THE AFRICAN SCIENCE ACADEMY DEVELOPMENT INITIATIVE

PROGRESS AND PROMISE

THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine

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FOREWORD

The use of scientific evidence and principles in decision making has tremendous potential to effect meaningful policy change that will benefit citizens and development. In Africa, there is particularly outstanding promise for evidence to make a substantial difference in decision making. Policy makers from the African continent are increasingly confronted by emerging issues with scientific underpinnings and are under greater pressure to act visibly, impartially, and effectively in the public interest.

Traditionally honorific societies that recognize individuals who have made outstanding scientific contributions in a country, science academies around the world and in Africa are progressively building a service orientation that will allow them to contribute to the resolution of development problems. Advice from a national science academy can carry weight among a nation's leaders, which in turn can influence decisions in tangible ways. The impacts of advice from science academies can be substantial and far reaching, including influencing legislation, increasing funding levels, influencing national-level or local-level policies and regulations, creating or re-organizing government programs, and enabling new research. Organizing the intellectual community of a nation in an independent advisory capacity also offers benefits in support of good governance, including improving the transparency of the decision-making process, increasing public acceptance and confidence in decision making, promoting public participation in decision making, and mitigating conflicts over controversial topics.

Science academies have a unique ability to draw upon highly qualified scientists, engineers, and health professionals from a variety of disciplines. Science academies can synthesize relevant research results into non-technical language and can use rigorous, apolitical procedures for objective and unbiased analysis. Further, independent science academies can generate authoritative, credible, evidence-based findings and recommendations for policymaking. The value of "home-grown" advice cannot be overstated in Africa, where the bulk of advice to government is driven currently either by donors and other external actors, who may have limited knowledge and experience of local conditions, or by powerful interest groups and internal actors, who may be motivated to influence decisions for private gain.

As we reach the half-way point of the African Science Academy Development Initiative, I am pleased to look back on the remarkable and rapid progress of our academy partners in many countries. Science academies have improved their infrastructure and have hired and trained capable staff. Advisory reports on a variety of critical public-policy challenges have been undertaken and successfully concluded. Trusting relationships have been forged and sustained between academies and government representatives. Members of African science academies are engaging progressively in a public-service capacity. We at the US National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine are looking forward to working with academy partners in Africa to achieve even greater successes over the next five years of the project.

Ralph Cicerone
President, US National Academy of Sciences

An ongoing global challenge is translating the wealth of scientific knowledge into solutions for human problems. Mastery of applied science and engineering as well as mastery of the public policy process are both essential elements of development. In this regard, the emerging policy advisory role of African science academies bodes well for the progress of health and development in that region.

Charles M. Vest
President, US National Academy of Engineering

Like all good partnerships, the African Science Academy project is a two-way learning experience. The success of this initiative depends both on changing the way evidence-based policy advice is generated and received in Africa and on influencing the way we in the US National Academies work to promote the role of science in policy making. I welcome these mutual benefits and look forward to the development of new partnerships throughout the continent of Africa.

Harvey V. Fineberg
President, US Institute of Medicine

MESSAGE FROM THE DIRECTOR

Africa remains the most challenged continent in the world with respect to the ability of its nations to attain the Millennium Development Goals. Development reflects the product of many factors with science as a powerful enabler. Fortunately, numerous African nations are beginning to embrace science as a core component of national policy. Emerging nations should not only support the conduct of the scientific enterprise but also ensure that scientific findings and approaches are utilized in the crafting of sound national policies. Science academies, as independent bodies of the most eminent scientists in a nation, are an underutilized asset in many developing countries. Many countries have not even established these institutions and in other cases, the academies have cultivated primarily an honorific character. Given the criticality of using all assets of a resource-poor country, intellectual and otherwise, to maximum effect, strengthening the capacity of science academies to serve as trusted and authoritative national advisors holds promise as a high-yield investment for achieving a better future.

Health, education, good governance, and strong institutions of civil society are essential elements to the foundation for full development. Similarly, innovation and the creation of prosperity are best fostered by systems that respect the value of science and sustain conditions for its broad application. Curtailing the scourges of infectious diseases, hunger, and high maternal and child mortality, as well as building economically productive institutions, will depend on the ability of national authorities to mobilize science and to translate scientific evidence into effective national policies for development.

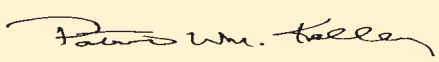
The African Science Academy Development Initiative (ASADI) was initiated in 2004 to foster in African countries a more evidence-based approach to health and development initiatives. Africa has a young and energetic population eager to learn and create prosperity, but the populace has suffered from the marginalization of science in many national decisions. The underutilization of science for public policy has placed African nations at a disadvantage with respect to formulating the most effective agricultural policies, solving issues of water quality and access, and separating fact from fiction when it comes to treatments for AIDS. Africa has an abundance of scientific expertise, especially when the diaspora is taken into consideration. Better mining of this expertise is the challenge.

The vision of ASADI is to mobilize a nation's scientific expertise to provide—through apolitical, multidisciplinary, independent, consensus-based processes—authoritative advice on matters of science and technology. A science academy is an element of civil society that enables citizens to better hold their democratically chosen representatives accountable by illuminating in a dispassionate fashion the science pertinent to issues of national importance.

Over the last four years, the vision of ASADI has become a reality. All eight African science academy partners have demonstrated enthusiasm at adding to their honorific character a focus on service. In addition, work has been undertaken on a wide array of relevant issues. Perhaps most gratifying has been the ability of African academies of science to engage parliamentarians and ministers in sustained dialogues on contemporary issues. National and international media are also beginning to cover the African academies and bring into the public space key scientific deliberations on subjects such as HIV/AIDS and nutrition, DDT and malaria control, and under-five child mortality. Both overseas and governmental donors are starting to financially support the work of African science academies. The African academies have also initiated establishment of a more effective network among themselves, key benefits of which are to enable the academies to identify continental expertise that can supplement national resources and to compare methods of operation to identify best practices.

The future of ASADI is dependent on the incorporation of sustainable best practices and the better definition of the unique niches of African science academies in their individual national advisory spaces. As these academies mature in their service function, they need to increasingly take ownership of the implications of that on their membership structures, on the expectations of their leaders, and on their utilization of staff. The most appropriate models of advising need to be worked out and strategic plans for sustainable financing geared to African settings with modest resources need to be put in place.

