



AIMS

African Institute for
Mathematical Sciences

NEXT EINSTEIN INITIATIVE

AIMS IDRC-DFID End-of-Program External Evaluation

Terms of Reference

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1. Introduction

1.1. Background

The African Institute for Mathematical Sciences, established in 2003 in Cape Town is a Pan African Network of Centres of Excellence that offer high quality post graduate education, research innovation and public engagement/outreach programs for the advancement of STEM in Africa's transformation journey. AIMS brings together Africa's most brilliant young talent in a highly interactive, culturally diverse learning environment where discovery, creativity and testing of mathematical solutions to development are the norm. AIMS harnesses expertise and experience from the World's top lecturers and Research fellows to further improve the learning experience for students.

Building on the success of its first centre in Cape Town, AIMS launched the Next Einstein Initiative (NEI) in 2008 to build a critical mass of scientific and technical talent in Africa, capable of driving economical, scientific and social advancement across the continent. The AIMS model was rolled out throughout Africa and five new centres were established in Senegal (2011), Ghana (2012), Cameroon (2013) Tanzania (2014), and Rwanda (2016).

1.2. Donor Support

In 2010, the Government of Canada contributed CAD 20 million to AIMS NEI, to be administered by the International Development Research Centre (IDRC).

In 2012, the UK Department for International Development committed £18.2 million to complement and build on Canada's contribution to AIMS NEI, also to be administered by IDRC. In addition, IDRC provided a further contribution of CAD 2 million as match funding to build the research capacity of AIMS and enhance the post graduate opportunities for AIMS-NEI graduates. The funding from the Government of Canada, DFID and IDRC will end in June 2017. The MasterCard Foundation committed USD 25 million in 2014, which includes two pilots: a Co-op Master's and a teacher training program.

1.3. Context for External Evaluation

AIMS is commissioning the IDRC-DFID End-of-Program external evaluation to be focused on the following critical components:

- a) The AIMS Academic program
- b) The AIMS Industry Initiative
- c) The contribution of AIMS Alumni to Africa's development challenges

The rationale for selection of these program components is described below.

- a) **The AIMS Academic Program** is a World Class Post Graduate training which is at the Centre of AIMS-NEI's core business and is crucial as a strategic pillar in contributing to the AIMS-NEI mission. It is therefore important that AIMS-NEI seeks an external, independent judgement on the quality, rigour and consistency of the Master's program across the AIMS Pan-African Network. AIMS seeks to provide the same quality of education in all of its centres which are located in varying political, socio-economic and academic environments. The evaluation of the AIMS Academic Program will enable continuous improvement, learning and measurement of progress towards the AIMS-NEI mission. Furthermore, the results of assessing this component will enable AIMS to pursue the accreditation of the program across the continent. The evaluation of the academic program is an opportunity for AIMS to benchmark its Master's program against other comparable programs in Africa. The end-of-program evaluation will also provide an opportunity to identify and address any discrepancies in the delivery and management of the

Master's program at centres. It will also ensure a high level of quality and consistency across the network and ascertain that recommendations are built in the next phases of the AIMS program.

- b) The AIMS Industry Initiative** focuses on building students' soft skills for employability and on facilitating their transition to meaningful employment in Industry (Private, public, civil society, academia and entrepreneurship). This initiative is a critical component of the DFID-IDRC program funding that is ending in June 2017 and aims at enhancing post graduate opportunities for AIMS-NEI graduates through activities such as the establishment of partnerships between AIMS and businesses, industry research linkages and practical field research projects. The extent to which AIMS Graduates have been positioned in industry for research and gainful employment giving them the opportunity to test, apply and discover practical solutions will inform AIMS, DFID and IDRC on the adequacy and plausibility of the program. Findings of the evaluation will enable AIMS-NEI to identify how to improve or scale up the design, structure, implementation and overall effectiveness of the AIMS Industry Initiative in enabling AIMS graduates to contribute to Africa's socio-economic development.
- c) AIMS' alumni unique contribution to Africa's development challenges** aims at obtaining an independent judgement on how AIMS Alumni are contributing towards solutions for Africa's development challenges and as future leaders to further the economic, political and educational advancement of the African continent in line with AIMS-NEI overall objective and the main objective of the programs funded by the Government of Canada, DFID and IDRC.

