

5 Beyond ASADI

The purpose of the African Science Academy Development Initiative (ASADI) was to build the capacity of African science academies. Its success means that the nations whose academies were supported now have an improved national source of evidence-based knowledge for policymaking and other purposes. At the same time, the academies involved in ASADI are more capable than before of stressing the role of science in national life, for example in education, in health provision, and in decisions on development. In addition, they are better placed to assist in the growth of academies in other countries.

These changes are all positive, and this chapter will explore ways of building on them. But capacity building such as that supported by ASADI does not happen in isolation. A science academy's capacity to be effective depends in part on its internal organization and resources, and these were the main emphasis of ASADI. But an academy's links to stakeholders and the wider society are also a vital part of its competence. Some of these capacities, such as links to government, are well-established academy priorities. Others such as media and external communications remain underdeveloped and are priorities for the future.

POSSIBLE SUCCESSORS TO ASADI

There is certainly scope for a successor to ASADI, perhaps with an emphasis on expanding African academies' capacity for policy development. The original mission of ASADI in capacity building for African academies also remains valid.

The panel would regard a new capacity building activity as a worthwhile commitment for donors such as the Gates Foundation, and for delivery bodies such as the U.S. National Academy of Sciences (USNAS) and Institute of Medicine. This support could include academies not involved, or not centrally involved, in ASADI, but might omit the Nigerian Academy of Sciences (NAS) and the Academy of Science of South Africa (ASSAf) as ASADI-graduated organizations. It might involve support such as continued technical guidance, help with connections to potential funders, undertaking collaborative continent-wide studies, and other projects.

One question that the panel considered is what science academies should aim to look like in contemporary Africa. One possible model would be to aim for the same level of power and influence as bodies such as the Institute of Medicine in the United States or the Royal Society in the United Kingdom. These are influential organizations with powerful committee structures capable of making nationally important interventions. The originators of ASADI regarded this as an attractive model in the planning phase of the project.

This objective, however, may not be realistic for some African academies, at least in the short term. One size does not fit all with academy models, and flexibility is needed in structure and operation. All of the intensive partner academies have made significant strides in becoming more visible and influential voices in national policy discussions, but have taken somewhat different approaches depending on their capabilities and policy contexts. ASSAf, for example, has delivered a series of influential consensus reports on issues such as Ph.D. production and treatment of HIV and AIDS. NAS has employed an approach that relies more on direct outreach and assistance to frontline officials and others in fields such as public health, as illustrated by its

recent activities aimed at controlling and ending the recent Ebola outbreak.¹² As African academies evolve, and scientific activity on the continent expands, the models of what these organizations can and should be will undoubtedly change, and will likely continue to exhibit a significant degree of diversity.

At the same time, a science academy is inherently an international organization in terms of the contacts it maintains and the networks to which it belongs. It can help make individual scientists more outward looking by involving them in national and international cooperation and debate. It can also be a useful point of contact for diaspora scientists who retain an interest in their nation of origin.

African academies already adapt to the national contexts in which they find themselves. In Ethiopia this has included having memoranda of understanding (MoUs) with government ministers on the nature and form of work that is required of them. In Uganda, the academy has been commissioned to convene committees of key national institutes such as the AIDS Commission. In South Africa, ASSAf crafted its strategic plan to align with national strategic priorities outlined by the government.

RESOURCES FOR AUTONOMY

The point was made repeatedly that African science academies need their own independent resources to carry out their missions successfully. The western model, for example, involves academies receiving substantial government and donor support, but at the same time having endowments and other funds that allow them to make their own decisions about specific projects and about their overall strategic direction. Even then, these academies are often short of resources.

One possible academy activity that could perhaps generate a surplus is publishing, of both scholarly and popular material. This activity is aligned with the academic and public-facing objectives of a science academy. However, significant resources are required to launch and sustain a scholarly publishing operation, and many African academies are not large enough to consider such a move. Uncertainty about long-term trends in the business of research publishing and the ability of journals to generate income constitute another reason for academies to exercise caution in moving into this arena.

This suggests a twin-track approach to the funding issue. On one track, governments need to learn that they get the best results from academies that receive core funding without a high level of political direction and interference. On the other, academies need to build up assets independently of government. This obviously requires them to become better fundraisers, but over time would also need them to develop management structures to manage their endowments. One academy put it that “fundraising champions” are needed in all these organizations.

