CHAPTER 6

Equality in Health Research Cooperation Between Africa and Europe: The Potential of the Research Fairness Initiative

Lauranne Botti, Carel IJsselmuiden, Katharina Kuss, Eric Mwangi, and Isabella E. Wagner

Abstract This chapter investigates the strategic benefits of global health collaboration programmes. Regretting the lack of alignment or harmonisation of research priorities and cooperation patterns, authors show how recent positive research development on health issues in Africa can foster more constructive and more balanced research partnerships with European countries and institutions. In this regard, authors urge greater support for

L. Botti (✉) • C. IJsselmuiden
Council on Health Research for Development (COHRED), Geneva, Switzerland

K. Kuss
Spanish Foundation for International Cooperation, Health and Social Affairs, Madrid, Spain

E. Mwangi
Ministry of Education, Science and Technology, Nairobi, Kenya

I.E. Wagner
Centre for Social Innovation, Vienna, Austria

A. Cherry et al. (eds.), *Africa-Europe Research and Innovation Cooperation*, https://doi.org/10.1007/978-3-319-69929-5_6

the Research Fairness Initiative as a promising emerging global standard for fostering fair and sustainable research partnerships and a more inclusive and better institutionalised framework for Africa–Europe cooperation on health development and innovation.

Keywords Global health cooperation • Global standards • Sustainable partnerships • Health development & innovation • Ebola • HIV • Malaria • Clinical trials • Collaboration outputs • Quality & fairness • Private sector

Introduction

In recent decades, governments have increased their collaborations on strategies for global health, and multilateral research programmes have involved partners from high-, middle- and low-income countries. Cooperation on health issues between Africa and Europe reveals the need to address the asymmetries that can affect both global health and health research. The outbreak of Ebola in West Africa in 2014 resulted in over 11,000 recorded deaths. With the disease also threatening Europe and rapidly becoming a global issue, it reminded us of the borderless vulnerability of our populations and of our responsibility to invest in global health and health research. Indeed, the Ebola epidemic did influence the international agenda for global health. The European Union Council, for example, stressed the importance of health security in the European Union (EU) and the need to strengthen preparedness research to address health security. Following a renewed interest in global health, the European Parliament also requested the evaluation of the impact of EU Framework Programmes (FP) funding of research into poverty-related and neglected diseases (PRND) on universal health coverage (UHC) (see RAND 2017).

This chapter elaborates the results of a study conducted by the CAAST-Net Plus project, concerning the impact of Africa–Europe health research cooperation under the European and Developing Countries Clinical Trials Partnership (EDCTP), and under the EU FP and its contributions to the broader bi-regional science, technology and innovation (STI) partnership (see also CAAST-Net Plus 2016). The study examined health research cooperation between Africa and Europe and the impact it has on participating countries. The first three parts of this chapter respond to a set of

concerns about the extent to which (1) actual bi-regional collaboration matches up to joint research and innovation (R&I) priorities; (2) bi-regional collaboration is balanced; and (3) the outputs of bi-regional collaboration are translated into new or revised goods, services, technologies or new or revised policy. The fourth part of this chapter presents the Research Fairness Initiative (RFI) as a response to the widely acknowledged need for improved quality and fairness in Africa–Europe research collaborations.

Policy Frameworks and Priorities

The main policy framework that currently guides research cooperation between Africa and Europe at regional level is the Joint Africa–EU Strategy (JAES) adopted in 2007 (African Union & European Union 2007) by the member states of the African Union (AU) and the EU at the second Africa–EU Summit in Lisbon. Although science is no longer an explicit chapter of the current JAES action plan, the contribution of STI remains embedded in it. The JAES states unequivocally that health research should address global challenges and common concerns related to HIV/AIDS, malaria, tuberculosis (TB) and other pandemics (paragraph 8), while research on vaccines and medicines for major, neglected and water-borne diseases should be supported (paragraph 61) and national health systems strengthened through the development of integrated strategies (paragraph 61).

The JAES stands out as one of the few frameworks that explicitly outline joint priorities for bi-regional cooperation in health research, although many national and international policies, declarations, strategies and agreements do provide guidelines for policymakers to formulate research cooperation priorities. For example, the Sustainable Development Goals are one of the most influential international agreements that guide and feed into bi-regional cooperation strategy and priorities in health research. These goals directly impacted international strategies and programmes such as the Special Programme for Research and Training in Tropical Diseases hosted at the World Health Organization (WHO), and have led to ambitious initiatives such as the Global Fund to Fight AIDS, Tuberculosis and Malaria and Global Vaccine Alliance. It is important to note that the key issues of access to UHC and to vaccines were addressed by the recent declarations such as the 2014 Luanda Commitment on

Universal Health Coverage in Africa, and the 2016 Addis Declaration on Immunisation (WHO 2014; Ministerial Conference on Immunization in Africa 2017), though both were left out of both the joint Africa–Europe agenda for science and technology cooperation and its implementation roadmaps.

