ADA Education Desk	Formerly ADA	07.11.2022	online
3 – Group Interview	Gerold Winkler	IPGL Manager	BOKU	09.11.2022	BOKU
3	Nina Haslinger	IPGL Office	BOKU	09.11.2022	BOKU
4	Gerhard Imhof	Former IPGL Manager	Formerly Austrian Academy of Science (ÖAW)	18.11.2022	ÖFSE
5	Carsten Schulz	Vice rector for Academic Affairs	BOKU	01.12.2022	BOKU
6	Thomas Guggenberger	Head of Quality Management Unit	BOKU	07.12.2022	BOKU
7 – Group Interview	Stefan Schmutz	Professor, IPGL Lecturer	BOKU	07.12.2022	BOKU
7	Herwig Waidbacher	Prof. em., Former IPGL lecturer	BOKU	07.12.2022	BOKU
8	Günter Langergraber	Head of Department of Water, Atmosphere and Environment	BOKU	12.12.2022	BOKU
9 – Group Interview	Thomas Hein	Professor; IPGL lecturer	BOKU	14.12.2022	BOKU
9	Wolfram Graf	Ass. Professor, IPGL lecturer	BOKU	14.12.2022	BOKU
10	Hans Schattauer	Formerly ADA staff	Formerly ADA	15.12.2022	online
11	Gertraud Findl	Formerly ADA education desk	Formerly ADA	15.12.2022	Coffee shop Vienna

12	Reinhold Gruber	Desk for Economy and Education	Ministry for European and Foreign Affairs	10.01.2023	online
13 – Group Interview	Margarita Calderon-Peter	Head of International Relations	BOKU	10.01.2023	online
13	Barbara Hinterstoisser	Formerly vice rector for academic affairs	BOKU	10.01.2023	online
13	Nicole Fohringer	Staff of International Relations	BOKU	10.01.2023	online
14 – Group Interview	Matthias Themel	ADA education desk	ADA	19.01.2023	ADA
14	Erwin Künzi	ADA Head of Division for Themes and Quality	ADA	19.01.2023	ADA
15	Andreas Melcher	Deputy Head of the Institute for Development Research, IPGL lecturer	BOKU	15.02.2023	BOKU
16 – Group Interview	Andreas Obrecht	Head of Sector Research for Development Cooperation	Austria's Agency for Education and Internationalisation (OeAD)	16.02.2023	OeAD
16	Julia Lichtkoppler-Moser	Programme Officer APPEAR	Austria's Agency for Education and Internationalisation (OeAD)	16.02.2023	OeAD
Netherlands					
17 – Group Interview	Gretchen Gettel	Lecturer	IHE Delft	29.11.2022	Online
17	Ken Irvine	Chair Department of Water Resources and Ecosystems	IHE Delft	29.11.2022	Online

Kenya					
18	Nzulu Kitaka	LWM Kenya coordinator	EGU	30.4.2023	EGU
19 – Group Interview	Steve Omondi	Dean faculty of science	EGU	01.05.2023	EGU
19	Moses N. Gichuki	outgoing Dean faculty of science	EGU	01.05.2023	EGU
20	Alex Kahi	Former Deputy Vice Chancellor in charge of Academic Affairs	EGU	01.05.2023	EGU
21	Jonathan Munguti	Head Aquaculture Division at KMFRI	KMFRI	02.05.2023	UKC, Nairobi
22	Christian Felber	Austrian Ambassador Kenya	Austrian Embassy Kenya	03.05.2023	Austrian Embassy Kenya
23	Jacob Iteba	Fishery officer	County Governments Busia	14.05.2023	Busia County, several places, visits and expert talks
24	Chrisphine Nyamweya	Researcher at KMFRI	KMFRI – Kisumu, Kenya Marine & Fisheries Research Institute	15.05.2023	KMFRI Kisumu
25 – Group Interview	Kevin Obiero	Researcher	KMFRI – Kisumu, Kenya Marine & Fisheries Research Institute	15.05.2023	KMFRI Sangoro
25	Cecilia Obiero	Researcher	KMFRI – Kisumu, Kenya Marine & Fisheries Research Institute	15.05.2023	KMFRI Sangoro
26	Nicholas Outa	Entrepreneur in Aquaculture and regenerative Agriculture	NGO DalAqua	15.05.2023	Kisumu
27	Joel Onyango	Head of the Climate Resilient Economies (CRE) programme	ACTS – African Centre for Technology Studies	18.05.2023	Nairobi