Part of ASADI’s success has been the growing ability of academies to bring in fresh funding from their own governments. While this money might arrive with political strings, it was also pointed out to the panel that global aid agencies and nongovernmental organizations (NGOs) also have their own agendas and restrictions, such as the U.S. Agency for International Development’s (USAID) restrictions on funding activity that might be regarded as supportive of abortion.

¹² “Ebola: Academy Educate Hotel Owners On Preventive Measures,” *Leadership*, September 25, 2014. Available at: <http://leadership.ng/news/385199/ebola-academy-educate-hotel-owners-preventive-measures>.

The overall lesson is that in countries with a small policy community, it might be unreasonable to expect as much distance between government and the academies it supports as the U.S. or European model might imply. The implications for future African academies are still to be explored. In addition, the policy structure of many African nations is changing and developing fast, so that this picture will change over time.

A CALL FOR LEADERSHIP

This rapid rate of change emphasizes again the importance of academy leadership. One ASADI participant pointed out that “all academies walk a fine line with their sponsors.” So leaders are needed who can “speak truth to power” without jeopardizing future funding, and who appreciate the nuances of how an uncomfortable message should be communicated. Like the fundraising champions mentioned earlier, these people need to be sought out and developed. A future development initiative in this area might be one way ahead.

Another area for future development is the strategic planning capacity of academies, as a valuable process for the academy itself and for its national and international audiences. While the ASADI academies have become good at writing plans, it is less clear that such plans have been monitored or evaluated during their lifetime or later. They sometimes lack stated initial targets that can be tracked and monitored during and beyond the project. A more results-based approach with broader use of quantitative metrics to track strategy implementation might allow other actors, such as civil society organizations, to work more closely with academies and to see their value.

This shows that ASADI might have given more advance thought to the detailed needs of the African academies before it started work. It could also have used a shorter time frame for some of its funding. While long-term support is needed for big change such as that delivered by ASADI, more use could have been made of specific targets leading to the release of subsequent tranches of money. This would have connected the partners more closely to the grant-awarding body.

This raises the issue of member and council activity more generally. It is a common theme that as academies grow and become professionalized, their members’ enthusiasm for voluntary activity can fall. As one academy member put it, “People want to review reports, but become less keen to write them.”

One key to this is to broaden membership, as seen in the last section. In the longer term, it might also be possible to involve experts who are not (or not yet) academy members more intensely in their areas of special expertise. The growth in secretariat capacity, for example in the production of reports, is a positive step and should make member participation simpler in the long term.

DIVERSITY OF PRODUCTS

As discussed elsewhere in the report, ASADI began with the intention of building the capacity of partner academies to produce consensus study reports as a primary policy advisory mechanism.¹³ Over time, the academies and ASADI learned that other sorts of products could be

¹³ Consensus study reports involve the consideration of primary and secondary evidence on a policy question or issue by a panel whose members collectively possess the expertise needed to address the question or issue. Depending on the issue,

valuable within the various national policy contexts. In addition, substantial resources are needed to undertake high quality consensus studies, implying that smaller academies might find it difficult or impossible to make their production a core activity.

In the future, there might be new forms of engagement with policy. For example, academies might convene expert groups that accept the possibility of a national consensus not emerging on some problematic subject. The Nigerian academy has already taken some steps in this direction, and going beyond the consensus report model. The current Ethiopian approach is to use consultants to draft academy reports which are reviewed by academy members before going to the government. Development and sharing of new approaches could be a focus of future capacity-building efforts.

It is also worth noting that African societies and nations are changing fast. This means that their academies, too, cannot stand still. Several of the ASADI academies pointed out that they receive more requests for advice than they can cope with. They are already seen as more objective than international consultants or NGOs.

However, most of the work that academies now carry out for government is in the field of “science for policy” rather than “policy for science,” to use a classic distinction. Governments are less keen to be told how they should organize the national science effort, or how much they should spend on it, than they are on advice about the latest scientific knowledge. Effective intervention here is a further area of possible future development.

It is our conclusion that these academies can become more relevant, more effective, more interactive, and better-resourced. The people who run them appreciate this. More complex, perhaps, is the issue of their future organization on a global and African scale, and of the management and ethos of their future capacity-building.

AFRICAN PRIORITIES

Academies of science in the west now interact with their African colleague organizations on a far more equal basis than in the past, stressing mutual rather than one-way learning and support.