Africa poses a challenge to all of us. Over the last several years, we have seen growing commitments of donor nations to providing financial resources to support development and health. In the end, a bright future for Africa depends on peace, good governance, advances in health, and the creation of institutions and policies that can deliver prosperity. Development will come with the responsible application of science and a culture of innovation. These last four years have provided proof of concept for the ASADI vision. Science academies are increasingly recognized as organizations that can convene a nation's best and brightest minds and apply them to timely issues of national relevance. Policy makers are starting to turn to academies for assistance in improving governance. With generous support from the Bill & Melinda Gates Foundation, as well as from other partner academies and donors in more economically advanced countries, ASADI enthusiastically anticipates the next five years in which the gains to this point can be consolidated and the advisory mission of African science academies extended beyond our initial efforts.



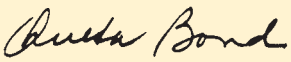
Patrick W. Kelley
Director, African Science Academy Development Initiative, US National Academies

MESSAGE FROM THE CHAIR

Building institutions that can promote the use of science and technology is essential in a competitive global environment. It is especially important in Africa, where there are few private-sector institutions currently performing this role. The science academies of Africa are ideally positioned to increase their capacity to play a greater role in their countries in advancing the use of science and technology in decision making. By drawing upon the strengths of African scientists, science academies can provide advice that is especially relevant to policy makers in their own countries.

In a remarkably short time, the African science academies involved with ASADI have done a superb job of developing strategic plans and gearing up a series of important studies and forums. I have deep admiration for how much has been accomplished by our science academy partners in spite of many challenges, such as frequent power outages and technology that is not functioning optimally. These early successes provide solid evidence in support of extending the ASADI effort to more partners and across other sectors.

Looking ahead to the next five years of the initiative, African science academies will need time to institutionalize advisory activities and to invent new mechanisms and approaches to their work that are uniquely relevant to Africa. Academies will also need to continue to work on ways to transform their institutions to better support a service role. It has been a pleasure to work on this project for the past five years with academy members and staff, and I look forward to the progress yet to come.



Enriqueta C. Bond
Chair, Board on African Science Academy Development, US National Academies

AFRICAN SCIENCE ACADEMY PARTNERS

INTRODUCTION

The African Science Academy Development Initiative (ASADI) is a 10-year effort to strengthen the capability of African science academies to provide independent, evidence-based advice to their national governments. Launched in 2004, and funded by the Bill & Melinda Gates Foundation, the initiative focuses on informing African government policy making and public discourse related to improving human health. The initiative also aims to foster a deeper appreciation on the part of African governments of the benefits of decision making based on evidence and analysis.

The grant supports intense capacity-building efforts with the science academies of Nigeria, South Africa, and Uganda—competitively selected on the basis of their potential to develop an effective and sustained policy-advisory process, the receptivity of their governments to seek advice from the scientific community, and the existence of a critical mass of scientific talent willing to serve as participants in policy-advisory activities. Collaborative partnering with these academies is helping to develop infrastructure, personnel, relationships between the academy and its government, and rigorous procedures for providing policy advice. The grant also provides modest support to the academies of Cameroon, Ghana, Kenya, Senegal, and the regional African Academy of Sciences for strategic planning efforts.

Professor Paul Mugambi, President of the Uganda National Academy of Sciences and Professor Robin Crewe, President of the Academy of Science of South Africa shake hands after signing a Memorandum of Understanding between the two academies, November 2007.

Complementary to the efforts to build capacity at the international level, a regional conference—held annually over the 10-year life of the project—is intended to enhance cooperation among African science academies, strengthen relationships among representatives of the academies and the policy making community, and foster a greater understanding and appreciation of the value of evidence-based policy advice.

The program is being carried out using a phased approach. Early activities have included training for academy staff, establishing contacts with appropriate government agencies and other organizations, fundraising, and implementing a variety of convening and consensus-based activities on subjects selected by the African academy in consultation with its government, with staff members from the US National Academies serving as external consultants. Over the course of the initiative, partner academies will conduct activities in an increasingly independent fashion and will be responsible for securing matching funds so that their programs can be sustained after the grant period has ended.

The ASADI vision is to develop African science academies so that they are regarded as trusted sources of credible scientific advice in each nation. Ultimately, it is hoped that many aspects of public policy may benefit from the experience and scientific rigor of the best minds in each country.

Oversight of ASADI is provided by the National Academy of Sciences, National Academy of Engineering, Institute of Medicine, and National Research Council—collectively the US National Academies. These are private, non-profit institutions that provide science, technology, and health-policy advice under a US Congressional charter.

ASADI AND THE UGANDA NATIONAL ACADEMY OF SCIENCES

A Perspective by Professor Paul Mugambi

The Uganda National Academy of Sciences, founded in 2000, has been working with the African Science Academy Development Initiative (ASADI) since 2004. One of our Academy's main achievements through the partnership with ASADI has been to strengthen the secretariat. The infrastructure of our academy—communication and facilities—has also been improved through the partnership. The Academy's Council—the decision-making body of Academy officers—has similarly strengthened its function and focus. Through ASADI, we've been able to set up various activities—discussion Forums and consensus studies—and will soon complete our first consensus report. Our engagement with the government has been enhanced through the relationship with ASADI, and our entire profile in the country has been raised. People in government and people in the public are increasingly getting to know about the academy.

So far, we have worked on health issues through the partnership with ASADI, specifically considering malaria prevention and control. Our consensus study addresses the issue of malaria vector resistance to insecticides used for indoor residual spraying in Uganda, including discussions of the controversial pesticide DDT. In the future, I'd like to see our academy playing a role in many other areas of public policy including health, education, and climate change.

Professor Paul Mugambi is President of the Uganda National Academy of Sciences. This statement was adapted from an interview conducted at the 3rd Annual Conference of the African Science Academy Development Initiative.

A Perspective by Patrick Amuriat Oboi, MP

The Uganda National Academy of Science (UNAS) is steadily maturing from its initial form to what it is today and will be in the years to come. This maturation can be attributed to motivation of academics in Uganda to promote science and technology and its contribution to development.

UNAS, with support of the US National Academies' ASADI program, has initiated a wide variety of activities to guide policy, including the publication of scientific reports, the creation of new modes of interaction with policy makers and politicians, and the generation of independent evidence-based advice. In Uganda, the role of UNAS as an independent body with the capacity to give evidence-based advice is gaining momentum as a consequence of that funding. A highly enthusiastic yet lean staff at UNAS have designed and implemented multiple programs to give science its rightful place in the priorities of government. Prior to US National Academies support, UNAS was poorly funded, and its potential to deliver had not been fully tested.

UNAS has been one of the best partners the Parliament of Uganda's Science and Technology Committee has ever had. It is the stakeholder to Parliament that has interacted with the Science and Technology Committee the most. Members of Parliament have been invited to a number of interactive and informative meetings, seminars, and workshops organised by UNAS and have also attended international ASADI conferences. I was privileged to participate and greatly benefit from my interaction with top scientists from Africa and beyond when I was invited to the inaugural ASADI conference in Nairobi, Kenya and the subsequent conference in Yaoundé, Cameroon. The fact that a non-scientist—a politician—could interface with scientists, present a paper, and be appreciated was an exhilarating experience and can be useful in bridging the gap between scientists and policy makers.