A global analysis of the deaths by infectious diseases and non-communicable diseases (NCDs, such as cancer, diabetes or mental health) concludes that there was an increase in HIV/AIDS, malaria and TB deaths between 1990 and 2010.[1] Mortality due to HIV/AIDS reached a peak of 1.7 million in 2006; malaria mortality rose to 1.17 million deaths in 2010 and TB killed 1.2 million people in 2010. In parallel, NCDs rose by just under 8 million between 1990 and 2010, explaining a third of overall mortality worldwide by 2010 (34.5 million) (Lozano et al. 2012). The numbers of deaths caused by NCDs are clearly increasing rapidly. A report by WHO (2017) has aptly summarised the global burden of NCDs as follows:

> NCDs kill 40 million people each year, equivalent to 70% of all deaths globally. Each year, 15 million people die from a NCD between the ages of 30 and 69 years; over 80% of these "premature" deaths occur in low- and middle-income countries. Cardiovascular diseases account for most NCD deaths, or 17.7 million people annually, followed by cancers (8.8 million), respiratory diseases (3.9 million), and diabetes (1.6 million). These 4 groups of diseases account for over 80% of all premature NCD deaths. (WHO 2017)

Bi-regional health research collaboration matches joint priorities particularly on HIV, malaria and TB. Many African countries have built substantial research capacities on these three major diseases. In 2013 the World Health Assembly adopted a resolution that calls for increased investments to improve the health and the social well-being of affected populations (World Health Assembly resolution 66.12). Almost at the same time, research on neglected diseases (NDs) was included in the second EDCTP Programme—NDs are NCDs that prevail mainly in subtropical conditions and largely affect populations living in close contact with infectious vectors and domestic animals.

Africa–EU health research cooperation does address global challenges and common concerns in terms of malaria, TB and, more recently, in terms of NDs. Nevertheless, health research priorities, as mentioned in the JAES, need to be updated to reflect the changing needs and evolving

burden of diseases. In the next 10 to 20 years, estimates predict a dramatic increase in the prevalence of NCDs, which will account for nearly 40% of disease burden in Sub-Saharan Africa by 2030 (Olesen and Parker 2012). This already has consequences for the current R&I collaboration—not just in 10 or 20 years from now. In this context, Africa–EU collaboration will require additional research investments to prevent NCDs through new vaccines, diagnostics and treatment, and to improve and increase access to health facilities and health coverage.

To better understand Africa–Europe science cooperation patterns in health research, CAAST-Net Plus conducted a bibliometric study on health co-publications between Sub-Saharan African and European researchers in recent years.[2] Bibliometric assessments of joint research in health have already been conducted, for example by Breugelmans et al. (2014, 2015) who compared research publications on PRNDs. Both of these studies found an overall increase in the volume of collaborative research outputs, similar patterns in geographic differences and an overall emphasis on PRDs. However, there have been no comparative analyses of the current research areas in Africa–Europe collaboration.

The study conducted by CAAST-Net Plus analyses the volume of publications on HIV, malaria and TB, collectively here called poverty-related diseases (PRDs), as well as on NDs and on NCDs in bilateral cooperation between Europe and Sub-Saharan Africa (SSA).[3] The data was analysed according to the three health research specialisations, defined by keyword sets.[4]

Figure 6.1 shows the development of the three strands of health research specialisations over the last decade. While the overall number of EU–SSA co-publications in health increased steadily (from slightly more than 2000 in 2005 to almost 5500 in 2014), the relative proportion of publications on NCDs, PRDs and NDs changed: publications on ND and NCD grew while fewer publications on PRD were published, although they still constitute the strongest research strand in comparison to the other two.

The increased attention given to NCDs is all the more positive as they have long been ignored although their burden might soon be higher than that of infection diseases. Yet, NCDs are still not a priority, as the number of publications on PRDs has been growing much faster than on NCDs. In fact, African research institutions do not participate fully enough in research on NCDs, as in PRDs or NDs. Several calls to fund research on NCDs have been recently issued by African institutions; for example, the

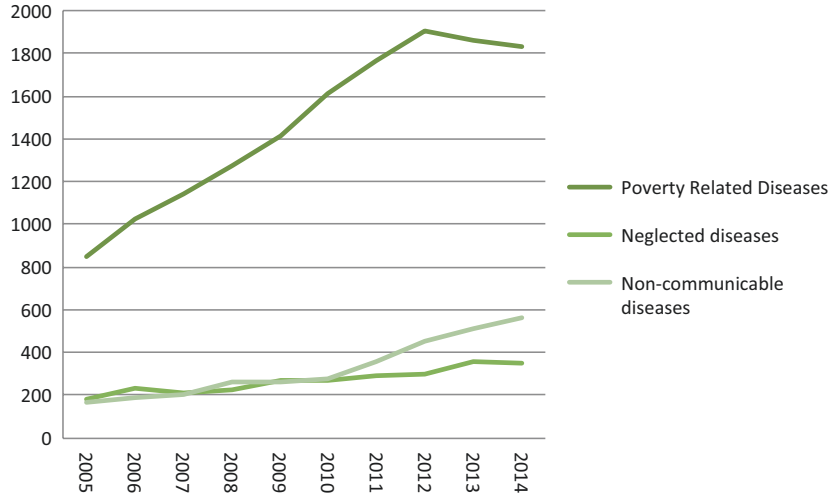

Fig. 6.1 EU–SSA co-publications 2005–2014 in the selected strands of health research (Source: CAAST-Net Plus 2016)

South African Medical Research Council partnering with the Newton Fund and GlaxoSmithKline issued two calls to address the WHO objective to decrease preventable mortality by 25% from NCDs (London School of Hygiene and Tropical Medicine 2015).