This suggests that if future development initiatives are to be as successful as ASADI, their priorities and leadership will have to come from Africa, specifically from African scientific communities and the societies of which they are part. The growing level of South-South science cooperation in and beyond Africa means that this important ambition can now be fulfilled.

During the ASADI process, several academies did push back against some of ASADI's suggestions for their future direction. So expectations need to be managed on all sides in future programs. An example is Ethiopia, whose academy is highly connected to government, and where an academy member has carried out the world's biggest study of bipolar disorder.

This example shows that these organizations are already generating their own model of what an African academy should look like. While there is room for diversity in the shape of future African academies, two key elements are that they will have independence to investigate and prioritize subjects of scientific importance, but will interact closely with national political systems as a trusted supplier of useful, high-quality, peer-reviewed insights.

panels may include non-academy members. In general, members of science academy consensus study panels serve as volunteers. Panel deliberations lead to a set of evidence-based, independent recommendations to government and other stakeholders based on a consensus of the panel.

INTERNATIONAL COOPERATION

Because knowledge is universal, an academy is inherently an international organization. The need for academies to work together and support each other, possibly via some larger African organization, was emphasized by many of the experts whom were interviewed during the review process.

As already stressed, this report is a review of ASADI, not of individual academies, and certainly not of the people within them. By the same token, it is not a review of international academy organization. Instead, it seeks to offer a few pointers towards the future role of international and multinational organization for African science academies.

Both academy experts and external participants in this review called for improved international working by African academies, and by their partner bodies in the North. Existing international networks such as the InterAcademy Partnership (IAP) and the InterAcademy Medical Panel (IAMP) are already very valuable for individual scientists and for academies, and can help develop academy members as ambassadors for science in Africa. Academies also have a role as credible voices for policy advice to continental organizations.

There are currently a number of bodies that represent African science on a continental scale, notably the Network of African Science Academies (NASAC)¹⁴ and the African Academy of Sciences (AAS).¹⁵ AAS has official recognition from the African Union Commission (AUC), giving it high-level influence on a continental scale. NASAC was founded a few years before the start of ASADI, so NASAC and ASADI have both had the task of building up the idea of academies as valid institutions for Africa. NASAC hopes to have 21 member academies by the end of 2014. It envisages an enhanced role for itself in light of ASADI's success, but agrees that it continues to face organizational and financial challenges, as well as political ones such as relations with the AUC.

ASADI participants interviewed for this review make the point that mutual assistance by African academies is perhaps their most vital international activity. As one interviewee told the panel, only Nigeria and South Africa have fully developed academies. All the others need to work together to accumulate critical mass. They could cooperate to improve their publications, their relations with government, their fundraising, and their links to industry and civil society.

¹⁴ The Network of African Science Academies aspires to act as an independent African forum that brings together academies of sciences in Africa to discuss scientific aspects of challenges of common concern, to make common statements on major issues relevant to Africa, and to provide mutual support to member academies. NASAC member academies include 19 African science academies, namely; Academie Nationale des Sciences, Arts et Letters du Benin (ANSALB), Academie Nationale des Sciences et Techniques du Senegal (ANSTS), Academy of Science of South Africa (ASSAf), Academy of Sciences of Mozambique (ASM), African Academy of Sciences (AAS), Cameroon Academy of Sciences (CAS), Ethiopian Academy of Sciences (EAS), Ghana Academy of Arts and Sciences (GAAS), Hassan II Academy of Science and Technology Morocco, Kenya National Academy of Sciences (KNAS), Madagascar National Academy of Arts, Letters and Sciences, Mauritius Academy of Science and Technology (MAST), Nigerian Academy of Science (NAS), Sudan National Academy of Sciences (SNAS), Tanzania Academy of Sciences (TAAS), Togolese Academy of Sciences, Arts and Letters (ANSALT), Uganda National Academy of Sciences (UNAS), Zambia Academy of Sciences (ZaAS), and Zimbabwe Academy of Sciences (ZAS).

¹⁵ The African Academy of Sciences (AAS) is an Africa-wide individual membership-based scientific organization, with a view to honoring internationally renowned African scientists and also to encouraging the development of the research and technology base throughout Africa.