UNAS has without any doubt a bright future. Once its draft statute is approved by government, it could become unstoppable in making an impact in the development of Uganda. With funding, it will help to transform the manner in which decision making related to science-based matters is conducted in Uganda.

Patrick Amuriat Oboi, MP, is a Member of the Science and Technology Committee of the Parliament of Uganda.

ELEMENTS OF THE PROGRAM

The African Science Academy Development Initiative (ASADI) supports a variety of program elements, including the testing and development of policy-advisory models, annual conferences and joint working sessions, formal and informal training activities, strengthening financial-management systems, strategic planning activities, and monitoring and evaluation.

POLICY-ADVISORY ACTIVITIES

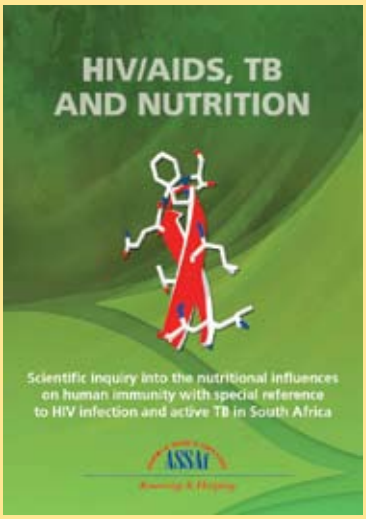
Partner African science academies have been developing and testing different models to inform government policy making. These have included both *consensus-based activities*—in-depth policy studies by a formally constituted committee to explore important issues and to offer formal, evidence-based guidance to national decision makers—and *convening activities*, gatherings of representatives with diverse perspectives to discuss and illuminate issues using an evidence-based approach. Accomplishments of partner academies in building these models are described below.

Consensus Studies

Consensus-based policy studies are in-depth analyses conducted by a committee of experts on subjects selected by an academy in consultation with the government. Careful procedures are used for selecting members to the committee: assuring that the committee's experience and expertise are appropriate to the task and screening for financial or other interests that might interfere with members' ability to serve objectively. The appointed committee of experts—balanced and free from conflicts of interest—reviews research, works together to achieve consensus, and, where appropriate, offers policy guidance.

Partner science academies in Africa have been working to adapt the model of the consensus study to the local context. At the science academies of Uganda and South Africa, procedures for the conduct of studies have been carefully developed, and several peer-reviewed studies have been initiated or completed. A consensus study by the Academy of Science of South Africa independently examined the evidence base relating human immunity and nutrition in South Africa (see Box 1). A new consensus study on clinical research in South Africa has begun recently. The Uganda National Academy of Sciences designed a lower-cost, rapid-response consensus-study approach: a workshop to gather information followed by a single committee meeting in which a short report was drafted. The Ugandan Academy's first consensus study, *Malaria Mosquito Alert: Approaches to Assessing and Managing Malaria Vector Resistance to Insecticides used for Indoor Residual Spraying in Uganda—Contributing to a National Indoor Residual Spraying Strategy*, focused on the development of an implementation strategy for indoor residual spraying to control malaria and included a consideration of the controversial insecticide DDT.

BOX 1



Nutrition is No Substitute for Medical Drugs in the Fight Against HIV

Findings from the Academy of Science of South Africa report on HIV/AIDS, TB and Nutrition.

In August 2007, the Academy of Science of South Africa (ASSAf) released the consensus study ***HIV/AIDS, TB and Nutrition: Scientific Inquiry into the Nutritional Influences on Human Immunity with Special Reference to HIV Infection and Active TB in South Africa***. This study was conducted by a multidisciplinary panel of 15 members, and over the course of 22 months, the Committee reviewed the scientific evidence relating to the influence of nutrition on the course of HIV/AIDS and TB. Amid widespread controversy over the nation's AIDS policies, which have for many years emphasized the importance of good nutrition in the fight against poverty, the Committee found that neither food nor food supplements were alternatives to drug therapy in treating those afflicted with HIV/AIDS. While nutritional intervention was deemed a valuable supportive measure, primary treatment should be in the form of anti-retroviral and anti-TB drug therapy. The Committee did, however, acknowledge the importance of good nutrition for general health. A number of recommendations were made for public policy and practice, and for much-needed new local research in the area.

The findings of the Committee have received widespread media coverage and have been featured prominently in the following internationally renowned online media: ***SciDev.Net***, ***The Guardian***, ***The New York Times***, ***The Washington Post***, and ***The BBC Online***. The report was also covered extensively in the national newspaper, radio, and television media, as well as the South African President's Party's weekly online newsletter, ***ANC Today***.

Perspectives on the Dissemination and Impact of the ASSAf Report.

Professor Anthony Mbweu — President of the South African Medical Research Council and a former Vice President of ASSAf.

The ASSAf report, ***HIV/AIDS, TB and Nutrition: Scientific Inquiry into the Nutritional Influences on Human Immunity with Special Reference to HIV Infection and Active TB in South Africa***, received wide coverage in the South African media over the course of the weeks following its launch in 2007. This coverage resulted in part from the impetus for preparing the report in the first place: that HIV/AIDS is the biggest public-health problem South Africa has ever faced and that there had been considerable debate in South Africa about the role of nutrition in the etiology and pathophysiology of the disease, as well as the efficacy of nutritional interventions in treating HIV/AIDS. In particular, the Minister of Health of South Africa, Dr. Manto Tshabalala-Msimang, had repeatedly emphasized in public the importance of nutrition in HIV/AIDS.

Government officials received copies of the report, and indeed the Minister of Education, Ms. Naledi Pandor, was a guest of honor at a symposium in late 2007 where the report was presented and discussed.

BOX 1 (continued)

Undoubtedly, the process of employing the report to influence public-health policy will continue in the coming years, and the high quality and relevance of the report will, I am certain, ensure that it is one of the major inputs used in the implementation process.

I am convinced that this work could serve as a model for further consensus reports produced by national science academies to influence government policy in South Africa and other African countries.

Dr. Daniel Ncayiyana — Editor-in-Chief of the South African Medical Journal.

The HIV/AIDS question in South Africa has been confronted by the challenges of ambiguity and even outright denial on the part of high political leadership—as well as confusion in the public domain—regarding the cause of the disease, its medical management, and its links to poverty, malnutrition, and tuberculosis.

