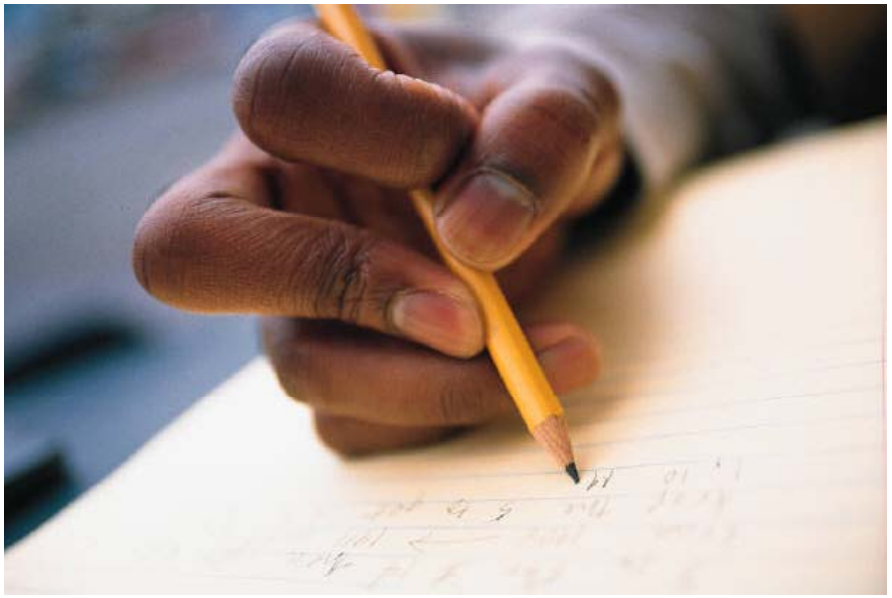
How to write a scientific proposal: Responding to competitive calls



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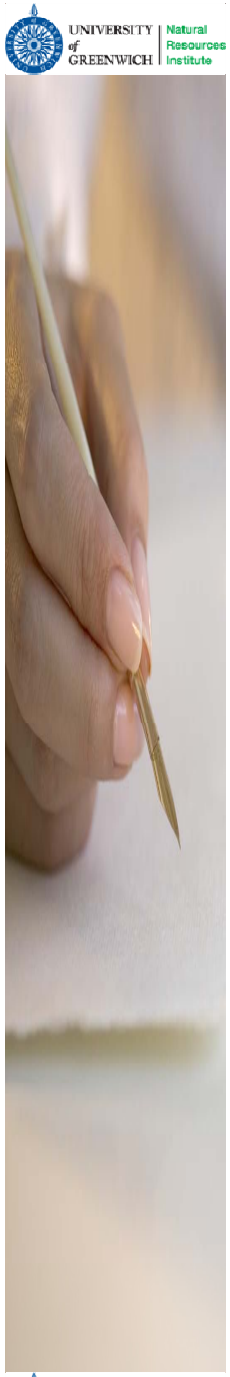
Why write proposals?

- Expected by employers - Deans and Chairs tend to favor grant-getters. Absolutely essential for NGOs
- Important indicator of external approval of your activities
- May benefit the department financially through overheads
- Brings money in to do the things you want to do
- Gives you independence in terms of attending meetings
- Fund equipment and laboratory facilities
- Fund post-graduate students
- Carry out research activities
- Collaborate with other scientists
- Raise your academic profile, prestige
- Increase number of scientific publications

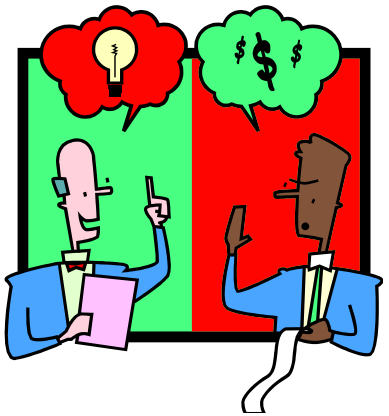


What is a proposal?

A proposal is a request for financial assistance to implement a project. Funding is sought, in whole or in part, from government funding agencies, charitable foundations, businesses, individuals

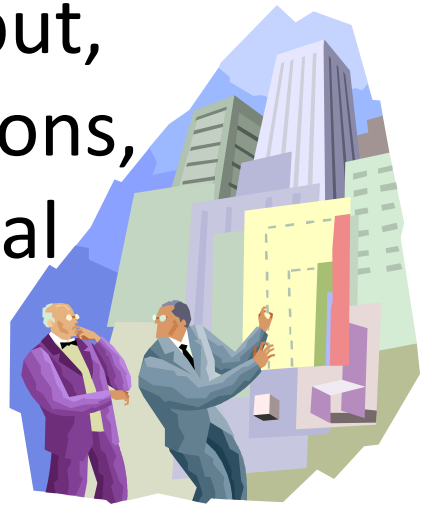
What is a proposal?

Proposal writing is a skill that can be learned and requires considerable knowledge in many disciplines. If you do not have proposal writing skills, your organization will not obtain the funding required to carry out research and development projects.



What is a proposal?

Elements of effective proposal writing include: content development, demonstrating scientific, economic, and social benefits, satisfying program criteria, addressing funding agency requirements, proper formatting/language, demonstrating the sustainability of the project's output, monitoring and evaluation provisions, budgeting, administrative/ financial capacity/experience



What is a proposal?

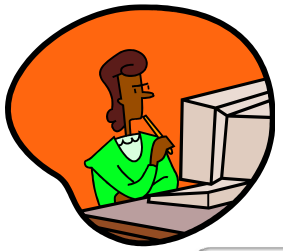
It also involves the proper referencing of other documentation and citations – how your proposal fits in with previous work.

You are trying to sell your ideas, justifying why your ideas are good ones and convincing the donor you can deliver what you promise.

What is a proposal?

Your proposal should demonstrate that your project will:

- Provide scientific/economic/social benefit
- Have a high probability of success
- Address a strategic priority – relevance to donor
- Be consistent with research and development strategies. theoretical vs. applied research
- Demonstrate need for financial assistance
- Be economically viable, budget management
- Have stakeholder support



Before you write a proposal

Idea development, start with specific or general problems, knowledge gaps, real-world problems, multidisciplinary ideas

Find out about funding opportunities

Is research call generally appropriate? Can your research ideas by adapted to fit?

Read the call document in detail. Do you still think your ideas can be made to fit?

Are you eligible to apply?

What is the submission deadline? Is there enough time?

Partners required? If not already identified, contact prospective partners. Identify project leader.

Draft up basic project concept, and share with partners

Assign proposal writing tasks and deadlines.

Before you write a proposal

- Proposals should be well researched prior to submission. Proposals are intended to communicate exactly what you want to accomplish, the problem to be addressed, the resources required, and when the activities will be performed.
- Your decisions must be based on documented facts. Nearly all successful proposals are based on some preliminary results which demonstrates feasibility and capabilities.
- You must seek out individuals and organizations to determine what you can learn from their experiences.