1.4. Use of evaluation findings

The primary user of the evaluation findings is AIMS-NEI. AIMS-NEI will use the results of the evaluation in order to:

- I. Have evidence based information on the relevance, efficiency, effectiveness, sustainability and impact of the Academic program and the AIMS Industry Initiative.
- II. Identify areas of improvement for the Academic program and the AIMS industry initiative.
- III. Determine best practices the AIMS Centres of Excellence are applying in the roll out of the Academic program and that should be replicated in the new Centres, reinforced in existent Centres and shared with Academic partners for their application.
- IV. Analyse findings to determine the extent to which AIMS Alumni have made unique contributions to specific challenges or are currently positioned to make these unique contributions.
- V. Determine if there are additional factors that need to be taken into account during the post graduate training and the Industry Initiative to enable AIMS Alumni make unique contributions to solving Africa's challenges.
- VI. Disseminate the results of the evaluation to AIMS-NEI stakeholders to further promote learning and accountability.

DFID, IDRC, the Government of Canada, host governments and other donors are secondary users of the evaluation. They are expected to use the results of the evaluation for accountability and learning purposes.

Specifically, the academic component of this evaluation will validate the accreditation of the AIMS Master's Program by host countries and determine what measures must be undertaken in order for AIMS to offer a unified Master's degree across the network that is recognised both locally and internationally.

The evaluation will be mainly informed by the following:

- I. The 2015 AIMS Mid-term Evaluation, which reviewed AIMS-NEI at large including academics, research, public engagement and organisational development.

- II. The 2013 IDRC/DFID project baseline
- III. The 2010 external evaluation of AIMS South Africa
- IV. The 2009 External Evaluation of the AIMS South Africa Academic Program.
- V. The Alumni update web application, which is an annual survey aimed at updating alumni career information and inquiring on the role of AIMS in fostering their career development.

2. Evaluation Scope

The AIMS IDRC-DFID End-of-Program Evaluation aims at assessing the Academic Program and the AIMS Industry Initiative using the five OECD DAC criteria - relevance, effectiveness, efficiency, sustainability and impact – and value for money (VFM) approach through DFID’s “3 E’s” framework, which includes measuring the degree to which economy, efficiency, effectiveness have been maximized, considering the level of equity and analysing cost-effectiveness.

More specifically, the evaluation will focus on the period of the funding provided by the Government of Canada, DFID and IDRC. It will build on findings from the Alumni update, Mid-term evaluation and Academic Program Evaluation. Also, the evaluation will determine the extent to which the recommendation from the Mid Term Evaluation have been applied to improve the AIMS-NEI programs, especially the three program components to be evaluated - the Academic program, the AIMS Industry Initiative and the AIMS Alumni contribution to Africa’s development challenges. The end-of-program evaluation will include review of programs at the 6 AIMS Centres of Excellence.

3. Evaluation Objectives and Guiding Questions

The objectives and key guiding questions of the AIMS IDRC-DFID End-of-Program evaluation are described in the below tables under the following three evaluation components:

- a. AIMS Academic Program
- b. AIMS Industry Initiative
- c. AIMS Alumni contribution to Africa’s development challenges

AIMS ACADEMIC PROGRAM component	
Objectives	
1.	Determine the relevance, efficiency and the effectiveness, sustainability, impact and value for money of the academic program
2.	Assess the quality and rigour of the AIMS Master’s Program overall and consistency of delivery at the different Centres

3. Evaluate the AIMS Master’s Program in comparison to other similar programs in Africa and globally with respect to, among others:
 - 3.1. Quality
 - 3.2. Program design and curriculum content
 - 3.3. Quality of teaching staff
 - 3.4. Pedagogy (teaching methods), learning and research infrastructure and facilities (teaching and learning support systems)
 - 3.5. Continuous improvements and innovations in program design, curriculum content and program delivery
 - 3.6. Gender sensitivity or responsiveness of the Masters’ program
 - 3.7. Relevance of program content to development needs and challenges
 - 3.8. Verify progress towards achieving AIMS’ strategic objective of providing world-class post-graduate training by reviewing the evaluation results against the program indicators for this Strategic Objective as identified in the AIMS results-based Monitoring and Evaluation framework

Guiding questions

Program design

1. Is the AIMS Academic Program consistent with the mission and vision of AIMS NEI?
2. Are the five formative areas of an AIMS graduate¹ clear, appropriate and in alignment with the requirements and expectations of the AIMS Academic Program?