The ASSAf report—prepared by South Africa's foremost independent scientists with no axe to grind—sought to clarify these issues for the government and the public, to separate fact from fiction, and to identify areas where more research is needed. The report received great attention and press exposure in South Africa and elsewhere in the world, including an hour-long discussion on the Africa Channel (TV), which is viewed by millions of viewers in most of southern Africa. In this regard, the report eminently succeeded in its objective to disseminate evidence-based knowledge on the causation, treatment, and collateral social and medical conditions of HIV/AIDS.

Although no direct evidence of impact on the political landscape can be reliably adduced, there is no doubt as to the influence of the data and information emanating from the report on the "silent majority" of the civil service-level corps responsible for the implementation of HIV/AIDS programs across the country.

The ASSAf report represents the first time that South African scientists have acted collectively to address a pressing national emergency under the auspices of an independent and respected scientific body, and as such constitutes an important milestone in the endeavor to transfer knowledge-based information to the public in order to help solve national problems.

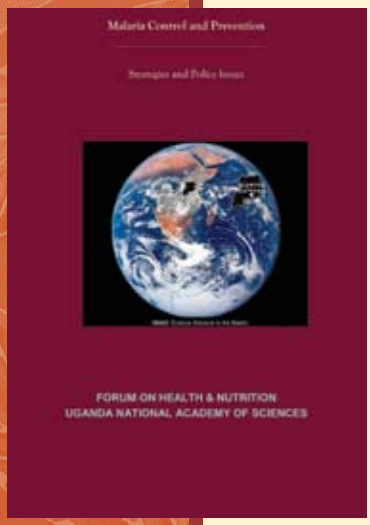
It is to be hoped that it will not be the last.

Mrs. Naledi Pandor — Minister of Education of South Africa.

I recently had the pleasure of attending the formal public presentation of the Academy of Science of South Africa's comprehensive report on HIV/AIDS, TB and Nutrition. I was most impressed by the rigour of the research review undertaken by ASSAf, as well as the accessible nature of the final report and its main recommendations. I have no doubt that the report will assist in providing the necessary clarity and guidance to a wide range of stakeholders who have an interest and involvement in this important area.

I also believe that the report serves to highlight the key role that the ASSAf plays in the provision of research-based evidence to inform policy makers and in enhancing the public understanding of critical issues of the day.

My Ministry continues to engage with ASSAf on issues of mutual concern and supports its endeavors.



Forums, Symposia, and Workshops

Science academies have the ability to convene diverse perspectives—representatives of industry, academia, non-profit organizations, donors, and government—to illuminate emerging issues of interest to a nation. Symposia, workshops, and series of workshops—forums or roundtables—convened in the name of a standing committee are among the convening models under experimentation by African science academy partners through the ASADI partnership. Convening events have brought a diverse array of interests to the table for discussions on a broad range of nationally significant topics including nutrition, poverty, and health. Proceedings or summaries from these events have been produced.

Several academies have established standing committees, or forums, to explore topics related to a particular theme on a regular basis. At the Nigerian Academy of Science, a standing Forum on Evidence-Based Health Policy Making has been established that has convened several workshops on a variety of topics (see Box 2). In South Africa, a Forum on Poverty Alleviation has been established and has convened a workshop on science-based improvements to rural/subsistence agriculture, and in Uganda, a Forum on Health and Nutrition has been established and has convened a workshop on issues surrounding malaria control and prevention.

Partner academies have also experimented with stand-alone workshops and symposia. The South African academy convened a symposium in 2006 to explore the nature of scientific evidence within a policy context and the potential role of the Academy in the national science system as an independent, authoritative provider of evidence-based advice. In Uganda, a workshop on biosafety and biosecurity in the life sciences was convened in March 2008 (see Box 3).

ANNUAL CONFERENCES AND REGIONAL ACTIVITIES

In addition to the partnerships at the national level, ASADI involves the broader community of science academies from across the African continent in regional activities, which include annual conferences, collaborative workshops, and shared information resources generated through the program.

Annual Conferences

Hosted each year of the initiative by one of the African science academies, annual conferences aim to foster greater understanding of evidence-based policy advice and to highlight current public-policy challenges for which the rigor of an academy's advisory processes could support decision making. These conferences also serve as a forum for sharing progress and knowledge gained through policy-advisory activities and for strengthening relationships among representatives from African science academies and the African policy making community. Summaries of the first two annual conferences have been published and made available to key stakeholders. Those conferences focused on the use of policy advice from science academies for achieving the Millennium Development Goals and improving food security in Africa. The 2007 annual conference focused on the role of science academies in informing policies related to water and health (see Box 4).

BOX 2

Nigerian Academy of Science: Forum on Evidence-Based Health Policy Making.

The Nigerian Academy of Science inaugurated the Forum on Evidence-Based Health Policy Making in Nigeria in 2006 to advance the country's ability to address its most critical health challenges. The Forum is a standing body of distinguished representatives from academia, government, industry and non-governmental organizations that gathers regularly for structured, evidence-supported discussion and debate on health-policy issues of shared interest. The Forum has provided a unique platform for exchanging information and ideas, identifying areas in need of greater attention, bringing scientific and research results into closer contact with government and industry, and informing decision makers on matters of science and policy. The Forum has become an effective tool for achieving these objectives in the context of national development.

Chaired by Professor Adetokunbo Lucas, of the Harvard School of Public Health, the Forum includes twenty-four permanent members who plan and convene two workshops each year on emerging health topics of national importance.

Through a consultative process, a group of stakeholders met in Abuja, Nigeria in 2006, under auspices of the Academy, to identify high-priority health issues that could be addressed by the Forum in subsequent meetings. Blood safety was chosen as the focus for the first Forum workshop, and subsequent meetings have explored the issues of reducing under-five mortality and improving health systems. An upcoming workshop will address issues surrounding primary health care. Published summaries of these meetings are under development. Publication of the Forum's first report, ***Blood Safety in Nigeria***, is scheduled for early 2008.

Perspective

Funmi Esan-Olayiwola — Project Officer of the United Kingdom's Department for International Development in Nigeria.

The UK Department for International Development (DFID) currently plays a vital role as a major donor in the health sector in Nigeria, working with the government, civil society, and in some cases the private sector. DFID supports both the Federal Ministry of Health and implementing partners at the state level to enhance health-sector policy effectiveness and service delivery.

From DFID's perspective, the Nigerian Academy of Science is well positioned to serve as a catalyst for influencing health-sector decision making by providing evidence-based information through its meetings and workshops. Such influence is essential, as ensuring quality data and effective evaluation still prove difficult within the health sector in the country.

Through one of its implementing partners, DFID provided funding for the most recent workshop of the Forum on Evidence-Based Health Policy Making, ***Health Systems in Nigeria***. The workshop was an opportunity to share lessons learned from other programs with the hope that these will be replicated in other states of the federation.