Why collaborate?

- Sophistication and cost of equipment
- Increasing specialisation
- Sharing knowledge, skills, techniques
- Division of labour
- Alleviation of isolation
- Sustained motivation via interaction
- Greater effectiveness of research
- To gain personal advantage

Why collaborate?

- Become involved in high-quality research which significantly contributes to science
- Foster linkages which expand collaboration
- Develop influence over business or policy

Why do scientists collaborate?

- Improved communication technology
- Increased mobility of scientists
- Policy frameworks
  - EU FP1-7, British Council DelPHE, USAID CRSP, ACIAR, CGIAR, SADC ICART

What is collaboration?

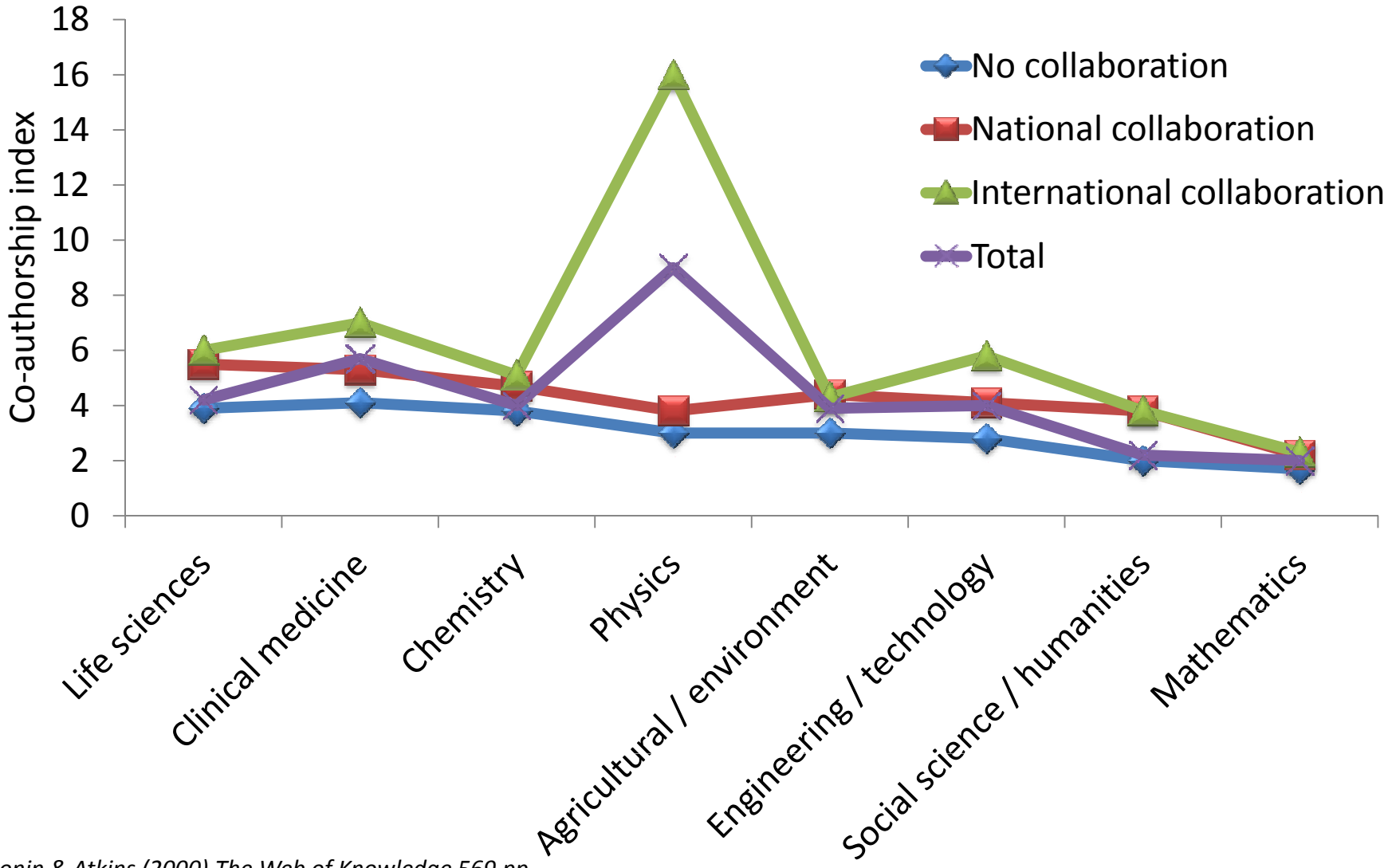
- Collaboration means actively working together to achieve things which could not be done alone.
- The essential elements of collaboration are communication and trust, and effective project management.
- Interactions between individuals lie at the heart of an effective collaboration.
- The success of collaboration can be measured by tangible benefits - increased numbers of publications, the production of working models and a number of intangible benefits.

Measuring collaboration?

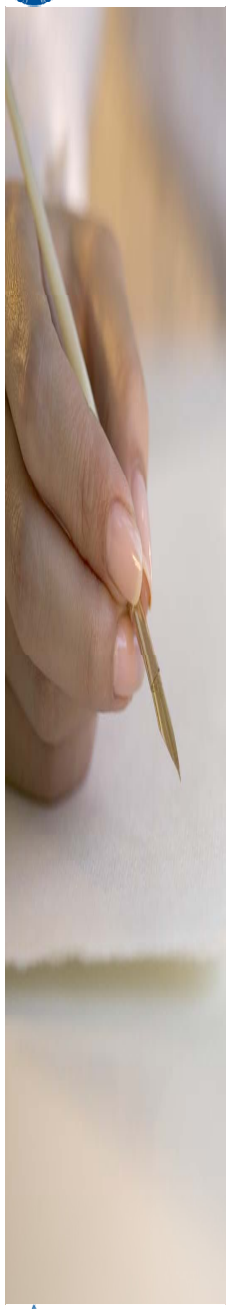
Most often measured by co-authorship of articles in scientific journals

- gives robust biometrics BUT
- authors may publish separately
- authors with more than one affiliation
- authors included for socio-politics

Measuring collaboration



Cronin & Atkins (2000) The Web of Knowledge 569 pp.