Among the pioneers of African research institutions participating in research on NCDs are consortium partners who participated in projects responding to the first FP call for proposals addressing infectious agents and cancer in Africa (HEALTH.2010.2.4.1) and to the second call HCO-05-2014, *Global Alliance for Chronic Diseases: Prevention and treatment of type 2 diabetes*. Three research projects funded by the FP on NCDs have at least one partner from Africa:

1. Prevention of liver fibrosis and cancer in Africa (PROLIFICA): Focusing on women's health, specifically the prevention of cervical cancer by early detection or by vaccination (MRC Unit the Gambia 2017)
2. Human papilloma virus in Africa research partnership (HARP): Evaluation and impact of screening and treatment approaches for

the prevention of cervical cancer in HIV-positive women in Burkina Faso and South Africa (CORDIS 2017)

3. Self-management approach and reciprocal learning for the prevention and management of type-2-diabetes (SMART2D): The project is a member of the Global Alliance for Chronic Diseases and contributes to the Alliance through the development of the community management strategies for the low-, middle- and high-income settings (Karolinska Institutet 2017)

Although the burden of infectious diseases is similar to the socioeconomic impact of those pandemics, many African countries have built substantial research on research in HIV/AIDS, malaria and TB. Over the long term, research dedicated to NCDs could show positive results that would reduce costs for often lengthy and expensive treatment of cardiovascular diseases, cancers, diabetes or chronic lung diseases, and so could contribute to alleviating the socioeconomic burden of NCDs. The accessibility and affordability of healthcare services and products are also major challenges to be tackled, and so are preventive health services. Ideally, the contribution of research projects to health care, health system services and shaping national R&I systems in low- and middle-income countries should be made an explicit objective of all Africa–Europe cooperative research calls.

Working Towards More Balanced Bi-regional Collaboration

Investments in research on PRDs on the one hand, and the increasing burden of NCDs on the other, remain disproportionate. The CAAST-Net Plus study of joint co-publications by authors affiliated to institutions in Europe and SSA shows an increase in publications on NCDs in the period 2004–2015 while the total volume of co-publications remains relatively low. A similar picture results from analysis of research projects funded by the different FPs within the health societal challenge area. Such observations call into question the balance (regarding the scientific and geographical scope, the funds, as well as the ownership and leadership over cooperative project) within bi-regional cooperation.

Nevertheless, EDCTP is a remarkable example of balanced cooperation in terms of governance and participation. Legally, EDCTP is an association established under Dutch law in the Netherlands, which currently counts 28 partner states as full and equal members—14 African and 14 European. Focusing on the development of indispensable research infrastructure, EDCTP has been contributing substantially to the Africa–Europe partnerships, because of its focus on the development of new and improved drugs, vaccines, microbicides and diagnostics against HIV/AIDS, TB, malaria and neglected infectious diseases. Among the results achieved by the programme are (1) the Kesho Bora Study, which demonstrated a 43% reduction in HIV infections in infants and more than 50% reduction of mother to child transmission during breastfeeding and influenced WHO 2010 guidelines on prevention of mother-to-child transmission of HIV, and (2) the Malaria Vectored Vaccine Consortium which found that the volunteers receiving the T cell-inducing vaccine had a 67% reduction in the risk of malaria infection during eight weeks of follow-up (see also EDCTP 2017).

The EDCTP programme, with its comparatively large funding for African institutions, has also become a success story from the perspective of balanced funding. The first phase of the EDCTP lasted from 2003 to 2013 and in this programme, 70% of funding went to African institutions and 62% of all projects were led by African researchers. A significant portion of the funding was aimed at capacity building and support for the ethical and regulatory environment for clinical research in Africa that includes, for example, the African Vaccine Regulatory Forum (the network of ethics committees), National Ethics Committees (NECs), the Mapping of Research Ethics Committees in Africa and the Pan-African Clinical Trials Registry (PACTR).

Critical voices on clinical trials question the balance of benefits for research on the one hand, and the benefits to participants in research on the other. The involvement of patients and volunteers in clinical trials, particularly in low- and middle-income countries, requires researchers to adhere to international guidelines for ethical conduct in health research. The guidelines demand that researchers assess and weigh the burdens to the individuals and groups involved in the research with foreseeable benefits to them and to other groups. Participants in clinical trials often wish or expect to obtain better access to healthcare and products, additional diagnostics tests and treatment or collateral health services that is normally

not available. Benefits to populations during research often include ancillary health services such as distribution of medicines or distribution of vaccines. Such criticisms point at important questions that remain to be answered: How can we ensure that health research contributes to better health care? Is there a legal or moral obligation to provide training to researchers and healthcare staff? What about technology transfer and medical equipment?

Depending on the nature, risks and burdens of the collaborative research, mutual negotiations should culminate in agreements or memoranda of understanding (MoU) aimed at providing a fair level of benefits to the host country, research institutions and communities. All clinical trials should be performed in compliance with local ethical and regulatory requirements. Nevertheless, research ethics committees cannot be made solely responsible for preventing unethical or exploitative conduct. Lack of staff, time and resources for follow-up restrain the agency of such research ethics committees. Access to adequate research infrastructure and equipment is critical for the quality of research too—in 2016, South Africa launched the Research Infrastructure Roadmap to improve researcher's access to world-class scientific knowledge and facilitate long-term planning to establish competitive national system of innovation (SAnews 2017). While funders should invest more in targeted equipment and infrastructure grants for African institutions to become internationally more competitive (Doloro 2016), mechanisms going well beyond the review of individual studies are necessary to ensure that partnerships result in systematic national capacity building in R&I. As the last section of this chapter explains, the RFI was precisely designed to go "beyond ethics review".