CONNECTING ACADEMIES

A specific priority for NASAC might be to act as connective tissue for the academies, strengthening their reach and influence. For example, it might use its current website as a repository which would allow academies across Africa to present their work and their expertise to the world at large. Many of the reports and documents they produce are of global interest. Broader visibility would add to their national and regional influence.

NASAC could also take on the role of raising the profile of the academies within bodies such as the African Union (AU). This would involve building on the success of the Annual Meeting of African Science Academies (AMASA), and of the continental-scale studies that academies are now producing, for example on tobacco control.

A development of this activity might involve the academies in the provision of distance or presence training. This is a field in which there is massive need across Africa, and this activity might be run to generate a financial surplus. ASSAf is already involved in training young scientists in science writing and communications. This activity is a possible precedent for further expansion. Some past training delivered to academy staff by commercial trainers has been inappropriate in content and language, perhaps because of the trainers' orientation towards private sector clients. This suggests that there are opportunities for academies to build on ASADI's work in training academy staff, and to extend this activity to the broader scientific community.

It seems certain that health will continue to be a major concern for the African academies. Health ministries are almost as big a point of reference for their work as science ministries. Academies already provide training for health professionals, carry out consensus studies on areas such as child health and tobacco use, and act as centers of expertise in fields such as HIV and AIDS, malaria, and immunization.

The future of this activity will change as African health priorities change. But academies will continue to be valuable sources of objective information in a field where there are competing claims for resources and competing ideas about disease and health. This has led to ASADI-supported academies housing national organizations on vaccination, malaria, and HIV and AIDS, such as the Uganda AIDS Commission, and ACVI, the Ugandan Advisory Committee on Vaccines and Immunisation.

The academies' ability to negotiate these issues suggests that they might become trusted advisers to government and broader society on other tricky issues on which consensus is hard to reach, perhaps including science education or climate change. The Ethiopian academy's influential work on biotechnology might be a precursor for this wider activity. A further agenda of activities in areas such as water, food, and climate might be developed in the light of the United Nations' (UN) current effort to identify Sustainable Development Goals (SDGs) as a successor to the Millennium Development Goals (MDGs) established in 2000.

REGIONAL STRUCTURES FOR AFRICAN SCIENCE

One question concerns the scope for NASAC to grow its activities across Africa. There is general agreement that the existing NASAC would need more resources to carry out the wide range of African academy-building activities that can now be envisaged.

A possible approach would be to strengthen NASAC while supplementing it with new regional structures. This would acknowledge two realities: the sheer size of Africa, and the fact that the larger academies are already leaders in their respective parts of the continent. This structure would give them a more formal regional responsibility for academy development, and a role in regional and continental policy development. This might include suggesting subjects for future policy studies and consensus reports.

Of special importance is AMASA. This meeting is valuable for several reasons. One of the most significant is that it allows African scientists to meet and plan. As one interviewee told us, this implies “shifting the center of scientific leadership” towards Africa. On this theme, the importance of a major annual event for national academies was also stressed to us, as a way of making the academy visible to politicians, funders, scientists, and the public, and of increasing its self-confidence.

Another related area for development is the global visibility of African scientists. To achieve this, the academies will need databases of their members’ expertise, as well as networking and media skills to grow their presence within and beyond Africa. There might well be scope for studies of science-related issues on a continental African scale, emphasizing the value of scientific advice to national governments and to the AU, including New Partnership for African Development (NEPAD) (an AU strategic framework for pan-African socio-economic development, providing a vision and a policy framework) the AUC and the UN. African and global policy development, implementation, and monitoring and evaluation around issues such as the MDGs and SDGs, and disaster risk reduction would benefit from stronger scientific input.

In addition, there might be scope for a regular meeting of academy chief executives as a leadership group for the implementation of academy development and for the development of NASAC and other cooperative structures. This might be useful from a continuity perspective as well as offering opportunities for networking.

All of these ideas would need to be planned strategically, supported, and then monitored and evaluated over time. This would involve the academies themselves in their own capacity-building and their own planning for sustainability.