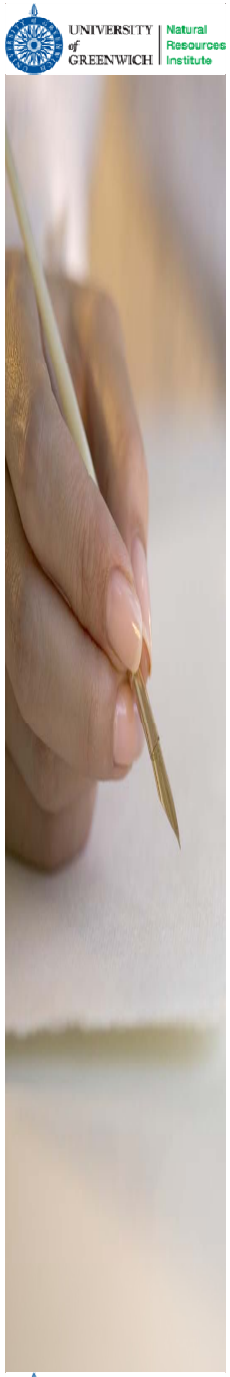


International collaboration

Higher rates of international collaboration in…

* Big Science
* Basic research
* Small countries
* Small research fields

Rate of international collaboration is increasing fast



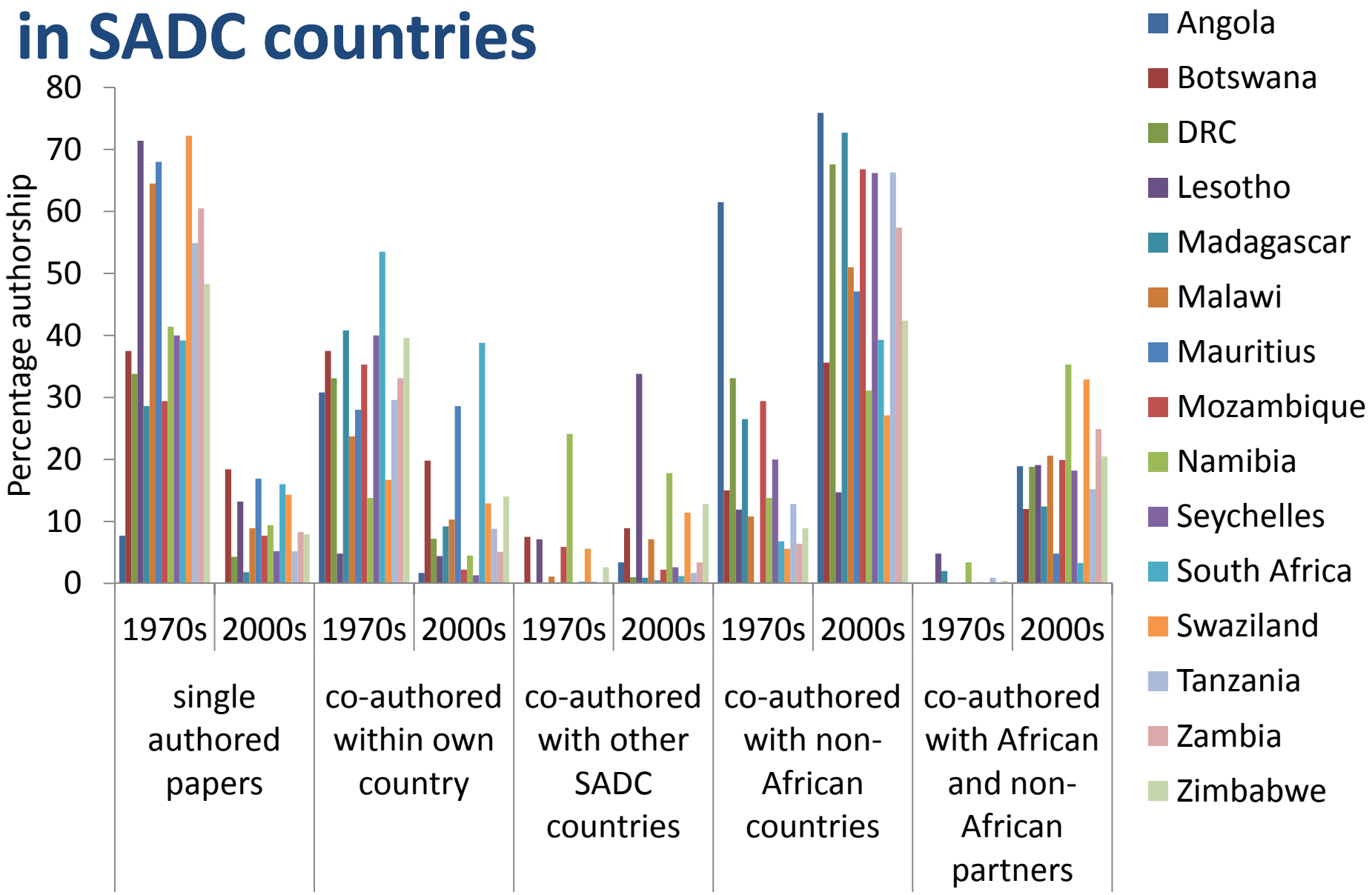
International collaboration

Science publications had and average of…

- 1.83 authors in 1955
- 3.89 authors in 1998
- 4.94 authors in 2009

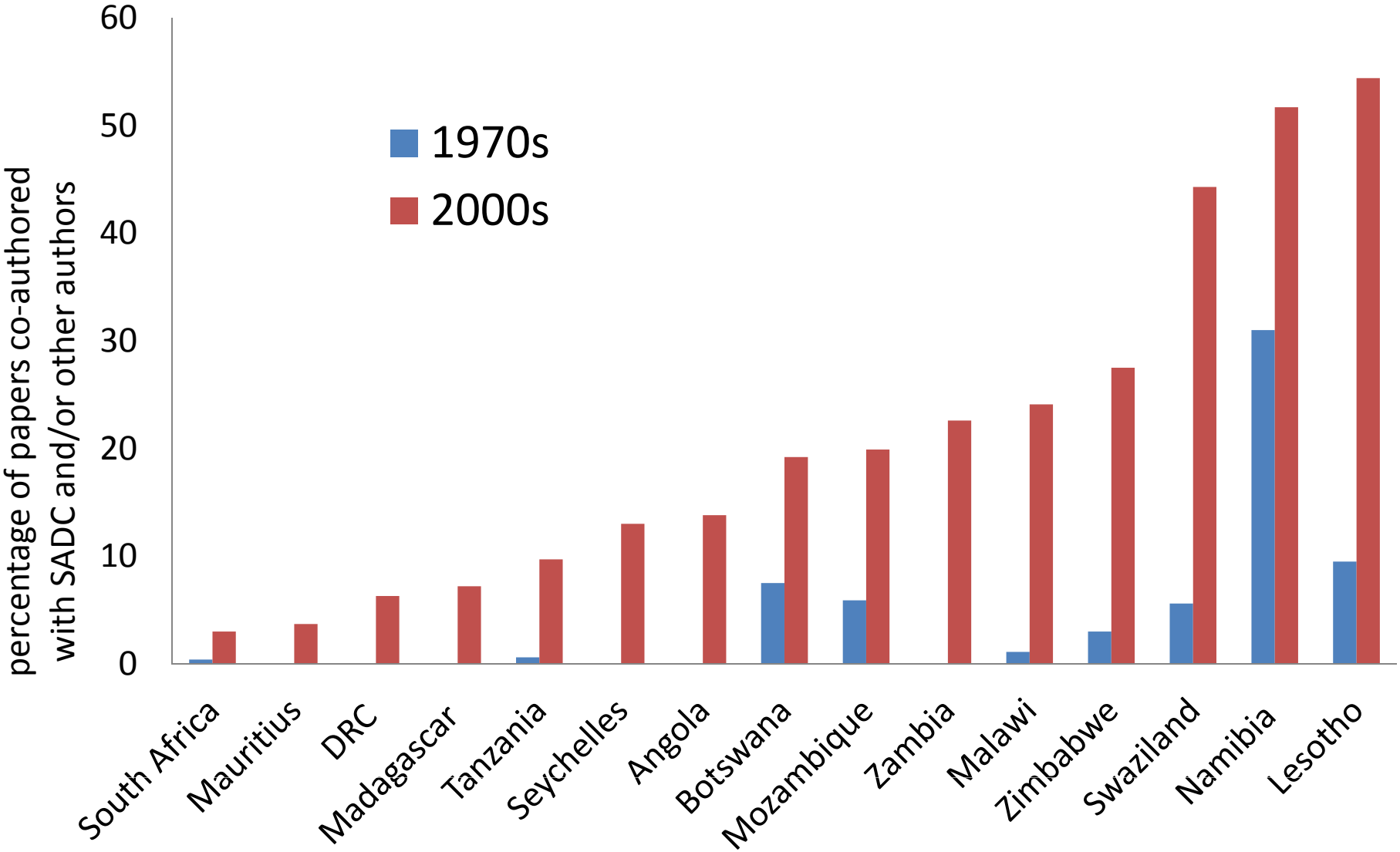
Single author papers have conversely declined - varies by speciality