Admission Requirements across all centres

1. Are admission requirements consistent across all centres and in line with international standards?
2. Are admission requirements appropriately aligned with the formative areas of an AIMS graduate and with the objectives of the Master’s Program?
3. Are admission requirements responsive to gender equality and inclusion as well as ethnic diversity?

Curriculum across all centres

1. Does the curriculum reflect current and leading topics from the mathematical sciences that are relevant to the mission of AIMS?
2. What evidence is there of any significant innovation, uniqueness, or adaptability in the content and/or delivery of the program relative to other programs?
3. How sustainable are the above innovations in the long-term?
4. Are the modes of delivery appropriate and effective for achieving the five formative areas of an AIMS graduate and the objectives of the Master’s Program?
5. Are the AIMS outreach objectives integrated in the academic programme curriculum?

Teaching and Assessment across all centres

1. Are teaching and learning methods (pedagogy) in line with modern practices and standards?
2. Are the methods used to assess student achievement of the five formative areas, the program’s objectives, and degree level expectations appropriate and effective?

¹ Mathematical, Computing, and Scientific Knowledge and Skills; Communications; Research and Analytical Skills; Attitudes and Values; and Innovation and Entrepreneurship.

<p>Resources at all centres</p> <ol style="list-style-type: none"> 1. Assess each centre use of existing human, physical and financial resources in delivering its master’s program according to OECD five DAC criteria and value for money approach. 2. Is each centre use of human, physical and financial resources relevant, efficient, effective, sustainable and impactful? 3. Are human, physical and financial resources acquired at the appropriate quality and at the right price? 4. Can the same or equivalent human, physical and financial resources be obtained for less money? 5. Would using cheaper different human, physical and financial resources risk the effectiveness and sustainability of the program? 6. How much impact is achieved in proportion to the human, physical and financial resources invested? 7. What is the level of adequacy and effectiveness of the available academic services to support the program (e.g. library, tutoring, information technology, etc.)? 8. Provide an assessment of the quality of lecturer, tutor and scientific visitor recruitment process across all centres.
<p>Quality Indicators</p> <ol style="list-style-type: none"> 1. Assess student performance and achievement - at the network and single centre level. 2. Assess lecturer and tutor qualifications, research scholarly record, and class size - at the network and single centre level. 3. Assess student recruitment, application and selection process, time-to-completion, final academic achievement, graduation rates, academic awards (including bursaries and scholarships), and student reports on teaching - at the network and single centre level. 4. Assess rates of graduation, employment within six months after graduation, and employment five years after graduation, and further post-graduate study - at the network and single centre level.
<p>Additional Criteria</p> <ol style="list-style-type: none"> 1. Is student progress both monitored and managed in relation to the program’s identified length and requirements? 2. What is the quality and availability of student supervision?

AIMS INDUSTRY INITIATIVE component
Objectives
1. Determine the relevance, efficiency, effectiveness, sustainability, impact and value for money of the AIMS Industry Initiative.
2. Provide information on the performance of AIMS Alumni in the workplace from the employer’s perspective.
3. Provide evidence on the specific contribution and effectiveness of the Student Development Officers to the AIMS Industry Initiative performance. This will look at different perspectives including how SDOs engage the students, engage with industry, follow up on students and Alumni in industry, time allocated to this process given the number of students, the duration and intensity of the Academic program, tools used to monitor progress.
4. Determine the extent to which the AIMS Industry Initiative is responsive to the needs, interests, passion and ambitions of the AIMS Alumni.
5. Review the design and implementation approach of the AIMS Industry Initiative to determine the extent to which these favour post AIMS employment prospects and industry research linkages for AIMS Alumni.
6. Establish the extent to which the AIMS Industry Initiative is aligned to and contributes to the host governments’ economic development objectives, including academia and private sector.
Guiding questions
1. Has the AIMS Industry Initiative met its objectives as outlined in the DFID-IDRC grant agreement?