The CAAST-Net Plus project, through its events and reports, has succeeded in posing the question about geographic balance of Africa–Europe partnerships. One major tendency seems to carry over from FP7 to Horizon 2020: about 40% of all African participation comes from South Africa. Another is strong involvement of some European countries, such as Germany, France, United Kingdom and Sweden in collaborative health research projects with African countries—research institutes in these countries have previous working history and experience in sharing resources and results with partners in Africa. A corollary is the complete absence of several African and European countries in these bi-regional research projects (see Chap. 3).

Research Translation

Assessing the extent to which research outputs are translated through innovation into goods and services or new and revised policies and processes is a difficult task given the lack of validated measuring tools. Linking social, health and economic impacts to health research, investments and collaboration is all the more necessary given the considerable challenges facing health research, such as the discovery of new vaccines for HIV/AIDS, malaria and TB, or the achievement of a UHC. Although results in these fields remain fragmented, they do gradually improve health systems and healthcare services in Africa and Europe. Nevertheless, recent research development and health research programmes tend to signal positive trends regarding the measurement of progress and impacts made.

Many clinical trials address improvements and adaptations of existing treatments for specific, vulnerable target groups, such as newborns and infants, pregnant women and HIV-infected individuals, who benefit not only from the medicine, vaccine or technology being tested but also from better and more accessible preventive and curative health care. Similarly, research on neglected tropical diseases, which mainly affect populations living without adequate sanitation and in close contact with infectious vectors and livestock, is increasingly showing positive outputs. Under FP6 and FP7, several projects were funded on leishmaniasis, trypanosomiasis, schistosomiasis, Buruli ulcer, filariasis and sleeping sickness (CORDIS 2015). Results of these projects contributed to integrated diagnostic-treatment platforms and to several publications, constituting the evidence base for WHO policy revisions. This in turn contributed to the extended scope of the EDCTP programme and is also in line with the JAES.

The assessment of health research projects supported by the European Commission's (EC) Directorate General for Research and Innovation during the period 2002–2010 analysed the impact of projects on the major diseases HIV/AIDS, malaria and TB (European Commission 2011). This study confirmed the contribution of research projects to research objectives formulated by European member states and gave examples of successful projects in malaria and TB research:

- The European Malaria Graduate School, created under EVIMalaR as a follow-up to BioMalPar, has produced more than 50 European and African Ph.D. candidates in the field of malaria research. It has

significantly increased the coordination of new collaborative projects between institutional laboratories within Europe and with African partners. Around 400 publications were released by the consortium's members, including a large number of high-profile publications in *Nature*, *Cell*, *Science* and so on. Due to this collaboration, Europe is now recognised as the world leader in the biology of the malaria parasite (European Commission 2011).

- TBVAC2020 is a project funded by Horizon 2020 in the field of TB. With a total budget of over 18 million euros TBVAC2020 aims at innovating and diversifying the current TB vaccine and biomarker pipeline, at setting criteria to select the most promising TB vaccine candidates, and at accelerating their development. The project builds on long-standing collaborations in previous TB vaccine and biomarker projects funded by the EC under the FP5, FP6 and FP7. TBVAC2020 involves partners from Europe, USA, Asia, Africa and Australia, many of which are global leaders in the TB field. In the global network of over 50 partners, there are four beneficiaries from South Africa and two from Senegal (Tuberculosis Vaccine Initiative 2017).

Projects funded by the FP in the field of HIV/AIDS, malaria and TB show how the strengthening of capacity through collaboration has led to greater capacity for home-grown research-based solutions to Africa's health challenges:

1. The Kenya Medical Research Institute (KEMRI) has grown to be a leading health research institution with landmark studies on impregnated bed nets and on new vaccines, having direct impact on national and international policy, and contributing to improving the lives of millions of children. Over the last 15 years there have been impressive improvements in malaria control across Africa, and in Kilifi itself cases of malaria have dropped by 90% (KEMRI 2014).

2. The Mbeya Medical Research Centre in Tanzania conducts research on the three "big" tropical diseases, and others, by evaluating new interventions, utilising vaccines, drugs and diagnostics focusing on basic research, clinical trials, epidemiological research, operational

research and social sciences. The centre has a CAP accredited research laboratory and a state-of-the-art TB laboratory (www.mmrp.org, 2017).

3. The Manhiça Health Research Centre in Mozambique has become a recognised scientific centre carrying out epidemiological and biomedical research such as a Phase II clinical trial of a TB vaccine candidate.

Long-lasting partnerships between African and European member states and research institutions seem to be a key factor for successful collaboration and continued access to funding from national and multinational programmes. All three institutions have this in common: over 20 years of continuing and intense cooperation with European countries and research institutions—Wellcome Trust and Oxford University with KEMRI, University of Munich with Mbeya Medical Research Centre and the University of Barcelona with Manhiça Health Research Centre in Mozambique. In addition to increased institutional capacities for basic research and for conducting clinical trials, African countries also benefit from the establishment of the PACTR, increased ethics capacity through the RHInno Ethics platform and through the establishment of NECs in four countries—all through EDCTP funding (see www.rhinno.net and www.researchethicsweb.org, 2017).