Authorship trends of journal publications in SADC countries



Boshoff (2010) Scientometrics 84:481-503.

SADC intra-regional collaboration measured by co-authorship of journal publications



Boshoff (2010) Scientometrics 84:481-503.

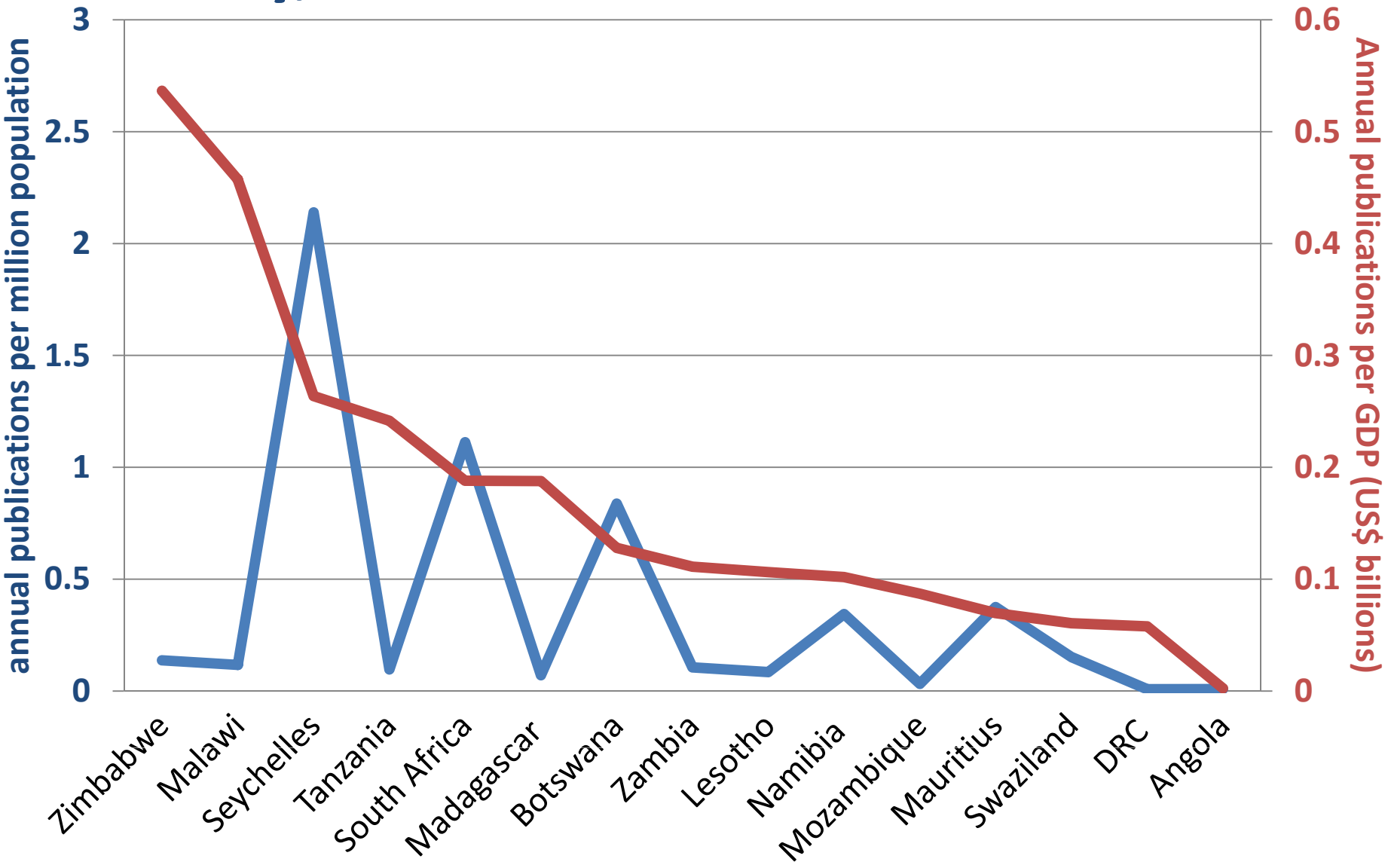
Proportion of SADC country papers that are co-authored with South Africa

Boshoff (2010) Scientometrics 84:481-503.