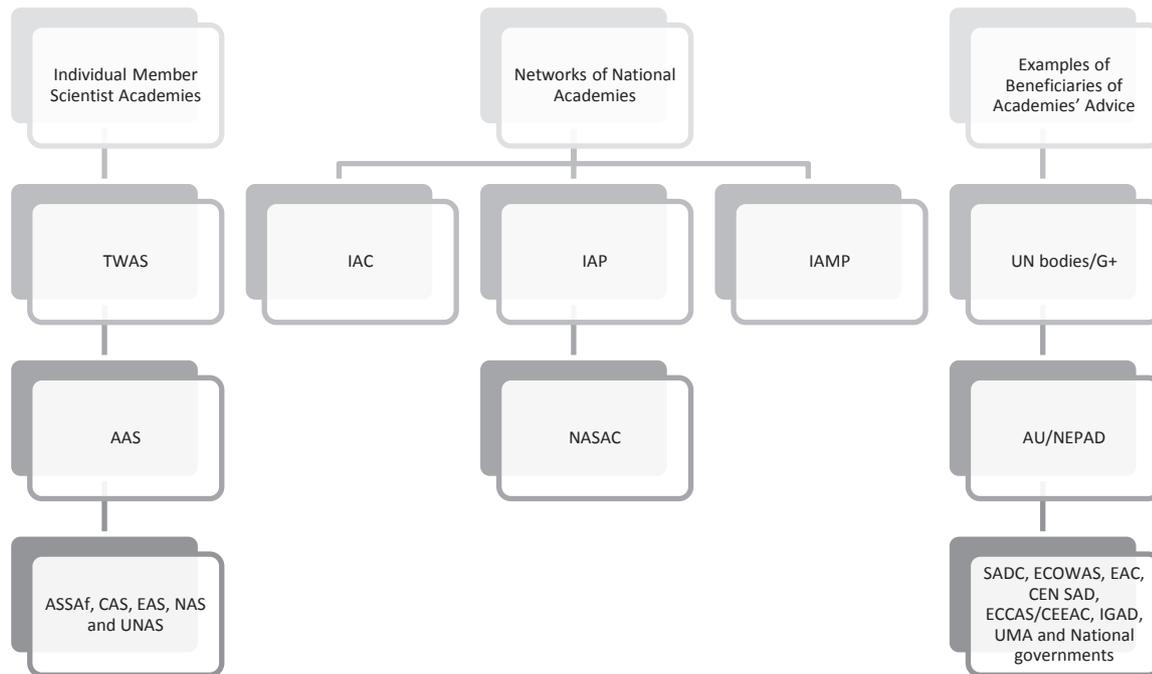
Strengthened bodies such as these are needed to represent the growing number of African scientists. The increasing number of world-class research centers and universities in Africa means that there are steadily more individuals capable of taking on national or continental roles as visible scientists. Modern technology makes it affordable for them to work together on policy issues as well as scientific ones, given an organizational framework that allows them to do so. Because of their links to governments across Africa, national academies will continue to be important players in this new landscape. For one thing, it is their role to remind governments of the AU target that they spend 1 percent of gross domestic product on research.

The growing scope and importance of African science mean, too, that African scientists and science academies will have a bigger say in the shape of the world scientific enterprise in future years. They will be participants in the setting of scientific agendas, not passive recipients of priorities decided upon elsewhere.

In addition, there are still African nations which lack an academy of science. Successful academies, and representative bodies such as NASAC and the AAS, have a key role in demonstrating the value of an academy to a modern African nation and in building support for its establishment. Setting up an academy involves gathering funding, gaining political backing, possibly including primary legislation, and getting staff and space. It also calls for commitment from senior people, who are needed to occupy key positions such as president and treasurer.

ASADI has already shown that small, new academies can be effective national and international organizations. In their next phase, they are likely to link with development organizations, education systems, and other poles of influence, while deepening their links to national and international policy processes. The academies of Nigeria and South Africa are already doing this, taking advantage of these countries' large pools of scientific talent. This is a long process that becomes simpler with the help of others who have travelled the same road before. That was the original aim of ASADI, and the panel sees every reason for further academy development within Africa to adopt the same ethos.

Figure 5-1 The International Structure of Organizations Relevant to African Science



Note: TWAS=The World Academy of Sciences; IAC=InterAcademy Council; IAP=IAP—The Global Network of Science Academies; IAMP=InterAcademy Medical Panel; AAS=African Academy of Sciences; NASAC=Network of African Science Academies; AU/NEPAD=African Union/New Economic Partnership for Africa's Development; ASSAf=Academy of Science of South Africa; CAS=Cameroon Academy of Sciences; EAS=Ethiopian Academy of Sciences; NAS=Nigerian Academy of Science; UNAS=Uganda National Academy of Sciences; SADC=Southern African Development Community; ECOWAS=Economic Community of West African States; CEN SAD= Community of Sahel-Saharan States; ECCAS/CEEAC=Economic Community of Central African States/Communauté Économique des États de l'Afrique Centrale; IGAD= Intergovernmental Authority on Development; UMA= Arab Maghreb Union.