Strengthening national health systems is explicitly mentioned in the JAES and has been addressed by several FP7 projects. Although it was hoped that the issue of Ebola would be jointly addressed by consortia of European and African partners, only one project, the REACTION project led by the French Institute INSERM (2015), found an African cooperation partner, namely the Cheikh Anta Diop University in Dakar, Senegal. The 2014 Ebola outbreak shows the extent to which political decisions are driven by changing realities such as disease outbreaks, as the EU provided 24.4 million euros from Horizon 2020 via a fast-track procedure to supporting research projects.

Another reaction to the Ebola outbreak was an increased engagement by the European private sector in bi-regional health R&I cooperation, especially in the recent funding of Ebola projects by the Innovative Medicines Initiative (IMI), a partnership between the EU and the European pharmaceutical industry, represented by the European Federation of Pharmaceutical Industries and Associations. The total

budget of the first 8 IMI-supported projects was 215 million euros, covering vaccine development and manufacture, vaccine uptake and diagnostics (IMI 2017). In view of these large and increasing amounts (especially in comparison to national health research budgets in most African countries), it is urgent to adopt a tool that will encourage compliance with existing guidelines and standards, that will indicate gaps requiring new ones to be developed and that constitutes a systematic learning platform for research partnerships.

The patenting and licensing *outside Africa* of products based on research conducted *in Africa* is, of course, a major area for future improvement. The RFI encourages research partners to make explicit statements on how they intend to address fairness in sharing of intellectual property—enabling debate, early negotiation, and gradual consensus on new standards and benchmarks.

Collaborative and multinational health research, especially between low- and high-income countries, has been a subject of controversy due to the many inequalities resulting from issues like data ownership, decision making and the application of research results in national policies and practices for capacity building (Costello and Zumla 2000; see also Chap. 7). Malawi's National Council on Science and Technology implemented a policy whereby research partners developed and enforced regulatory requirements relating to the conduct of research (National Commission for Science and Technology (Malawi) 2012). These requirements emphasise elements of fair research collaboration such as (1) the affiliation of researchers from high-income countries to local institutions, (2) the contribution to local capacity building (training, research infrastructure, technology transfer, transfer of knowledge and skills etc.) and (3) negotiating and signing appropriate MoUs or consortia agreements that aim at identifying and defining benefits of the collaborative research and a clear strategy of realising and sharing such benefits (Kachedwa 2015).

Similarly, the Council for International Organisation of Medical Sciences (CIOMS, www.cioms.ch, 2017) attempts, through a research ethics lens, to address some of the issues faced by partners in research collaborations. The CIOMS requires a sponsoring agency to ensure, ahead of the research process, that the product developed will be made reasonably available to the inhabitants of the host community or country once the testing successfully completed. However, no associated accountability mechanism exists to ensure this is done. Just as research ethics have a limited focus—mostly on participants in individual studies—so the CIOMS guidelines are inadequate for ensuring fair sharing of research benefits and

therefore reduce the potential impact from sharing of intellectual property or from "spin-off" economic activity.

New research trends in African countries suggest a brighter future, however: African countries aim to increase their investments from an average of 1% of GDP (UNESCO 2010). Between 2001 and 2006, there was a 60.1% increase in medical research publications by local authors in the African region (UNESCO 2015), reflecting an increase in spending on research and/or incoming funds by African nations. Nevertheless, research expenditures and publications are only one ingredient for successful research partnerships. What makes them effective is a much bigger challenge, to which we will turn in the next section.

The Unique Potential of the RFI to Improve Research Collaborations Between Africa and Europe?

Research partnerships (or formalised research collaborations) do not apply only to high-income countries: they are not merely a luxury afforded by those with the financial means to pay for them. Research partnerships are an essential component of sustainable development of low- and middle-income countries as well. Partnerships are recognised as key to sustainable development in general (through the Sustainable Development Goal 17), while research collaborations and research networks are becoming the essential components of a strategy to deal with global or local challenges and to build national research system capacities (Nordling 2015).

However, the potential of research collaboration, partnerships and networks to build sustainable national research systems (especially in low-income countries) can only be realised if such partnerships are "fair". If all partners can derive benefits commensurate with their contributions—or perhaps even more than their contributions in the case of support for research systems in low-income countries—*and* if these benefits concern *all* aspects of the "research enterprise" and not simply sharing in a publication, then the full potential of research collaboration could be fully realised. Partners and countries (especially, again, low-income countries) should not only benefit from access to a final product or technology but also share in research system capacity strengthening and spin-off economic activities. The research enterprise is so much larger than publications: it includes the creation of jobs, increasing social capital, increasing reliability of local

finance and communication facilities, sharing in intellectual property rights and the benefits deriving from these and much more.

Most, if not all, stakeholders in research are well aware of this—and many have tried and continue trying to improve the way partnerships are created and maintained, and how benefits (and costs) are shared more equitably. This applies to research collaboration between high-income countries as much as to collaborations between high- and low-income countries. The evidence-base of publications, guidelines, practical tools and even international legal instruments, like the Nagoya Protocol (United Nations 2010), is increasing (see, e.g. RFI-COHRED 2017).