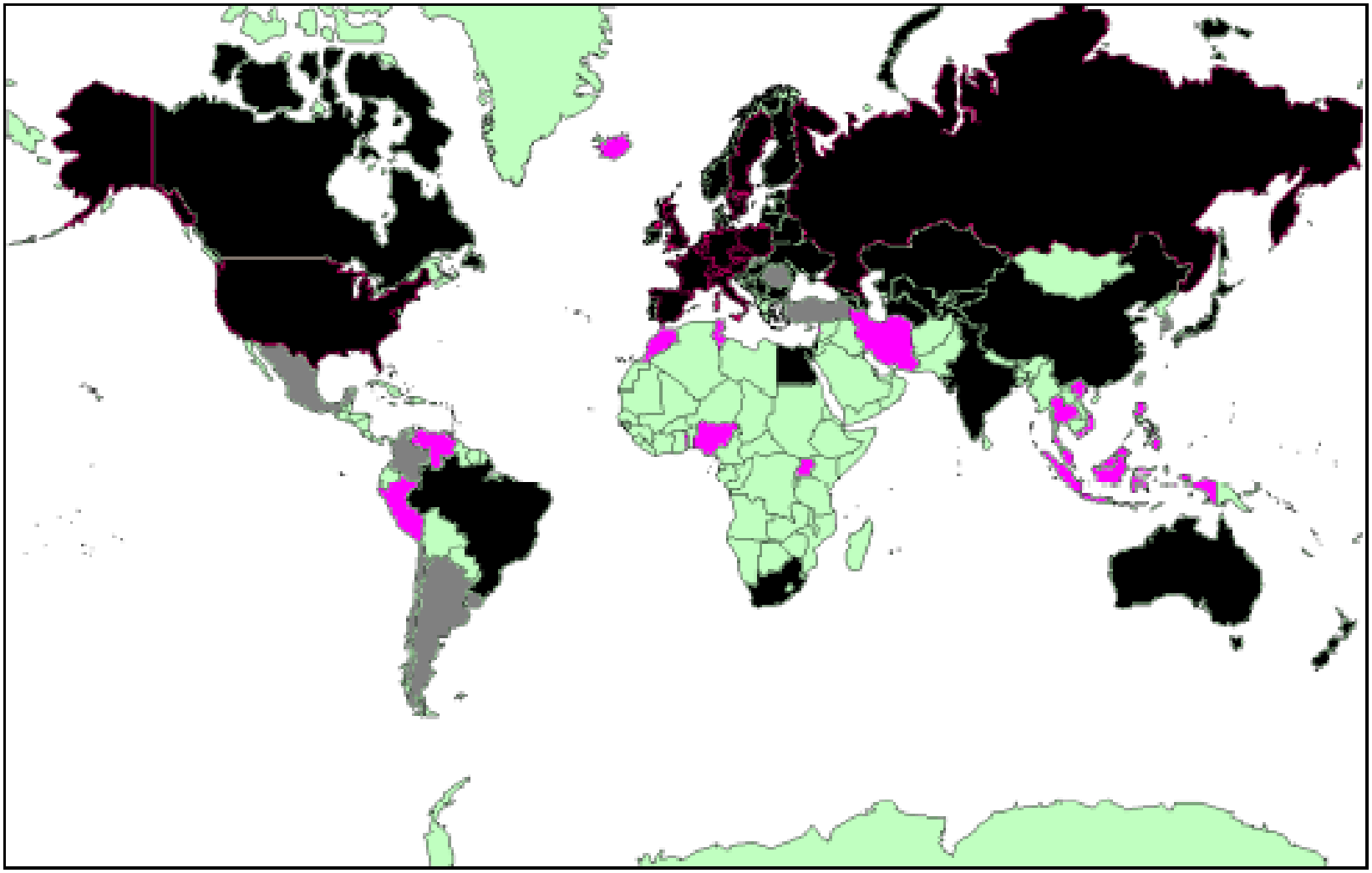
Proportion of South African papers that are co-authored with SADC countries

Boshoff (2010) Scientometrics 84:481-503.

Total number of publications by SADC country, 2007 data



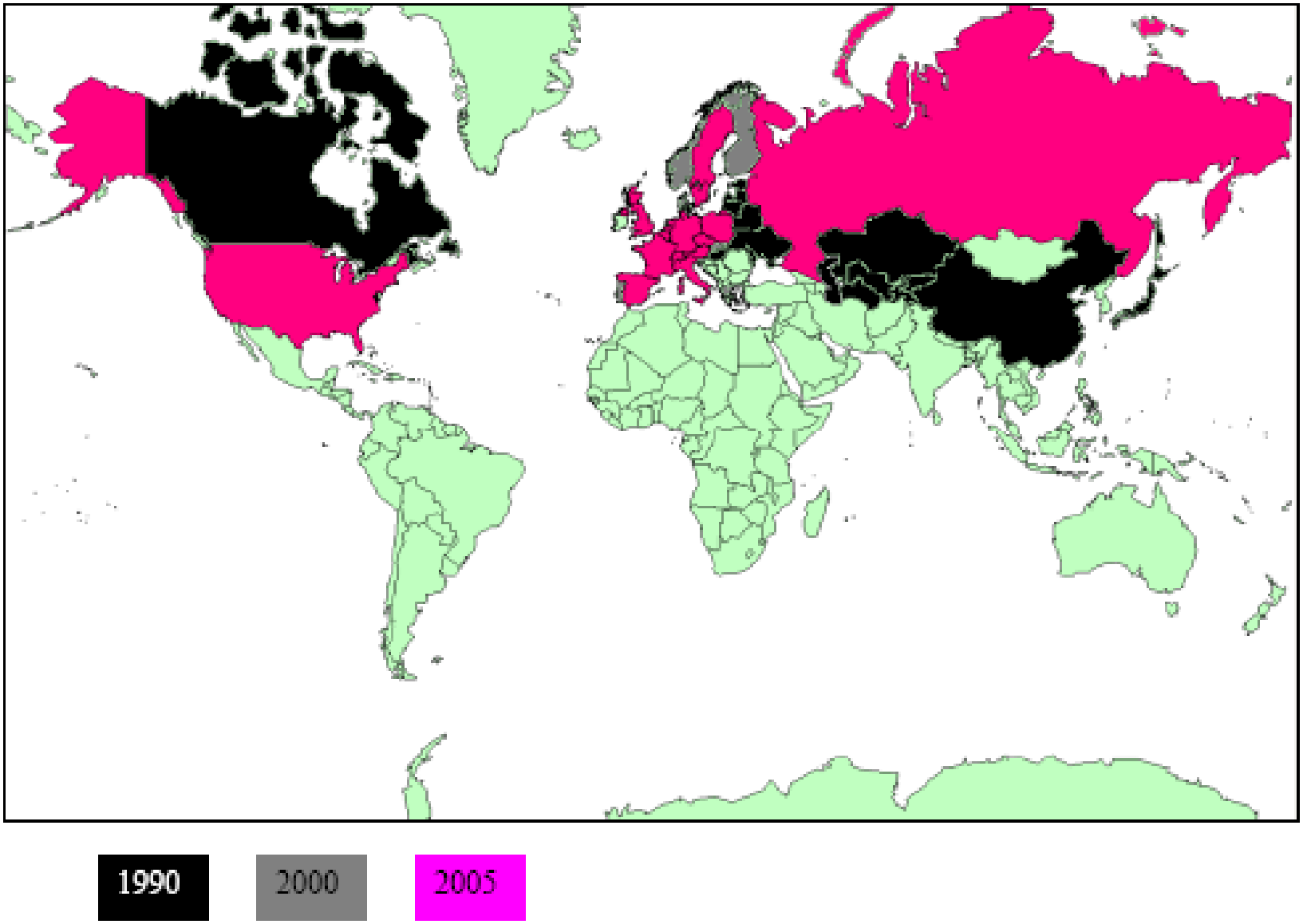
Participation in the core group of international collaborating countries



1990 2000 2005

Leydesdorff & Wagner (2008) Journal of Informetrics 2(4):317-325.

Normalised participation in the group of collaborating countries



Leydesdorff & Wagner (2008) Journal of Informetrics 2(4):317-325.