CONCLUSIONS

Conclusion One: ASADI has been a significant success—both in terms of meeting its stated objectives and in its wider positive impacts on the trajectory of the African science academies that it supported. Of the specific areas of capacity building that the panel reviewed, the training and financial support that strengthened academy secretariats and assistance to improve strategic planning were the most notable. The ASADI-supported academies are making significant contributions to their societies. They are vital civil society organizations that can

expand their contributions to health, development, and evidence-based policymaking. ASADI has helped to expand the scale of this contribution markedly.

Conclusion Two: Although strengthening the African science academy movement on a continent-wide basis was not a primary goal of ASADI, some aspects of the program have had this effect. Most notable was support for AMASA¹⁶ and for collaborative studies on issues such as discouraging tobacco use. The dialogue and relationships that have been built among African academies represent a significant asset that can be used going forward.

Conclusion Three: The ASADI-supported academies are building and pursuing several different models for what an African science academy can and should be. Developed country academies can provide useful examples and advice, but close emulation may not always be possible or desirable. The ASADI process clarified the elements necessary for a science academy to be effective in serving society, which can be used as a template for future efforts to build the capacity of academies. These elements include a critical mass of excellent scientists that constitutes the membership; the ability to recruit, train, and sustain an outstanding staff; strong leadership by the council and executive secretary; facilities and infrastructure that enable the academy to work effectively; political backing, including recognition by an act of the legislature; and later in its development, diversified sources of funding (project vs. core; government vs. other stakeholder), and communications and media relations capability.

Conclusion Four: ASADI did not always go smoothly, and experienced its share of tensions and missteps. In the end, these did not seriously impair the program's overall effectiveness. Some of these difficulties, such as occasional disagreements between the USNAS program staff and the African academies over control of resources and their use, might be unavoidable in a program of this type. Other issues hold lessons that are relevant to future efforts to build the capacity of science academies in Africa and elsewhere. For example, the national policy context as well as resource needs should be taken into account in setting goals for the types of products an academy should be generating. Early on, ASADI focused on enabling the partner academies to produce consensus study reports. While consensus reports are valuable, the greater openness to different sorts of products that ASADI has exhibited over time encouraged the African academies to develop innovative new mechanisms for serving their governments and broader societies.

Conclusion Five: Despite the success of ASADI, the academies that it supported face a variety of challenges in sustaining the capacity that has been built and in becoming more effective and influential. A significant source of resources for supported academies will end with ASADI. In addition to financial challenges, the academies will be pressed to increase their policy impacts, expand outreach to society, retain staff, and strengthen their membership bases. Most of the ASADI-supported academies are vulnerable to the loss of key personnel. There is a continued need for capacity building among African science academies and in regional and continent-wide institutional infrastructure. Donor support for such capacity building would be an excellent investment in strengthening African civil society, promoting the effective governance of African nations, and finding evidence-based solutions to the continent's most serious problems. Future

¹⁶ Each year, since the inception of the ASADI program, an annual meeting of ASADI partners, later expanded to include other non-ASADI-supported science academies on the continent, has been held to encourage collaboration and joint learning among Africa's science academies.

academy development will call for priorities to be set and choices to be made, given that in practice, resources will continue to be finite.

Conclusion Six: In order for the broader African science academy movement to advance more rapidly, which will benefit both African science and African society at large, there is a pressing need to strengthen the institutions and activities that support academies and foster collaboration at the continent-wide and regional levels.

RECOMMENDATIONS

Based on the information that it gathered during the review and informed by the experience of its members, the panel has developed several recommendations for African science academies and other stakeholders. The recommendations are aimed at outlining a pathway toward continued growth, greater financial sustainability, and increased policy influence for individual academies and for the broader African science academy movement. Unlike the assessment of ASADI's results against its stated objectives, quantitative measures and other data were of limited use in developing these recommendations, which by necessity involved the collective judgement of the panel members.