Uganda					
28	Lillian Idrakua	Commissioner	Ministry of Water & Environment, Directorate of Water Resource Management	04.05.2023	Ministry of Water & Environment Entebbe
29	Richard Kyambadde	Principle Wetlands Officer	Ministry of Water & Environment	04.05.2023	Ministry of Water & Environment Kampala
30	Roswitha Kremser	Head ADA Coordination Office Kampala	ADA Coordination Office Kampala	05.05.2023	ADA Coordination Office Kampala
31 – Group Interview	Peter Akoll and colleagues	Researchers at Makerere University	Makerere University	08.05.2023	Makerere University Kampala
32	Denis Byamukama	Director Environment and Water Resources	WSS Services (U) Ltd	08.05.2023	WSS Services (U) Ltd Kampala
33 – Group Interview	Grace Saanyu; Mary Kaggwa; Santa Maria Asio; and colleagues	Researchers at Kyambogo University	Kyambogo University	09.05.2023	Kyambogo University Kampala
34	Rose Kaggwa	Director	NWSC – National Water and Sewerage Corporation	09.05.2023	NWSC Kampala
35 – Group Interview	Winnie Nkalubo	Director	NaFIRRI – National Fisheries Resources Research Institute, Jinja	10.05.2023	NAFIRI Jinja
35	William Okello	Researcher	NaFIRRI – National Fisheries Resources Research Institute, Jinja	10.05.2023	NAFIRI Jinja
36	Gladys Nalunkuma	Buvuma District environment Officer	Buvuma District	12.05.2023	Buvuma Island

Ethiopia					
37 – Group Interview	Getachew Benebere	AEEM and Aquahub coordinator at BDU	BDU	26.06.2023	BDU
37	Goraw Goshu	Assistant Professor	BDU, Blue Nile Water Institute	26.06.2023	BDU
38	Ayalew Wondie	Director	Lake Tana and other water bodies protection and development agency	26.06.2023	Lake Tana and other water bodies protection and development agency
39	Erkie Asmare	Officer	Bahir Dar Fisheries and Other Aquatic Life Research Center	27.06.2023	Bahir Dar Fisheries and Other Aquatic Life Research Center
40	Tesfaye Shiferaw Bogale Tesfaye	Vice President Research & Extension	BDU	27.06.2023	BDU
41 – Group Interview	Tadesse Fetahi	AEEM Coordinator; Director for Research	AAU	29.06.2023	AAU
41	Beza Afework	Head of Zoology Department	AAU	29.06.2023	AAU
41	Abebe Getahun	Professor, former Head of Zoology Department	AAU	29.06.2023	AAU
41	Seyoum Mengistou	Professor, Postgraduate program coordinator, Aquatic Science, Fisheries and Aquaculture (ASFA)	AAU	29.06.2023	AAU
42	Doris Gebru-Zeilemayr	Head ADA Coordination Office	ADA Coordination Office Ethiopia	29.06.2023	ADA Coordination Office
43	Mekuria Argaw	Director	Horn of Africa Regional Environment Center, AAU	29.06.2023	AAU

44	Adamneh Dagne	Senior scientist and Aquaculture	EIAR – Ethiopian Institute for Agricultural Research	30.06.2023	EIAR – Ethiopian Institute for Agricultural Research
45	Feleke Zewge	Director	World bank project "African Centre of Excellence in Water Management" at Addis Ababa University	01.07.2023	AAU
46 – Group Interview	Brehan Mohammed	President	EFASA – Ethiopia Fisheries & Aquatic Science Association	03.07.2023	AAU
46	Mekonnen Hailu	Vice-President	EFASA – Ethiopia Fisheries & Aquatic Science Association	03.07.2023	AAU
47	Yohannes Zerihun	Director of Ecohydrology Coordination Office	Ministry of Water, Irrigation & Electricity	03.07.2023	AAU
48	Fasil Dawit	Head, Fisheries and Aquaculture Development Desk	Ministry of Agriculture	03.07.2023	AAU