International collaboration is more

- Highly cited
- Higher quality
- More efficient
- Spreads risk / improves credibility
- Breaks down barriers
- Reduces impact of downsizing and funding cuts

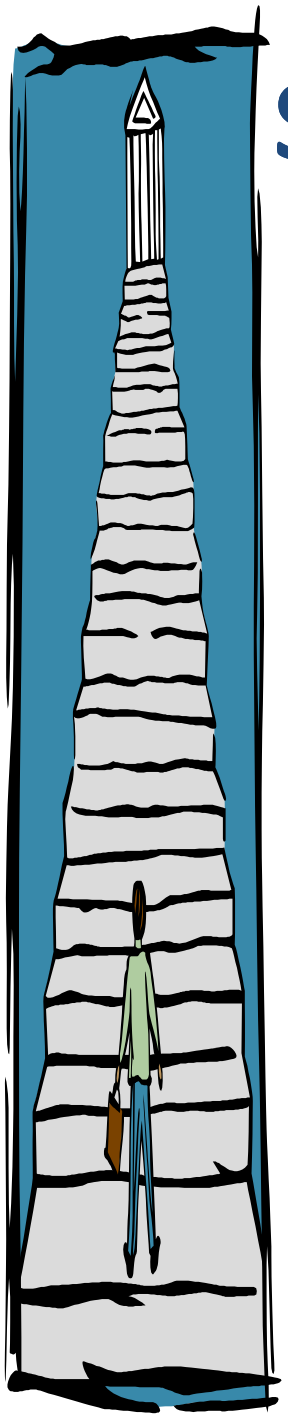
Funding opportunities

Bill and Melinda Gates Foundation
McKnight Foundation
Rockefeller Foundation
Ford Foundation
Wellcome Trust
Leverhulme Trust
Royal Society
Darwin Initiative
World Wildlife Fund
World Wide Fund for Nature

Wikipedia – charitable foundations

Funding opportunities

EU Framework 7 - international cooperation
EuropeAID – ACP S&T
Country programmes:
DFID, British Council (DelPHE), Research Councils UK
Association for Commonwealth Universities – UK
National Science Foundation, USAID – USA
International Foundation for Science – Sweden
International Development Research Centre – Canada
Institute for Research and Development – France
German Research Foundation – Germany
Australian International Agricultural Research Council – AU
Southern African Development Community
African Union, Forum for Agricultural Research in Africa
National African government programmes
Internal institutional competition



Steps to writing a proposal

Work backwards from submission deadline

How long to courier?

How long to gain institutional approval?

Signatures, letters of support…

Copying and binding several copies

Online submission? Not always easy

Add references, table/figure numbering

Work out budget

Edit and review text

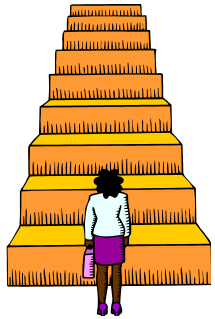
Write text

Write concept, share with partners

Pre-proposal steps…

Steps to writing a proposal

- Total time taken depends greatly on size and complexity of grant. Several weeks to several months are required to prepare large international research grants. Successful submission can take years from time of initial research concept formulation.
- Submission dates and times are normally very firm. Even an hour late can lead to automatic rejection. You can't blame the courier or power failures that prevent online completion.



Content of proposal

- Title, acronym
- Summary
- Background / Justification – well referenced
- Objectives
- Activities – methods, timing, references
- Outputs
- Milestones
- Exit strategy
- Previous experience – CVs, projects, publications
- Project management, monitoring and evaluation
- Budget, realistic numbers, justification, value for money
- Administrative information
- Any number of special sections on cross-cutting themes such as ethics, gender, environmental impact, communities

Title

- Descriptive
- Catchy and Relevant to donor call criteria
- Can it be made into an acronym or other shortened term?

Summary

- This is written last, after the activities, outputs, objectives…
- Usually limited to 1-3 paragraphs, depends on guidelines

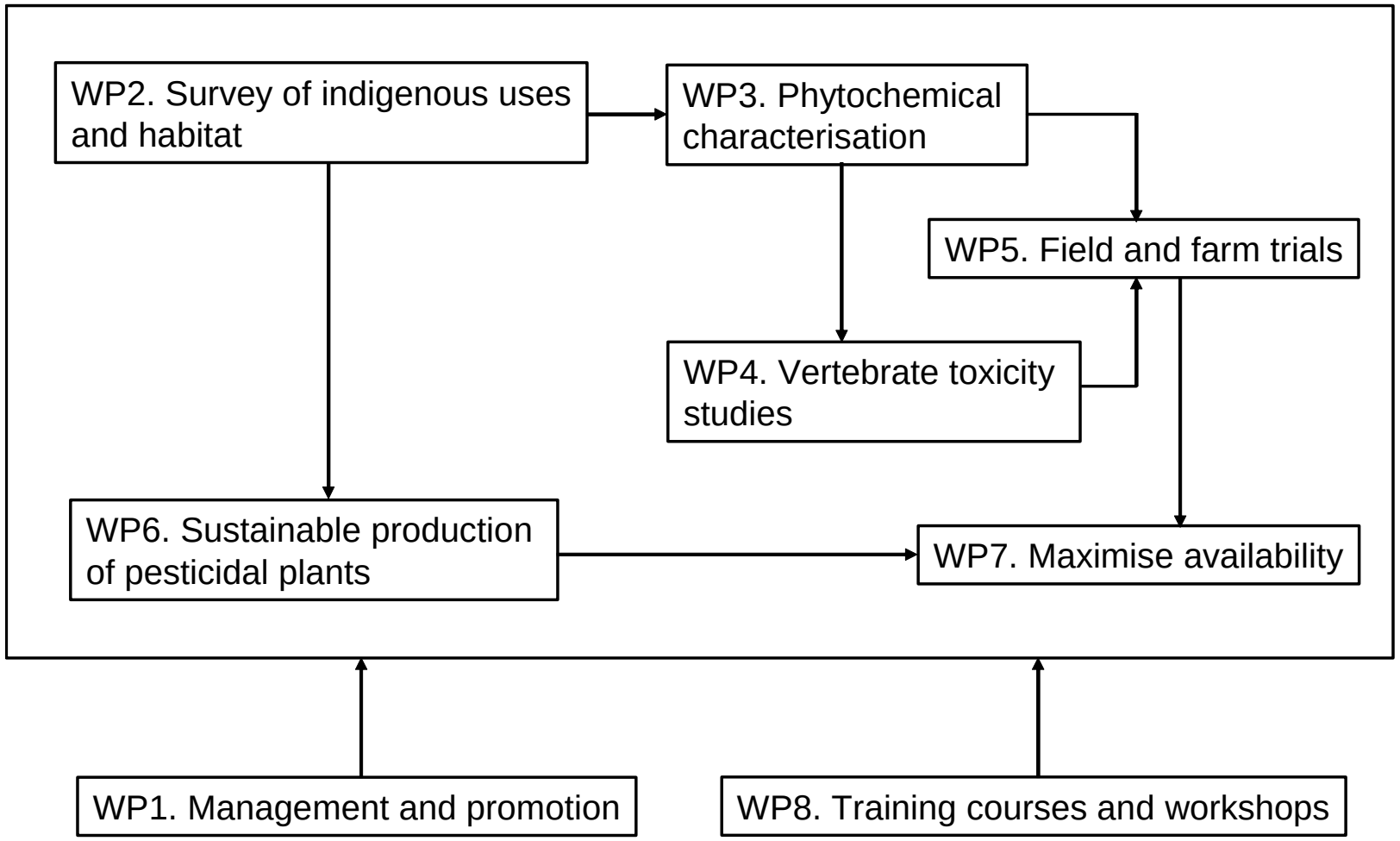
Objectives

- What you propose to do - straight to the point
- Put it in terms of what the call document says
- Use the jargon and wording found in the call document
- Often presented as a list of bullet points or short sentences