Through its future workshops and meetings, the Nigerian Academy of Science will be an important player in bridging existing gaps between policy and practice within the Nigerian health sector. The Academy can play a vital role in persuading decision makers to implement policies effectively. Academy-sponsored workshops and meetings can also provide a platform for state governors to better understand the health sector and the need to support it.

WHAT INVOLVEMENT IN ASADI HAS MEANT TO ME

A Perspective by Ms. Solome Mukwaya

I joined the Uganda National Academy of Sciences (UNAS) following completion of a Master of Arts degree in Development Studies. Through my education and previous work experience, I possessed skills in research, writing, communication, monitoring and evaluation, planning, and organisation and management of meetings. I started my job with no prior experience about the function of national science academies and quickly found that my previous work experience was not enough to prepare me for my work as staff of a science academy. Through mentoring and training, however, I now understand the role of academies in national development and grasp my role as staff in facilitating the process. I am competent in the processes of convening experts, organizing activities to inform policy making, putting reports together, and producing value-filled, evidence-based documents that have the potential to influence policy. While I find the consistent use of these logical and systematic processes very satisfying, the job with the Academy is never monotonous. The processes through which we inform policy may be the same, but each study or convening activity is an entirely different experience. We must understand every new topic in order to facilitate the processes competently. Inevitably, I am learning about many new subjects that affect society.

Networking is a major part of my work. These networks are not only beneficial to the Academy but to me as an individual as well. Through activities such as the ASADI annual meetings and Academy workshops, I have related with international experts in various fields, high-level government officials, and staff from other science academies with whom I would otherwise never have met. The ASADI annual meetings have been a great opportunity to introduce policy makers from Uganda to the leaders and staff of science academies and policy makers from other countries, thus helping them understand that academies are valued all over the world and not just in Uganda. The ASADI annual meetings have been an opportunity for staff of the different academies to get together, share, and learn from each other's experiences.

Ms. Solome Mukwaya is a Research Assistant at the Uganda National Academy of Sciences.

BOX 3

Promoting Biosafety and Biosecurity within the Life Sciences: An International Workshop in East Africa.

In March 2008, the Uganda National Academy of Sciences (UNAS) convened a workshop on the inadvertent or deliberate spread of disease stemming from life science research. The meeting, entitled ***Promoting Biosafety and Biosecurity within the Life Sciences: An International Workshop in East Africa***, gathered international and local experts on biosafety and biosecurity, academy members, and policy makers for discussions of policy responses and practical institutional measures.

Co-funded by the Alfred P. Sloan Foundation, this meeting illustrates a successful effort by African science academy to secure matching funding for its program activities. In addition to the funding provided by the Sloan Foundation and ASADI, UNAS secured support for the workshop participants' travel from other government and private agencies, including Sandia National Laboratories, Pacific Northwest National Laboratory, the Academy of Science of South Africa, the University of Maryland, and the InterAcademy Panel working group on Biosecurity.

Joint Learning Sessions

Annual joint learning sessions have created a support network of African and US science academy staff involved in policy-advisory activities. These meetings have focused on collaborative problem solving, the exchange of best practices and strategies for project implementation, and practical training. In past years, topics of joint learning sessions have included strategic planning, interacting with the government, fundraising, defining values of importance to each academy and procedures that can reinforce those values, marketing academies of science, communicating with the media, and transforming honorific organizations to service-orientated organizations. Each session has included group reflections on the highlights and challenges of the previous year and an exchange of lessons learned from experiences carrying out forums, consensus studies, strategic planning, and monitoring and evaluation.

Participants at the Third Annual International Conference of the African Science Academy Development Initiative, November 2007 in Dakar, Senegal.

KEY CAPACITIES FOR AFRICAN SCIENCE ACADEMIES FOR ADDRESSING FUTURE CHALLENGES AND OPPORTUNITIES

A Perspective by Narcisco Matos

The process of engagement in the African Science Academy Development Initiative (ASADI) is prompting African scientists to think more about their past and current roles as members of science academies. Academies of science in Africa have traditionally been honorific institutions—in which membership to the academy is based on what one has done in the past, not on what one expects to do going forward. The notion of academies of science producing opinions based on evidence and making these opinions reach those who have to make decisions is an entirely new discourse and new paradigm.

As science academies build a public-service role, they will need to develop strong capabilities to surmount challenges and address opportunities successfully. Communicating and engaging effectively with government, the media, and the general public; prioritizing issues of national importance; and serving as a more effective bridge between Western and traditional knowledge are among the capacities that the ASADI program is helping African science academies to develop going forward.

Engaging and Communicating Effectively with Government, the Media, and the Public

A key challenge for African science academies—and a capacity that the ASADI program is helping to develop—is to translate science into a language that can be utilized by the general public and also by policy makers. This is not a typical role for scientists today in Africa. People in laboratories and universities write good papers and participate in conferences, but they write for their peers. They write for journals. Better translation of science for non-scientists is one of the vehicles that will be important for African scientists going forward.

Because there is a poor regard for science in Africa, and because the media are not different from society in general, there is often a lack of engagement between the media and scientific experts. It does not occur to representatives of the African media to interview experts when a problem arises, which would be a normal reaction in Western civilizations. Similarly, when there is a problem, our governments do not turn to scientists for help. The closest they get to real expertise is to hire a consultant from abroad. The irony is that the first thing that consultants from abroad do is to liaise with local experts.

The failure to use local expertise—to inform both the government and the public—is emblematic of the way we regard science in Africa, but African scientists and science academies have an important role to play in demonstrating the relevance of science and in bringing local expertise to bear on local problems.

Bridging Traditional Knowledge and Western Science

Science academies can also function as an important bridge between Western science and indigenous ideas. We as Africans still believe in and use knowledge and practices that have not been investigated by science. For example, most Africans still use traditional healers and still pray for their ancestors. It's important to recognize the African person and how he or she deals with daily life problems. We already know that some traditional medicines are effective, but because there are no scientific studies, we lack full knowledge of their side effects. A great opportunity for African science academies would be to separate what is effective from what is not effective.

Dr. Narciso Matos is a member of the Institute of Medicine's Board on African Science Academy Development and Executive Director of the Foundation for Community Development, Mozambique. This statement was adapted from an interview conducted at the 3rd Annual Conference of the African Science Academy Development Initiative.

BOX 4

The 3rd Annual Conference of the African Science Academy Development Initiative (ASADI): *Water and Health in Africa*.