The EU recently funded projects, such as TRUST, aimed at ensuring that international collaborative research using EU funding does not exploit populations in third countries (http://trust-project.eu, 2017). Similarly, the funding of the current CAAST-Net Plus project is anchored in improving policy dialogue to facilitate research collaboration between Europe and Africa in health, food security and climate change—with potential for much wider application of the project's results (https://caast-net-plus.org, 2017).

CAAST-Net Plus has been searching for ways in which the project can deliver outcomes and impact that can survive the funding limit (December 2017). In this regard, it was in 2016 that CAAST-Net Plus took the decision to adopt a partnership compliance tool under development by project partner COHRED. The RFI is a unique tool to gradually and systematically improve the way research partnerships are constructed, managed and maintained, with an emphasis on supporting low- and middle-income countries to develop their own national R&I systems.

The RFI does not invent new standards. Instead, it is a reporting tool that every major stakeholder in research should use to report on how they will behave and want partners to behave in joint research programmes. RFI Reporting Organisations (RROs) are required to provide responses to questions about the 15 most essential aspects of fairness and effectiveness in research partnerships—divided over the three phases of research collaboration: *fairness of opportunity (before)*, *fair process (during)* and *fair sharing of benefits, costs and outcome (after)*. The RFI does not ask for reports on each individual contract or partnership. It focuses on the conditions, policies and practices that RROs put in place to optimise R&I partnerships in which they are or will be involved (see http://rfi.cohred.org, 2107).

In doing so, RROs will, among other things:

- Be required to take note of existing evidence, guidelines and benchmarks, and indicate how they implement them. This makes the RFI an effective compliance tool.
- Be encouraged to identify, and then fill gaps in evidence, guidelines or benchmarking. This makes the RFI a critical learning tool.
- Be made aware of critical improvements they can make *within* their own organisation to the organisational management of research—increasing fairness, efficiency, impact and competitiveness, all at the same time. This makes the RFI an essential strategic management tool for all research stakeholders.
- Be empowering of low- and middle-income institutions and countries by enabling them to select their partners more clearly and to negotiate terms of collaboration explicitly and upfront.
- Be enabled to showcase innovations or major achievements in partnership construction and management—for which there is often no other platform inside or outside organisations. This makes the RFI an innovation tool by sharing learning.
- Be stimulated to become more transparent—to users, partners, funders and tax payers—about the social value of their institution, organisation or business. This makes the RFI a sector-specific Shared Value Report that is already being used increasingly in the private sector.
- Finally, become contributors to the first global evidence base for research collaboration and partnerships. At this time, there is no systematic evidence base—in other words, the partnership wheel is being re-invented with virtually every new partnership created, and learning ends with the end of a project. This makes the RFI a unique compliance instrument, transparency mechanism and learning platform to improve fairness, efficiency and impact of research partnerships.

Having seen the potential relevance of this tool early on, CAAST-Net Plus took a strategic decision to support its development as one of the ways in which it can make a long-term contribution to bi-regional research diplomacy and collaboration. Since then, all partners have spent time reviewing the RFI and adapting it to fit in the context of Africa-Europe research and

science collaboration. Over the course of two years, the RFI will have been reviewed in and with four to five African countries—usually hosted by ministries of health and of science and technology—and in meetings involving at least six European countries, as well as major project offices in the EC. The resulting RFI is now active—institutions are beginning to conduct internal reporting—and the RFI is being reviewed for use in two major bi-regional funding calls under the Africa–Europe R&I partnership on food and nutritional security and sustainable agriculture (FNSSA).

Conclusion

There has been growing momentum in the AU–EU health research cooperation agenda, which now focuses on the infectious diseases of malaria, HIV and TB and increasingly on NDs, and on health system strengthening. Nevertheless, research partnerships between both regions need to be diversified and strengthened, while the priorities and mutual benefit of bi-regional health research cooperation partnerships must be continuously assessed. Partnerships could not only gain prominence in future programmes but also have an impact going much beyond health issues, touching on agriculture, food security, climate change and biotechnology—and these fields could be broadly integrated in research for health. Major challenges remain ahead, however. Few European businesses have yet engaged or expressed interest in engagement in bi-regional health R&I cooperation: so should initiatives such as the IMI call on Ebola be encouraged and involve African partners. Similarly, funding for cooperation in health research between Africa and Europe should not only focus on EU policy instruments and financing mechanisms but also develop new models like those used by ERAfrica and the ERA-Net co-fund for Africa on FNSSA (LEAP-AGRI). Last but not least, should the RFI become a mainstream instrument, it would provide a valuable global tool that can be used to systematically improve research collaborations involving collaborators from Africa and Europe.

Notes

1. NDs are NCDs that prevail mainly in subtropical conditions and largely affect populations living in close contact with infectious vectors and domestic animals.
2. Publications with at least one Sub-Saharan African author and another author affiliated in one of the 28 European Union member states or associate

states to the last and current Framework Programme for Research and Technological Development (FP7 and Horizon 2020 respectively) were included. In this bi-regional extract of co-publications, there are also strong co-authors from countries outside the two regions involved (e.g. Northern African countries or the United States of America).