Activities

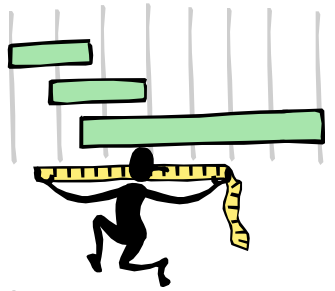
- This is the main part of the document.
- This section is the longest part, usually 14-16 pages, depending on complexity & guidelines
- Activities should be broken down into work packages or subthemes, particularly for large multidisciplinary projects with complex issues
- Detailed methods, often supplemented with outputs, milestones, timelines, labour inputs, partner involvements, how activities relate to each other

Activities


WP2. Survey of indigenous uses and habitat
WP3. Phytochemical characterisation
WP5. Field and farm trials
WP4. Vertebrate toxicity studies
WP6. Sustainable production of pesticidal plants
WP7. Maximise availability
WP1. Management and promotion
WP8. Training courses and workshops

Outputs

- Concrete deliverables – at the end of the process
- Scientific publications, databases, reports, news articles, diagnostic tools, patents, methodologies, meetings, workshops, conferences



Milestones

- Significant events, often decision/evaluation points in the process
- Time delimited progress, completion of certain phases of the research process
- Scheduling – GANTT chart
- They should be specific, measurable, attainable, timely, progressive and significant

GANTT Charts (named after Henry Gantt)

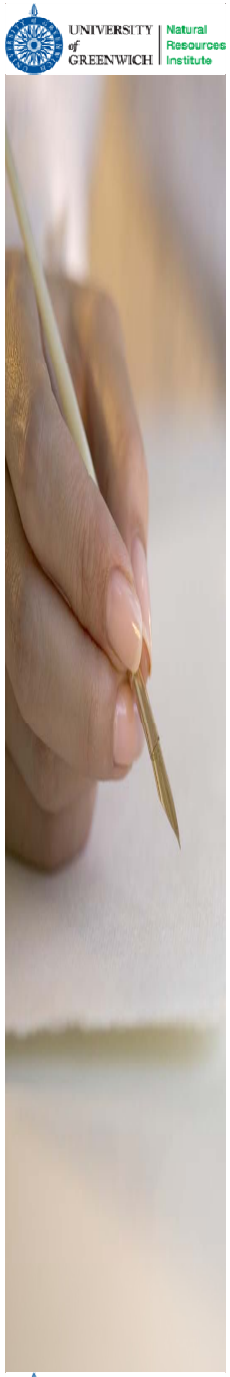
	GANTT CHART	Year:	2011	2012	2012	2012	2012	2013	2013	2013	2013	2014	2014	2014	2014	2015	2015	2015	COUNTRY	STAFF
		Months:	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep		
Objective	Activities	Quarter:	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16		
Obj - 1:	Ecological studies of PCES																			
a(i)	Pesticidal plant abundance survey in wild habitat																		TAN	SB/RM/Res1/FT1/FT2
a(ii)	Harvesting of pesticidal plants from wild habitat																		TAN	Res1/FT1/FT2
a(iii)	Small mammal biodiversity survey in wild habitat																		TAN	Res2/LM/FT1/FT2
a(iv)	Pesticidal plant abundance survey in human-influenced habitat																		TAN	SB/RM/Res1/FT1/FT2
a(v)	Planting pesticidal plants in human-influenced habitat																		TAN	Res1/FT1/FT2/SUB3
a(vi)	Invertebrate biodiversity survey																		TAN	Res1/FT1/FT2/SUB3
a(vii)	Pesticidal plant validation and efficacy trials																		TAN/UK/MAL	PS/SB/LM/SUB2/SUB3
a(vii)	Analysis of small mammal taxonomy																		TAN	Res2/LM
a(viii)	Analysis of invertebrate taxonomy																		TAN	Res1/RM
a(ix)	Analysis of changes in biodiversity/abundance																		TAN/UK	RM/SB
a(x)	Analysis of pesticidal plant bioactivity vs harvesting/planting regime																		UK	PS/SB
b(i)	Field trials to assess trade-offs between NPV PCES and other ES																		TAN	KW/SUB4/DG
b(ii)	Analysis of soil samples from b(i)																		UK	KW
b(iii)	Database analysis of armyworm outbreaks																		UK	KW
b(iv)	Field analysis of distribution of armyworm NPV																		TAN/ZAM/MAL	KW/SUB4/DG
b(v)	Field acceptance trials of armyworm NPV																		TAN/ZAM/MAL	SUB4/DG/KW
b(vi)	Field trials for armyworm NPV productivity assessment																		TAN	DG/SUB4/KW
b(vii)	Processing of harvested NPV from b(vi) in Arusha lab																		TAN	SUB4/DG
b(v)	Value analysis of NPV																		TAN	GO/SUB4/DG
b(vi)	Phenotypic analysis of NPV PCES from b(iv)																		TAN	SUB4/DG
b(vii)	Genetic analysis of NPV PCES from b(iv) RFLP																		UK	KW

Logical frameworks (logframe)

	Intervention logic	**Objectively verifiable indicators of achievement**	**Sources and means of verification**	**Assumptions**
Overall objectives	from call document	milestones	outputs	risks
Specific objective	your objective	milestones	outputs	risks
Expected results	list results/ outcomes	milestones	outputs	risks
Activities	list activities	budget items	budget numbers	risks

Monitoring and evaluation

- Describe how you are going to monitor the project to ensure that it stays on track
- Project Monitoring: How project costs, quality, schedule, and scope will be monitored, controlled, and corrected if necessary
- Best Practices: How you plan to capture and record what you learn from your project so it can be applied in the planning and execution of future projects.
- Accounting: The retention and recording of financial information. Accounting is very important to funding agencies. It must be transparent and accurate.
- Determine the success of your project's end product. There should be emphasis on reporting the effects of the project on the target group (beneficiaries). Often a directive for quarterly and/or annual reports to donor