The conference was held in Dakar, Senegal in November 2007 and hosted by the Académie Nationale des Sciences et Techniques du Sénégal. It focused on the value of national science academies in informing water-policy decision making in Africa as a vehicle for achieving health and development objectives. Among the highlights of the meeting were break-out sessions in which diverse groups of scientists, policy makers, donors, academy members, and academy staff worked together to develop frameworks for studies—including the definition of specific questions—that could be addressed by academies.

Through the support of the World Bank, government officials from 12 African countries participated in the conference. Moderated policy maker roundtable discussions elicited insights on various topics of water and health: access to water, water and disease, water-related disasters, and water resource management and governance. The exchanges and experience from these discussions resulted in the drafting and signing of the *Declaration of Dakar*—a document that espouses the use of scientific evidence in policy making through a process facilitated by science academies.

Perspective

Professor Yaye Kène Gassama Dia — Minister of Scientific Research, Senegal and a Fellow of the Académie des Sciences et Techniques du Sénégal.
(This statement was adapted from an interview conducted at the 3rd Annual Conference of the African Science Academy Development Initiative, in Dakar Senegal.)

In Africa, science has always been underestimated and misunderstood because of the separation of scientists in their laboratories and society. Previously, there was no interaction between the two. Today, the approach of the government in Senegal has been to make science more available by disseminating it more broadly and by facilitating greater access. This is important, because here in Senegal we face many development challenges, including the problem of access to water and healthcare in rural areas. Science has some answers and something to propose to society. Scientists can think about these issues and propose to government potential solutions. This is a time of greater mutual awareness between government and academies of science.

Here in Senegal, the government has traditionally used the Academy of Science and Technology for strategic consulting. Our current President is aware of many other things the Academy can do for the government, in such areas as agriculture, biotechnology, water, and health. The Senegalese government is now trying to help the academy become more powerful and have enough means to implement its mission.

WHAT INVOLVEMENT IN ASADI HAS MEANT TO ME

A Perspective by Dr. Bolaji Obadeyi

At the Nigerian Academy of Science, we are working hard to ensure that the objectives of ASADI are translated into solid achievements. Through my work with the Forum on Evidence-Based Health Policy Making, I have acquired skills and practical experience in assembling experts on a variety of topics, convening quality meetings, and producing high-quality, peer-reviewed reports. As policy makers are the primary target of our activities, it has been very rewarding to nurture relationships with technocrats within government ministries and especially with political office holders. Before ASADI, it was difficult to envision how relationships between scientific institutions and government could occur.

It has been challenging to cope with the variety of activities and the high quality of work expected of program staff but I feel fortunate to have a very strong support network. This network has made available extensive resources and experienced personnel at the US National Academies through formal training sessions and through less-formal mentoring relationships. In some instances, it has been possible to use the US National Academies network to gain access to world-renowned institutions within and outside the United States.

Looking ahead of our current efforts, it is my hope that in 10 years we will share in the pride of an ASADI program that has contributed to appreciable progress in human development.

Dr. Bolaji Obadeyi, a physician, is a Program Officer of the Nigerian Academy of Science.

Shared Electronic Database of African Scientists

Partner African science academies are assembling an international database of African scientists with technical support from the US National Academies. The most recent version of the database includes the expertise, contact information, and current affiliation of over 750 leading African scientists on the continent and in the African Diaspora. When shared across countries, the database will help science academies easily identify and recruit experts for policy-advisory activities.

TRAINING

ASADI has assisted African science academy staff in developing stronger skills to build complex advisory capacities within each academy. Close one-on-one partnering relationships between US National Academies staff and African science academy staff—linking counterparts at the managerial, financial, program, research, and administrative levels—are contributing to the development of skills to support the full array of academy operations, including:

Staff from the US National Academies and the African science academies working together at the March 2007 Program Officer Training in Washington, DC.

- Establishing and sustaining relationships with government agencies and other organizations
- Planning and implementing projects of the highest quality
- Scheduling, preparing for, and managing meetings
- Establishing advisory committee management procedures
- Identifying and recruiting expert advisers
- Preparing literature reviews
- Writing and editing high-quality, peer-reviewed reports
- Communicating with the media and disseminating Academy products
- Managing finances and developing budgets
- Managing personnel
- Fundraising and preparing proposals
- Developing leadership and oversight functions

The ultimate goal of training activities is the independent conduct of academy operations and advisory activities by African counterparts.

In addition to one-on-one partnering, a variety of formal training activities have been offered to program partners over the life of the project (see Box 5).

STRENGTHENING FINANCIAL MANAGEMENT

Strengthening financial management is a cornerstone of functioning academy operations and has been a key focus of the ASADI capacity-building efforts. Through ASADI, African academy staff counterparts are acquiring skills in budget development, financial projection, account reconciliation, and accounts management. Program participants have gained experience in identifying cost-effective ways to meet program objectives through the pro-

cess of developing annual work plans and budgets. Primary partner academies now have financial systems in place that combine internal management of day-to-day accounting with outsourced management of specific financial aspects, such as payroll. Academy partners have also developed financial management policies and procedures, including those for accounting, reporting, and travel reimbursement. African academy partners continue to gain experience in generating defensible budgets, creating financial oversight mechanisms, and making prudent financial decisions.

Interacademy staff exchanges have been used successfully to build skills in financial management and to share experiences. In 2006, Uganda National Academy of Sciences financial officer Harriet Nanfuma visited Nigeria to meet and work with the Nigerian Academy of Science financial officer Samuel Shofuyi. In 2007, a retreat for program financial officers was held in Nairobi, Kenya.

STRATEGIC PLANNING

All African science academies affiliated with the ASADI program have developed and finalized strategic plans to formally consider the future course of their institutions. In consultative sessions involving Academy Fellows, senior managers, staff, and stakeholders, ASADI partners have completed visioning exercises to describe the ideal future identity of their organizations,

BOX 5

Formal Training and Networking Events

Formal training events organized at the US National Academies headquarters in Washington, DC and in country have provided a useful complement to mentoring efforts and an important means of strengthening professional relationships among staff affiliated with ASADI from different countries.

In October 2005 and March 2007, African academy research and program staff members participated in an intensive series of interactive sessions to examine models for evidence-based advising in the US context; to observe advisory and oversight activities such as expert meetings, forums, roundtables, and consensus study committee meetings; to develop skills to manage the critical steps in policy-advisory processes (e.g., developing budgets and timelines, forming a committee, managing conflict of interest and bias, working with committees and committee chairs, and writing and disseminating reports). Training sessions stimulated discussions on the values that underlie the operation of an academy and the unique role of science academies in supporting policy making. Participants also exchanged ideas about the degree to which practices used in the US context are transferable to the African context. Another training exercise for thirteen new and veteran African academy staff members of all levels—conducted in March 2008 in Kampala, Uganda—focused on increasing inter-academy staff networking and problem solving.