3. The research process was first developed through a review of policies and reports on Africa–EU cooperation and health research in particular (CAAST-Net Plus 2016). Co-publications in health research from 2004 to 2015 with authors affiliated to institutions in Europe and in Sub-Saharan Africa were retrieved from Elsevier's Scopus database (www.elsevier.com, 2017). The analysis was complemented by information on EU-funded health projects. Annual and evaluation reports of the FP and EDCTP were reviewed, especially in relation to the question on balanced cooperation. The principal selection criteria for a project's inclusion in the study were that (1) it involved a partnership with at least one African partner, and (2) the focus of the project was on health research. Information to address both criteria was obtained from the European Commission's website CORDIS (http://ec.europa.eu/research/, 2017) and from the Health Competence database (http://www.healthcompetence.eu, 2017). In total more than 200 FP project profiles were reviewed and 67 projects identified as relevant and grouped into six key research fields: (1) HIV/AIDS, (2) malaria, (3) tuberculosis, (4) co-infection with one of these three diseases, (5) neglected infectious diseases and (6) research on health systems.
4. The keyword sets used:

   Poverty related diseases (PRDs) (see WHO 2004): TITLE-ABS-KEY (hiv) OR TITLE-ABS-KEY (aids) OR TITLE-ABS-KEY (malaria) OR TITLE-ABS-KEY (tuberculosis) OR TITLE-ABS-KEY (dental decay) OR TITLE-ABS-KEY (diarrhoea) OR TITLE-ABS-KEY (pneumonia) OR TITLE-ABS-KEY (malnutrition)

   Neglected diseases (NDs): cf. http://www.who.int/neglected_diseases/diseases/en/ (2017) TITLE-ABS-KEY (Human African trypanosomiasis) OR TITLE-ABS-KEY (trypanosomiasis) OR TITLE-ABS-KEY (sleeping sickness) OR TITLE-ABS-KEY (Buruli ulcer) OR TITLE-ABS-KEY (Chagas disease) OR TITLE-ABS-KEY (Cysticercosis) OR TITLE-ABS-KEY (taeniasis) OR TITLE-ABS-KEY (Dengue fever) OR TITLE-ABS-KEY (Chikungunya) OR TITLE-ABS-KEY (Dracunculiasis) OR TITLE-ABS-KEY (Guinea-worm disease) OR TITLE-ABS-KEY (Echinococcosis) OR TITLE-ABS-KEY (trematodiases) OR TITLE-ABS-KEY (Leishmaniases) OR TITLE-ABS-KEY (Leprosy) OR TITLE-ABS-KEY (Hansen disease) OR TITLE-ABS-KEY (Lymphatic filariasis) OR TITLE-ABS-KEY (Onchocerciasis) OR TITLE-ABS-KEY (Rabies) OR TITLE-ABS-KEY (Snakebite) OR TITLE-ABS-KEY (Schistosomiasis) OR TITLE-ABS-KEY (Soil-transmitted helminthiasis) OR TITLE-ABS-KEY (Trachoma) OR TITLE-ABS-KEY (Yaws)

Non-communicable diseases (NCDs): cf. http://www.afro.who.int/en/clusters-a-programmes/dpc/non-communicable-diseases-managementndm/npc-features/1236-non-communicable-diseases-an-overview-of-africas-new-silent-killers.html (2017) TITLE-ABS-KEY (Cardiovascular disease) OR TITLE-ABS-KEY (Chronic obstructive pulmonary disease) OR TITLE-ABS-KEY (chronic respiratory disease) OR TITLE-ABS-KEY (Diabetes) OR TITLE-ABS-KEY (Cancer) OR TITLE-ABS-KEY (Obesity)

References

African Union & European Union. (2007). *The Africa-EU strategic partnership: A joint Africa-EU strategy*. Available from: http://www.africa-eu-partnership.org/sites/default/files/documents/eas2007_joint_strategy_en.pdf. Accessed 8 May 2017.

Breugelmans, G., Cardoso, A. L., Chataway, J., Chataway, M., Cochrane, G., Manville, C., Murali, N., & Snodgrass, J. (2014). *Africa mapping: Current state of health research on poverty-related and neglected infectious diseases in sub-Saharan Africa*. The Hague: European & Developing Countries Clinical Trials Partnership.

Breugelmans, J. G., Cardoso, A. L. V., Gurney, K. A., Makanga, M. M., Mathewson, S. B., Mgone, C. S., & Sheridan-Jones, B. R. (2015). Bibliometric assessment of European and sub-Saharan African research output on poverty-related and neglected infectious diseases from 2003 to 2011. *PLoS Neglected Tropical Diseases, 9*(8). Available from: http://journals.plos.org/plosntds/article?id=10.1371/journal.pntd.0003997. Accessed 16 May 2017.

CORDIS. (2015). *Express: Research results tackle neglected tropical diseases*. Available from: http://cordis.europa.eu/news/rcn/124183_en.html. Accessed 16 May 2017.

CORDIS. (2017). *Final report summary—HARP*. http://cordis.europa.eu/result/rcn/163257_en.html. Accessed 27 June 2017.

Costello, A., & Zumla, A. (2000). Moving to research partnerships in developing countries. *British Medical Journal, 321*, 827–829.

EDCTP. (2017). *Success stories*. Available from www.edctp.org/projects-2/success-stories. Accessed 27 June 2017.