The panel believes that African science academies can perform extensive, valuable service for their societies in the coming years. They have the potential to be recognized as strong, independent institutions, built on the scientific merit of their fellows, and acting as beacons for science and technology as tools for development. The panel encourages the academies and their stakeholders to seize these opportunities. It is important to note that implementing the recommendations described below will require additional resources. Resources are always limited, so choices will need to be made and priorities set. Still, the African academies and their stakeholders and partners on the African continent and around the world have proven capable of launching initiatives, and can make a strong case for support.

1. African academies of science,¹⁷ NASAC, African governments, donors, partner academies based outside Africa, and the global inter-academy organizations should work together by:

- ensuring that needed capacity building efforts continue
- shaping and delivering such programs within Africa to the extent possible.

2. African academies of science should strengthen and expand the capacity and capability that they have developed during this program, by developing, implementing, and sharing good practice in:

- human resource management, including training and development programs for council, members, senior executive and staff;
- membership and election procedures;
- strategic planning, project management, and peer review;
- financial management and accounting systems;
- communications, outreach, and media relations;

¹⁷ In this report, "African science academies" and "African academies of science" refers to the ASADI-supported academies as well as the non-ASADI supported academies, and includes the African Academy of Sciences.

- fundraising;
- risk management and accountability (including developing impact metrics);
- establishing an informal network of executive directors of African science academies to facilitate exchanges of information and best practice;
- working with government, industry, and civil society;
- encouraging informal regional leaders to become champions for regional academy development (the academies of Uganda, Nigeria, and South Africa have already emerged as regional leaders in East, West and southern Africa, respectively).

3. NASAC should work to strengthen the institutions and activities that enable collaboration among African science academies to enhance the effectiveness of individual academies and empower science and science advice at the African level. The goal should be to expand existing efforts and develop new approaches in key areas, by:

- providing assistance to African scientists seeking to launch new national academies and strengthening capacities of existing academies;
- providing clearing house services that facilitate sharing of effective academy policies, peer review and election processes, training materials, and other best practices, and information on events—including “good news” stories;
- providing distance and presence training opportunities;
- building stronger linkages with the AU, NEPAD, the UN, national governments in and beyond Africa, and the global scientific community.

4. African academies of science should make every effort to broaden their financial support base to provide longer-term, more sustained financial security, by:

- developing and implementing fundraising strategies, identifying new sources of funds where appropriate;
- demonstrating to governments that core funding, without direction, supports the provision of quality scientific advice;
- designing initiatives and providing services which generate a surplus.

5. African academies of science should become more effective advocates for the contribution of science to public policy, by:

- promoting the principles and practice of evidence-based policymaking;
- delivering quality policy advice that is timely and fit-for-purpose;
- broadening both the range of policy issues covered, the mechanisms for delivering policy advice, and sharing that knowledge;
- building relations with national and regional policymakers;
- systematically measuring the impact of policy interventions, for example, genuine policy change, anecdotal feedback, the level of support (financial or otherwise) leveraged, and/or contract activity that the academies are commissioned to undertake.

6. African academies of science should maximize the benefits which can be derived from working in partnership, by:

- exploiting their membership in regional (e.g. NASAC) and global inter-academy organizations—capitalizing on the intellectual and financial resources available to them, and contributing to their business as a further tool for capacity building;
- developing partnerships which are strategic and/or complementary, and based on shared values;
- acting as a bridge between national and regional scientific communities, policymakers, and the wider public—for example by convening meetings/discussion fora; communicating science and its benefits, effectively and with authority; and nominating experts to sit on committees etc. outside their own country.

7. African academies of science should be more proactive policy advocates at regional, continental, and global levels, by:

- working with each other and with other academies of science to influence policy on an international level;
- building on the AMASA meetings and developing timely policy agendas;
- building relations with their regional delegations in government, regional development communities, the AU, NEPAD, and the UN;
- engaging in global policy debates, for example the MDGs, SDGs, disaster risk reduction; contributing to their implementation and monitoring and evaluation;
- helping to strengthen NASAC's contribution to regional policy advice.

8. African academies of science should develop and deploy best practice in increasing diversity of its membership and its core business, by:

- engaging more with young African scientists and promoting opportunities for them, including involving them in academy business;
- improving diversity of ethnicity and gender at all levels within the academies, including fellowship, council, senior executive, and other staff; membership of working groups;
- tapping into the expertise and connections of the diaspora.