In April 2008, the leadership of the African science academies—both executive-level staff and elected Academy officers—came together for a special collaborative forum with the leadership of the US National Academies. The goal was to explore the critical role of the academy leadership in transforming African science academies from largely honorific societies to organizations that can also provide independent, evidence-based advice to their national governments.

BOX 5 (continued)

Perspectives from Participants Following the March 2007 Training.

"Every day we got back to the hotel excited and brainstorming on what we would implement back home, and how."

"I have learned that the staff plays a very big role in the process and that a big part of the success of the report depends on the staff."

"I need to be meticulous in planning, budgeting, building a network of contacts, and developing a dissemination strategy. And I need to develop a "thick skin" for working with difficult people!"

"I enjoyed hearing about the history of the US National Academy of Science, which was created as a result of demand by a government that values the advice. In African countries, we're still trying to create the demand."

"I have learned that excellence is built in before the project starts. In Africa, we tend to look at excellence as something you add on. I have been impressed at the attention to detail that goes into a project before even a dollar is spent."

"I was impressed by the commitment of your Governing Board Executive Committee. They came together in the same room at the same time and were prompt. They had read the documents. Those who felt they had something to say were brief."

"I appreciated the emphasis on managing people, personalities, and relationships."

"I appreciated the session on the dynamic process of accounting and budgeting. Every decision you make about the study design goes into the accounting itself. "

"I have observed that at the US National Academies, you have a wealth of in-house expertise and a culture of developing people. I am hoping that in 10–20 years, we'll be able to boast of the same thing. Acquired experience is different from what you get from books or from the Internet."

"This training session has been warm, friendly, and pleasant. It's been possible to build working relationships across the academies. The training has given me an opportunity to learn more about each of the academies—not just about our common problems, but our common journey."

Harriet Nanfuma, Financial Officer from the Uganda National Academy of Sciences trains staff from the Nigerian Academy of Science, January 2007.

BOX 6

Examples of African Science Academy Strategic Plans.

Strategic Objectives of the Kenya National Academy of Sciences

ADVOCACY AND PUBLIC RELATIONS

- To sensitize the public, scientific organizations, professionals, and related stakeholders on the potential role of science and technology in national development
- To strengthen linkages with the Government in the formulation of science, technology and innovation policy

GOVERNANCE

- To strengthen the relationship with the Government and other relevant organizations in achieving the goal of industrialization by the year 2020

MEMBERSHIP

- To increase membership
- To eventually establish chapters for the Academy

COMMUNICATION

- To disseminate information and knowledge through various types of media, publications and appropriate language for enhanced awareness and utilization
- To promote the preservation and use of Kenyan indigenous languages

MANAGEMENT

- To develop and strengthen management structures and systems

KNOWLEDGE, HUMAN AND FINANCIAL RESOURCES

- To raise additional funds
- To develop a database of available human resources, organize national, regional, international scientific activities, and create fora for research issues
- To establish a documentation centre on existing knowledge (including indigenous knowledge) resources in Kenya

LINKAGES/NETWORKING/COLLABORATION

- To strengthen and broaden linkages, networking and collaboration opportunities

Source: Kenya National Academy of Sciences Strategic Plan, 2006-2011

Strategic Goals of the Cameroon Academy of Sciences

- To increase and strengthen the visibility and credibility of the Academy
- To reinforce the Academy's physical infrastructure and staff to accomplish its mission
- To increase fiscal and financial sustainability of the Academy
- To inform science, research, and innovation policies and to provide evidence-based information for policy formulation and implementation

Source: Cameroon Academy of Sciences Strategic Plan, 2006-2010

Strategic Goals of the Ghana Academy of Arts and Sciences

ATTRACT THE FINEST INTELLECTUALS

- Identification and effective mentoring of potential Fellows
- Broadening the base of potential fellows
- Streamlining the process of selection

ATTRACT ADEQUATE FINANCIAL RESOURCES

- Make the Academy relevant to its stakeholders
- Ensure adequate funding for the implementation of the strategic plan
- Diversity sources of funding

BUILD A PROFESSIONAL AND EFFECTIVE SECRETARIAT

- Resources the secretariat for the fulfillment of the strategic plan
- Acquire a headquarters building that is appropriately equipped to support effective functioning of the Academy
- Motivate our officers and staff

Source: The Ghana Academy of Arts and Sciences Strategic Plan, 2006–2011

assess their institutions' current situation (including strengths, weaknesses, opportunities, and threats), identify core values, prioritize strategic goals, develop approaches to achieve strategic goals, and develop methods for tracking progress.

Among the factors considered by many academies in the strategic planning process were the identification of key constituencies for an academy's advice; alternative routes to the development of a service-orientated, advisory role for the academy; the role of the academy membership in supporting an advisory role; the need for long-term financial sustainability; the development of an effective outreach strategy; and the development of professional staff. Elements from several academy strategic plans are provided in Box 6.

MONITORING AND EVALUATION

A five-year external evaluation of ASADI has been conducted over the first phase of the project, with principal focus on the three science-academy partners in Nigeria, South Africa, and Uganda. Two small companies—Washington, DC-based Encompass and South Africa-based Otherwise—are working in partnership to carry out the evaluation, which has included baseline observation and inquiry sessions at all affiliated academies, annual visits to each of the three intensive partners, periodic meetings with US National Academies staff, and regular review of evaluation-relevant materials shared by program participants. Members of the evaluation team also participate in the annual conferences and joint learning sessions to gather data and facilitate discussions on evaluation.

Two overarching principles characterize the ASADI evaluation approach: *participation* and *capacity building*. The evaluation has engaged, through a participatory process, a broad range of US and African stakeholders in the design, monitoring, and assessment components of the evaluation. A diverse core group of program participants at each academy has been established in order to ensure continuity in evaluation design, implementation, and analysis. A participatory approach to evaluation has helped to make more explicit the goals, assumptions, and expectations of the overall initiative; to refine the Initiative's theory of charge; to clarify the users of evaluation; and to identify performance measures to be used across and within institutions. The evaluation is also itself a capacity-building exercise. The evaluation team has provided training in evaluation theory, design, and implementation for US National Academies staff and for members and staff of all participating African academies.

The evaluation of ASADI has included both qualitative and quantitative measures and has tracked both processes and outcomes of the program. The evaluation involves the analysis and monitoring of change in attitudes, behaviors, and skills at the individual and organizational levels and the extent to which evidence-based decision-making in partner countries may be developing as a result of the initiative.