European Commission. (2011). *Impact assessment of health research projects supported by DG research and innovation 2002–2010*. Available from: https://www.kowi.de/Portaldata/2/Resources/fp/fp-impact-assessment-health-research-2002-2010.pdf. Accessed 16 May 2017.

Innovative Medicine Initiatives. (2017). *IMI 2-Call 8*. Available from: http://www.imi.europa.eu/content/imi-2-call-8. Accessed 27 June 2017.

INSERM. (2015). *Preliminary results of the JIKI clinical trial to test the efficacy of Favipiravir in reducing mortality in individuals infected by Ebola virus in*

Guinea. Available from: http://presse.inserm.fr/en/preliminary-results-of-the-jiki-clinical-trial-to-test-the-efficacy-of-favipiravir-in-reducing-mortality-in-individuals-infected-by-ebola-virus-in-guinea/18076/. Accessed 16 May 2017.

Kachedwa, M. (2015). *Framework conditions for fair international research and innovation collaboration: Malawi perspectives*. Available from: https://caast-netplus.org/object/news/1277/attach/M__KACHEDWA_Framework_conditions_for_fair_intl_res_and_innov_collab_MALAWI_PERSPECTIVES__.pdf. Accessed 16 May 2017.

Karolinska Institutet. (2017). *SMART2D*. http://ki.se/en/phs/smart2d. Accessed 16 May 2017.

KEMRI. (2014). *25th anniversary of the KEMRI-Welcome Trust research programme*. Available from: https://www.tropicalmedicine.ox.ac.uk/_asset/file/25th-anniversary-brochure-2.pdf. Accessed 16 May 2017.

London School of Hygiene and Tropical Medicine. (2015). Funding call: NCDs in Africa. *Centre for Global NCDs*. Available from: http://globalncds.lshtm.ac.uk/2015/05/11/funding-call-ncds-in-africa-2/. Accessed 16 May 2017.

Lozano, R., et al. (2012). Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: A systematic analysis for the global burden of disease study 2010. *The Lancet, 80*(9859), 2095–2128.

Ministerial Conference on Immunization in Africa. (2017). *Declaration on "Universal access to immunization as a cornerstone for health and development in Africa"*. Available from: http://immunizationinafrica2016.org/ministerial-declaration-english/. Accessed 27 June 2017.

MRC Unit the Gambia. (2017). *PROLIFICA consortium holds first meeting in the Gambia*. Available from: http://www.mrc.gm/prolifica-consortium-holds-first-meeting-in-the-gambia/. Accessed 27 June 2017.

National Commission for Science and Technology (Malawi). (2012). *National regulatory requirements and policy measures for the improvement of health research co-ordination in Malawi*. Available from: http://www.medcol.mw/comrec/wp-content/uploads/2014/07/National_Policy_Measures_and_Requirements_for_the_Improvement_of_Health_Research_Co-ordination_in_Malawi.pdf. Accessed 16 May 2017.

Nordling, L. (2015). *Research: Africa's fight for equality*. Available from: http://www.nature.com/news/research-africa-s-fight-for-equality-1.17486. Accessed 16 May 2017.

Olesen, O., & Parker, I. (2012). Health research in Africa: Getting priorities right. *Tropical Medicine and International Health, 17*(9), 1048–1052.

RAND. (2017). *Evaluating the impact of EU R&D on poverty-related and neglected diseases (PRNDs)*. Available from: http://www.rand.org/randeurope/research/projects/impact-of-research-on-poverty-related-neglected-diseases.html. Accessed 27 June 2017.

RFI-COHRED. (2017). *RFI evidence-base*. Available from http://rfi.cohred.org/evidence-base. Accessed 27 June 2017.

SAnews. (2017). *SA sharpens its research quality*. Available from: http://www.sanews.gov.za/south-africa/sa-sharpens-its-research-quality. Accessed 27 June 2017.

Tuberculosis Vaccine Initiative. (2017). *TBVAC2020 project description*. Available from: http://www.tbvi.eu/for-partners/tbvac2020/tbvac2020-project-description/. Accessed 27 June 2017.

UNESCO. (2010). *Research and development: Africa is making progress despite major challenges*. Available from: http://www.unesco.org/new/en/media-services/single-view/news/research_and_development_africa_is_making_progress_despite_major_challenges/#.VwERi6R97IU. Accessed 3 Apr 2016.

UNESCO. (2015). *UNESCO science report: Toward 2030*. Paris: UNESCO.

United Nations. (2010). *Nagoya protocol on access to genetic resources and the fair and equitable sharing of benefits arising from their utilisation to the convention on biological diversity 2010, opened for signature 29 October 2010, entered into force 12 October 2014*. Available from: https://treaties.un.org/doc/Publication/MTDSG/Volume%20II/Chapter%20XXVII/XXVII-8-b.en.pdf. Accessed 16 May 2017.

WHO. (2014). *Universal health coverage in Africa: From concept to action*. Available from: http://www.who.int/health_financing/policy-framework/auc-who-2014-doc1-en.pdf. Accessed 16 May 2017.

WHO. (2016). *Director-General briefs media on outcome of Ebola emergency committee*. Available from: http://who.int/mediacentre/news/statements/2016/ihr-emergency-committee-ebola/en/. Accessed 16 May 2017.