2. Is the AIMS Industry Initiative facilitating transition to industry?
3. Does the concept and method contribute to students' smooth transition and permanent integration in the workplace?
4. Does the initiative contribute to close the labour market's skills versus demand gap?
5. Is the initiative centred on Alumni and Students' talents, skills, passions and ambitions?
6. Has the initiative enhanced opportunities for AIMS graduates within the private sector?
7. Assess initiatives taken to enhance the quality of the program and the associated learning and teaching environment, including the AIMS Industry Initiative (network wide) and the Pilot Co-Op Master's Program at AIMS Senegal.
8. Assess the initiative use of existing human, physical and financial resources in delivering its master's program according to OECD five DAC criteria and value for money approach. 8.1. Is the initiative use of human, physical and financial resources relevant, efficient, effective, sustainable and impactful? 8.2. Are human, physical and financial resources acquired at the appropriate quality and at the right price? 8.3. Can the same or equivalent human, physical and financial resources be obtained for less money? 8.4. Would using cheaper different human, physical and financial resources risk the effectiveness and sustainability of the initiative? 8.5. Can the same results be achieved while saving on how activities are managed? 8.6. Would savings to how the program is managed risk reducing effectiveness, sustainability and incurring other costs? 8.7. How much impact is achieved in proportion to the human, physical and financial resources invested?

AIMS ALUMNI CONTRIBUTION TO AFRICA'S DEVELOPMENT CHALLENGES
Objectives
1. Assess whether there is early evidence that the programs in support of AIMS funded by the Government of Canada, DFID, and IDRC for advance training in applied mathematics to top African students has enabled them to pursue high quality post graduate studies to eventually contribute as future leaders to the further economic, political and educational advancement of the African continent.
2. Identify how many AIMS Alumni are currently positioned (in gainful employment, as entrepreneurs or in further academia) in areas / sectors that make a contribution in addressing Africa's development challenges.
Guiding questions
1. Are AIMS alumni contributing to Africa's development challenges widely recognized in the international arena?
2. Is AIMS determinant in building alumni professional and research skills that allow them to contribute in solving Africa's development challenges?
3. What distinguishes AIMS alumni from alumni with comparable degrees from other institutions in the shaping of Africa's development?

4. Evaluation Methodology

AIMS invites interested applicants who can demonstrate innovation and creativity in their proposed approach and methodology to undertake the AIMS IDRC-DFID end-of-program evaluation with a strong academic component, as described above. The Consultant(s) is expected to use a mixed method approach (e.g. quantitative, qualitative, and participatory), tools, and adequate desk

research to allow the triangulation of information and to ensure impartiality. There should be an extensive review of all relevant documents, existing literature and a representative sample of key stakeholders should be consulted.

In consultation with AIMS, the Consultant(s) is expected to prioritize and propose specific questions to guide the evaluation referring to those in Section two above as a guide.

It is expected that the AIMS IDRC-DFID end-of-program evaluation focuses on the key strategic objectives and outcomes of the AIMS academic program and AIMS Industry Initiative using the five OECD DAC criteria of relevance, efficiency, effectiveness, sustainability and impact. It should also focus on AIMS alumni contribution to Africa’s development challenges to determine the extent to which the three components drive AIMS-NEI progress towards the higher-level mission and vision of AIMS.