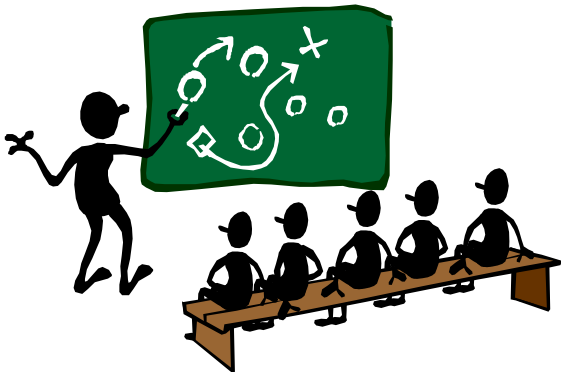


Recycling proposal ideas

- Don’t assume that because a proposal satisfies one funding agency it will satisfy others
- Do not overlook the requirements of programmes which will make smaller contributions
- Read program criteria closely and reflect those criteria throughout your proposal
- Use a proposal checklist to ensure all the required information is included

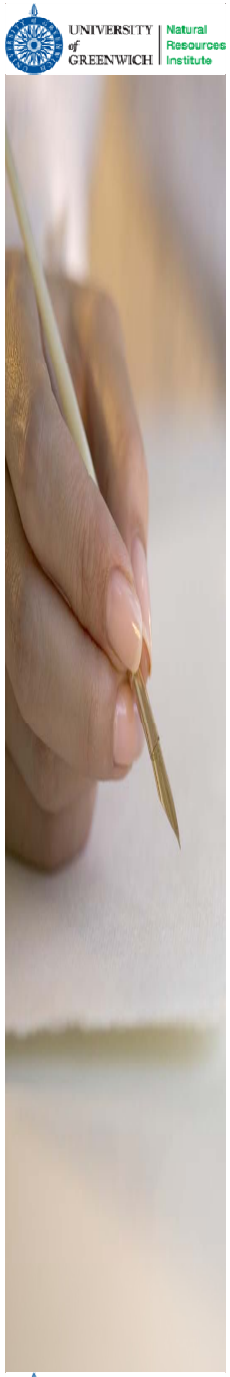
Exit strategy

- Donors want to see you have thought about what happens when the project is over. What will be left behind? What impact will the project have?
- Better facilities and equipment?
- Better trained, more capable staff?
- Better/new technology?
- Changes in farming practice?
- Sustainability in socio-economic / livelihood terms for stakeholders and beneficiaries of the research?
- Concrete changes vs. new knowledge

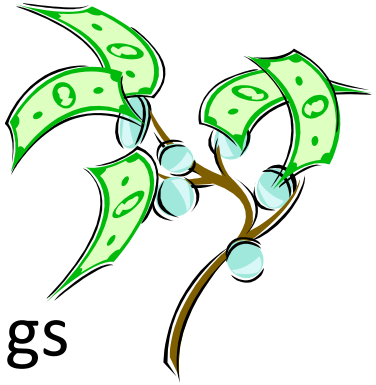


Budgets

- Increasingly donors do not give 100% of the funding required to carry out a research project. They may contribute anywhere from 50% to 95% of the project value. In this case “contributions in kind” or “creative accounting” can fill the gap. Rarely is it necessary to have “real” money to make up the contribution. Ways of dealing with this need to be discussed before proposal submission with your finance/auditing officers.



Budgets



- Some donors do not pay for certain things
- Overheads - can be limited to 5%, 7%, 20%...
- Staff time – particularly existing staff, PIs, students
- Equipment purchases over a certain value, computers, vehicles
- Per diems and exchange rates
- Project advances and pre-financing are dependent on providing interim accounts and financial audits. This can lead to massive delays in cash flow.
- Expenditure can be retrospectively disallowed.

Self-review & Evaluation criteria

- Internal review should be part of institutional approval process before proposal submission. In any event it is important to get other people to read the proposal to ensure clarity of ideas and presentation
- Many donors provide guidelines on how proposals are evaluated. Have colleagues, friends, relatives read your proposal in the context of the published evaluation categories
- Proof reading, formatting and proper use of English are essential. Evaluators will be reading dozens, possibly hundreds, of proposals in a short time. Poor presentation will frustrate the evaluators, they won't read your proposal properly and you won't get the points you need to pass.

What affects success?

- Quality of proposal – attention to detail, formatting, language, page restrictions…. following the rules
- Persuasiveness
- Responsiveness
- Riskiness (peer-review process can be opaque)
- Value for money
- Feasibility in relation to resources
- Reputation / track record of proposer, collaborators, institutions
- Existing facilities, equipment, management experience
- Other support - matching funds; letters of support from stakeholders

What affects success?

- Have a good idea
- Why is it a good idea?
- Sell the idea - show how you will do it
- Convince them you can deliver

EuropeAID proposal template

- Commonly used for proposal calls funded by the European Development Fund…. Including calls under the African Union.

Second AU call to be announced soon….

ACP Science and Technology Programme

An ACP-EU co-operation programme in the field of science and technology

Welcome

... to the new website of the ACP Science and Technology Programme (see About for more information on the programme). We are still under development, but already have more features than the previous site, still available on http://archive.acp-st.eu.

Projects by Themes

- Agriculture and agro-industry
- Energy
- Environmental research activities
- General technologies
- Quality health care
- Sustainable trade
- Transport

Latest News and Views

Intra-ACP academic mobility scheme - Call for Proposals EACEA/35/10

Author: PMU
13-01-2011
The intra-ACP academic mobility scheme promotes cooperation between higher education institutions (HEIs) and supports mobility in Africa, the Caribbean and the Pacific (ACP) regions. The Programme aims to increase access to quality education that will encourage and enable ACP students to...

African Union Research Grant Programme: Open Call 2011

Author: PMU
17-12-2010
The African Union Commission is seeking proposals for research focusing on the following thematic priorities articulated in Africa's Science and Technology Consolidated Plan of Action (CPA) and its Lighthouse Projects: (a) Post-harvest and Agriculture, (b) Renewable and Sustainable...

Joint EDULINK and ACP S&T Stakeholder Conference

Author: PMU
29-11-2010
For three days, 26 to 28 of October 2010, the ACP House in Brussels hosted the Joint Stakeholder Conference of the EDULINK and ACP S&T Programmes, entitled "Promoting the Knowledge Triangle in ACP countries (Education, Research and Innovation)". As you can see from the agenda (...

New Call for Applications - Erasmus Mundus Programme

Author: PMU
05-11-2010
A new Call for Applications for the Erasmus Mundus Programme, Action 2 - Strand 1 - the Mundus ACP Project has been launched on the 1st November 2010 by the University of Porto, the coordinating institution. The main goal is to enhance the cooperation in the area of Higher Education...

Conclusions and Recommendations on Research for Sustainable Development

Author: PMU
04-11-2010
The 2nd ACP Forum on Research for Sustainable Development took place in Brussels on the past 12 and 13 October 2010. You can find here its conclusions and recommendations on Research for Sustainable Development in ACP States. Also available in French.

Highlights

For everyone involved in the ACP S&T projects, please check the page 'Help for Projects' where you can find information and all the templates needed to manage and report on you project.

Join ACP S&T