THE ROLE OF AFRICAN SCIENCE ACADEMIES IN INFLUENCING NATIONAL POLICY

An Opinion by Dr. David Mbah

Although few African science academies have a clear mandate to advise government, the role of academies in influencing national policy is growing, thanks in part to the African Science Academy Development Initiative (ASADI). The need for this service role has been clearly articulated by policy makers at annual meetings organized by African science academies and looking across the content of strategic plans it is clear that a service role is a desired objective of many African science academies.

What will be needed for academies to effectively perform a role in influencing national policy? Science academies will need to clearly distinguish their unique niche as compared to other organizations. Because that niche involves the ability to synthesize scientific knowledge and make it available to decision makers in a timely and useable format, service-oriented academies must be independent but must also have strong links with government.

Perceptions about academies will be strong determinants of whether or not the Academies can deliver effectively from a service point of view. Academies should therefore establish and actively promote a set of core values, which should clearly be reflected in the academy's day-to-day operations. For example, the membership of the academies should be diverse, merit-based, and gender balanced. Members of science academies should visibly demonstrate their commitment through active service on advisory committees and taskforces.

African science academies face many challenges in developing the capacity to advise policy formulation. These include the challenges of bringing multiple disciplines together, communicating effectively, strengthening the quality and use of locally available policy-relevant data, building political will and demand for evidence-based advice, building institutional and human resources capacity, and attracting sustained financial investment from governments, funding agencies and other stakeholders.

Dr. David Mbah is the Executive Secretary of the Cameroon Academy of Sciences.

PUBLICATIONS

REPORTS OF ANNUAL CONFERENCES

Improving Public Policy to Achieve the Millennium Development Goals in Africa: Harnessing Science and Technology Capacity
Kenya National Academy of Sciences and the African Academy of Sciences

Prioritizing Food Security Policies for Health and Development in Africa: Science Academy–Policy Maker Interaction for Evidence-Based Decision Making
Cameroon Academy of Sciences

Water and Health in Africa (in preparation)
Académie des Sciences et Techniques du Sénégal

REPORTS OF WORKSHOPS AND FORUMS

Evidence-based Practice: Double Symposium Proceedings on Problems, Possibilities, and Politics
Academy of Science of South Africa

Science-Based Improvements of Rural/Subsistence Agriculture
Academy of Science of South Africa

IAP Water Programme: Regional Workshop for Africa
Academy of Science of South Africa (in collaboration with the South African Water Research Commission)

Establishing a Forum for Evidence-Based Health Policy Making in Nigeria: Summary of a Planning Meeting (in preparation)
Nigerian Academy of Science

Blood Safety in Nigeria: Summary of a Workshop (in preparation)
Nigerian Academy of Science

Reducing Under-Five Mortality in Nigeria: Summary of a Workshop (in preparation)
Nigerian Academy of Science

Health Systems in Nigeria: Summary of a Workshop (in preparation)
Nigerian Academy of Science

Partnering for Science in Uganda: Establishing the Forum on Health and Nutrition
Uganda National Academy of Sciences

Malaria Control and Prevention: Strategies and Policy Issues
Uganda National Academy of Sciences

REPORTS OF CONSENSUS STUDIES

HIV/AIDS, TB and Nutrition: Scientific Inquiry into the Nutritional influences on Human Immunity with Special Reference to HIV Infection and Active TB in South Africa
Academy of Science of South Africa

Malaria Mosquito Alert: Approaches to Assessing and Managing Malaria Vector Resistance to Insecticides used for Indoor Residual Spraying in Uganda—Contributing to a National Indoor Residual Spraying Strategy (in preparation)
Uganda National Academy of Sciences

BOARD ON AFRICAN SCIENCE ACADEMY DEVELOPMENT

The initiative is overseen by a US National Academies-appointed board, of rotating membership, with expertise in science-academy processes, African issues, and public health.

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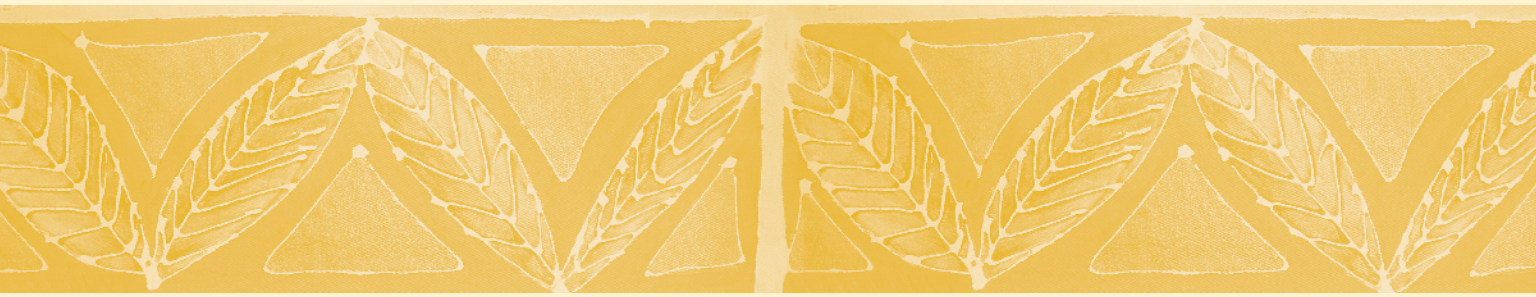

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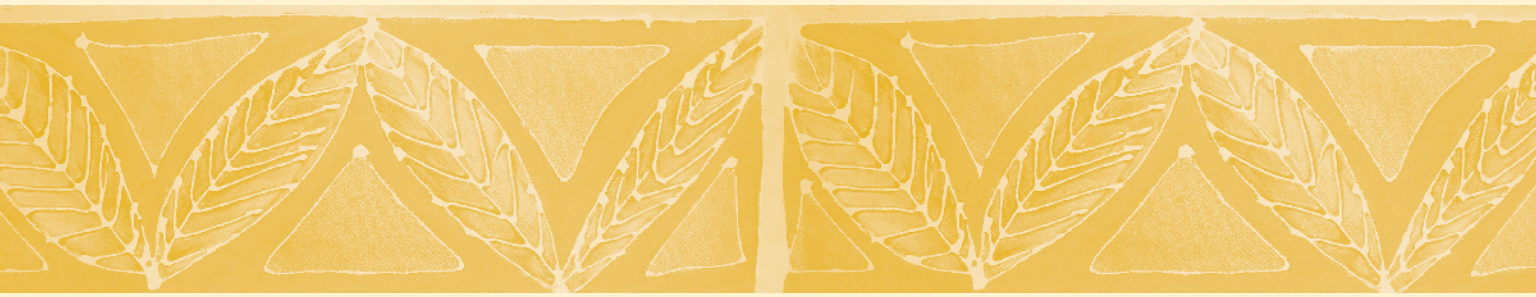

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