Workshops

Nr	WS target group	Date	Location
Austria			
	LWM students 2022/23	09.11.2022	BOKU
	IPGL Alumni inscribed in phd at BOKU	10.11.2022	BOKU
Kenya			
	IPGL Alumni present at the Africa UniNet General Assembly, EGU	19.10.2022	EGU
	LWM Staff at EGU	20.10.2022	EGU
	IPGL Alumni Kenya	02.05.2023	United Kenya Club
Uganda			
	IPGL Alumni Uganda	05.05.2023	Kolping Kampala
	IPGL Alumni Uganda	06.05.2023	Kolping Kampala
Ethiopia			
	IPGL Alumni Ethiopia, AEEM alumni and students	28.06.2023	Desalegn Hotel

ANNEX 8

LIST OF CONSULTED DOCUMENTS

1. Project Proposals and Reports

All Project Proposals for OEZA Projekt 612-00 from 1998–2018

All Project Reports of OEZA Projekt 612-00 from 1998–2022

as provided by the contractor

2. Evaluation Reports (in chronological order)

Siebel, W. / Etienne, A. / Zauner, A. (2001): Evaluation. International Post-Graduate Training Course in Limnology (IPGL). Vienna, ÖFSE.

Hartung, H. (2008): Feasibility Study. Regional Programme on Water Education and Research in East Africa. Stuttgart, FAKT.

Day, J. (2014): Review of the joint Limnology and Wetlands Management Programme offered at Egerton University, Kenya; the Universität für Bodenkultur, Wien, Austria; UNESCO-IHE Institute for Water Education, the Netherlands. University of Cape Town.

Roemling, C. / Silvestrini, S. (2018): Final Report. Evaluation of CAPAQUA II (2015–2018). Saarbrücken, CEVAL.

Syspons (2021): Assessment of AQUAHUB – Education and Research Hub for the Sustainable Management of Aquatic Ecosystems in Eastern Africa. Final Report. Berlin, Syspons.

3. Literature on earlier IPGL project phases (in chronological order)

Clement, Werner / Gruber, Karl Heinz / Krobath, Hermann / Zapotocky, Klaus (1975): Die Österreichische Bildungshilfe. Erfahrungen und Zukunftskonzeptionen. Untersuchungsphase I. Leitlinien wirksamer Bildungshilfe. Wien, ÖFSE. ÖFSE Signatur: 07580

ÖFSE (1976): Deskriptiver Vorbericht der Evaluierung der Hochschulkurse, Berufsausbildungs- und Beamtenfortbildungskurse für Absolventen aus Entwicklungsländern. Wien. ÖFSE Signatur: 08605

Hufnagel, F. / Krobath, H. / Langthaler, R. (1978): Bildungshilfe für Entwicklungsländer in Österreich. Eine Untersuchung der aus staatlichen Mitteln geförderten Ausbildungs- und Betreuungsaktionen. Wien, ÖFSE.

Imhof, G. (1987): Limnologie in Ostafrika. Auswertung bisheriger und Erkundung neuer Möglichkeiten der Entwicklungszusammenarbeit Österreichs mit ostafrikanischen Ländern auf dem Gebiet der Limnologie. Bericht einer Erkundung im Sudan, Kenia, Uganda, Tansania und Burundi im Juli/August 1986. Im Auftrag des Bundesministeriums für Auswärtige Angelegenheiten. Wien.

Imhof, G. (1991): Der Internationale Postgraduierten Lehrgang in Limnologie „UNESCO-Kurs“. Sonderdruck aus: 10 Jahre Institut für Limnologie. Abt. Mondsee. 1981–1991. Österreichische Akademie der Wissenschaften.

ÖFSE (1996): Verbleib und Reintegration von StipendiatInnen der Österreichischen Entwicklungszusammenarbeit. Ergebnisse der AbsolventInnenstudie. ÖFSE Edition 5. Wien.