5. Evaluation Phases

Below is an outline on the phases of the assignment and key actions to be included in each phase. However, the Consultant(s) is expected to provide a detailed methodology and implementation-plan with timelines to be agreed up on with the AIMS – NEI team for their final approval.²

Evaluation Phase	Task/Output	Timeframe
A. Inception	Desk review of existing documents, including relevant policies, plans, strategies, previous evaluations, M&E data and information, progress and donor reports, lecturer and tutor databases, curriculum, admission criteria etc.	3 weeks
	Consultation with key internal stakeholders	
	Drafting of Inception Report, including the evaluation matrix. Sign off will be done by AIMS-NEI	
	Finalisation of logistics and schedules for field missions	
B. Data collection	Visits to AIMS South Africa, AIMS Senegal, AIMS Cameroon, AIMS Ghana, AIMS Tanzania, AIMS Rwanda and the Secretariat	3 -5 weeks
	Each field visit to last 3 – 5 days maximum and include: <ol style="list-style-type: none"> 1. Introductory meeting with AIMS Centre Management and selected staff members 2. Interviews or focus groups with key stakeholders, including students, tutors, lecturers, Student Development Officers, academic partners, government partners, and employers 3. Review of relevant documents 4. Consultation with key external stakeholders 	
	Submission of AIMS Centre and Secretariat Visit Reports (Aide memoire) (seven)	
C. Reporting	Debriefing session with AIMS NEI	2 weeks

² Prior to the inception phase all relevant documentation will be provided to the successful candidate.

	Submission of first draft evaluation report and review by AIMS NEI	
	Incorporation of feedback and revision of the report	
	Submission of the final evaluation report	
	Presentation to AIMS Management Team on evaluation findings, recommendations and utilization	
	Production of evaluation summary reports	
D. Evaluation Learning Workshop	Interactive workshop with AIMS academic and program team to share evaluation findings and recommendations	3 days
	Facilitated group discussions to consider the implications of AIMS IDRC-DFID end-of-program evaluation	
	Development of a plan of action based on findings and recommendations	

6. Evaluation Deliverables

- a. **Inception Report** - Expands on the proposed objective, scope, approach, methodology, and key questions for the evaluation.
- b. **AIMS Centre & Secretariat Visit Reports** - Brief report outlining key findings from field missions to the six AIMS centres and the Secretariat (Aide-Memoire).
- c. **Final Evaluation Report** - Pulls together the findings and recommendations emerging from the desk review, stakeholder consultation and field missions. Maximum of 30 pages including a two-page Executive Summary.
- d. **Most significant change stories** - Provide at least 10 Most Significant Change stories of AIMS Alumni that will be used by AIMS to demonstrate the impact of its model.
- e. **Interactive Workshop** - Share the evaluation findings and recommendations with the AIMS academic and program team.

7. Evaluation Period

The evaluation will be conducted over a two month period, with the Inception Phase to begin on April 3rd, 2017, data collection to be completed by June 5th, 2017, and the Reporting Phase to be concluded by July 5th, 2017. The Evaluation Learning Workshop will be scheduled before the end of July, 2017.

8. Application Process and Selection Criteria

A team of external consultants identified through a transparent selection process will conduct the evaluation to ensure independence and credibility of the findings. It is recommended that the team be comprised of at least three members with an appropriate balance of expertise and experience. The team leader must have extensive experience in conducting evaluations of complex programs as well as excellent analytical, team management, and communication skills (oral and written). She/he should be fluent in English and French. Team members must have sound skills and relevant experience in: undertaking evaluations of academic programs, post-graduate education, mathematical sciences, and international development, as well as on-the-ground experience living and working in Africa. Ideally, the evaluation team will have a good understanding of both

Anglophone and Francophone higher education systems in Africa. A member of the team should be a specialist in mathematical sciences (a subject-matter specialist).

Additionally, applicants should submit the following and consider the indicated weight (percentages) as selection criteria:

1. Expression of interest, curricula vitae of the consultant or key team members and three recent professional references : 30 %
2. Technical proposal with proposed methodology, reflecting evaluation phases and deliverables : 30 %
3. Financial proposal including a detailed breakdown of the costs : 15 %
4. Two samples of relevant evaluations done : 25 %

9. Application Procedure

All interested and qualified applicants are invited to forward a letter of interest, CVs of all team members, proposal, and two samples of relevant evaluations to mel@nexteinstein.org with the subject line “AIMS IDRC-DFID End-of-Program External Evaluation.”

Application Deadline: 5 PM EST on March 15th, 2017.