

GP Politics Briefing

**Contribution of Research
and Development to
Resilient Health Systems**

The Role of Germany

October 2018

An event by the Global Perspectives Initiative



Global Perspectives Initiative (GPI)

The Global Perspectives Initiative supports the United Nations' Sustainable Development Goals, which aim to make the world a fairer and safer place by 2030. GPI brings together stakeholders from politics, business, media and society, discusses approaches to sustainable global development and motivates people to act.

As a non-profit and neutral platform, the initiative gives rise to new ideas, raises awareness about the opportunities and challenges around the concept of a global society and thereby shapes the public discourse in Germany.

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Contribution of Research and Development to Resilient Health Systems

At present, Germany invests €850 million in Global Health (or health-related international aid assistance), twice as much as just a decade ago. While this is a favorable development, it remains (some €15 million) less than the WHO recommendation of 0.1% of Germany's GNI. Although Germany is itself the largest donor to the WHO's fund for emergencies it has to catch up and needs to intensify the efforts toward higher international research expenditures.

The recent political decisions in cutting research contributions of the Trump administration are creating a vacuum which needs even more international leadership and investment. Germany has to take the demand for global responsibility. These factors among others accumulate to a new role that Germany holds. While "filling the vacuum" in international leadership is necessary, Germany should do so in consistently working towards improved multilateral solutions and being a forcing-actor in all aspects of Global Health.

The Global Perspectives Initiative supports the SDGs and has a special focus on Health as the basis of any wellbeing for the people as well as for all nations. With the help of experts from Europe, Africa and America, through workshops and dialogues, five general requests emerged for future German engagement in Global Health:

- 1. More investment into R&D of prevention and cure of NTDs and PRNDs**
- 2. More investment in on-site capacity and capability building in African countries**
- 3. Better collaboration between institutions of African countries and those of Germany**
- 4. Better preparation of national health systems of African countries towards higher resilience**
- 5. Better development of research structures, governance in the framework of pharmaceutical markets and access to pharmaceutical products**

COMMENTS TO THE RESULTS BY THE NOBEL LAUREATES

Peter Agre (Nobel Laureate 2003)

Research on poverty-related diseases is making good progress. Private institutions can make a difference. Supporting local champions in academia, research, and governance remains key.

Aaron Ciechanover (Nobel Laureate 2004)

The only sustainable solution can be found through a holistic approach. Eradicating one disease will not solve the issue of the absence of health eco-systems. And neither the lack of capacity.

1. MORE INVESTMENT INTO R&D OF PREVENTION AND CURE OF PRNDS, INCLUDING VACCINATIONS

In view of present economic prosperity, Germany should invest more in the prevention and cure of PRNDs and NTDs. The WHO estimates that more than one billion people suffer from neglected tropical diseases (NTDs) that often are poverty related. NTDs look beyond malaria, tuberculosis, and HIV, and comprise 20 diseases that have experienced very little attention in research. The results of the G7 summits in Elmau (2015) and in Ise-Shima (2016) underline the combat of NTDs is a Global Health challenge. However, the investment in research and development of prevention and cure remain characterized by structural deficits – also in Germany.

NTDs and PRNDs affect the world's poorest and most marginalized communities. Malaria and tuberculosis alone lead to the death of an estimated 2.1 million people annually. These diseases increase infirmity and insecurity, undermine productivity, and thus perpetuate the cycle of poverty. Sub-Saharan Africa is disproportionately affected, approximately 90% of all malaria-related deaths occur in this region.

On the other side – with nearly 200,000 migrants entering Europe via the Mediterranean alone in 2017, there will be a need to refocus attention to prepare for new patterns of disease spread, and for infectious disease outbreaks and epidemics. As outlined in the 2018 report of the World Bank's International Vaccines Task Force, clinical research capacity needs to be built in advance of outbreaks, so that research on treatments and preventive measures can be rapidly initiated when outbreaks occur.

2. MORE INVESTMENT IN ON-SITE CAPACITY AND CAPABILITY BUILDING IN AFRICAN COUNTRIES

The combat of NTDs will be successful only through interdisciplinarity – One-Health. Approaching research and development from this perspective requires local capacities and capabilities that go beyond the study of human medicine, but comprise the studies of veterinary medicine and climate change.

Besides, the availability of sufficient resources (to construct and run well-managed clinics), intergovernmental relations (to ensure the pursuit of a common goal), bureaucracy, and cooperation with international actors (to establish joint decision-making processes) are all critical factors in local capacity and capability building. Local research institutes in African countries usually have access to excellent cohorts and patients coupled with an efficient production of field data and samples.

However, beyond that, there remains high dependence on external collaborators. To establish a stronger role for Africa-based researchers on the international stage, there needs to be a concerted effort to equip African research institutions with well-managed world-class research facilities that can allow them to be at par with their counterparts abroad.

Capacity Building

Units and strategies for sustainable research structures must focus on health more holistically.

3. BETTER COLLABORATION BETWEEN INSTITUTIONS OF AFRICAN COUNTRIES AND THOSE OF GERMANY

The research and development in the prevention and cure of NTDs is still very one-sided. German research institutions commonly focus on fundamental research in biomedicine. A possible root-cause is the predominantly short-term financing of academic research projects that undermines long-term studies on basis of international cooperation. Synergy effects arising from collaboration between university and non-university research are not sufficiently made use of. Ministries should continue to collaborate even closer to recognize interdisciplinary funding opportunities.

Germany has strong research organizations and there are strong research sites in Sub-Saharan Africa. They are the capacity and chance for strong research partnerships. Institutionalized funding by Germany would strengthen those who developed strong capacities that meet international standards in health research in the Global South and support the build-up of lasting health research and education infrastructure. International networks are fundamental and to be expanded. Programs like the Research Networks for Health Innovation in Sub-Sahara Africa of the BMBF's Africa Strategy should be broadened and multiplied in number.

Framing

A global health governance must be encouraged through continuous financial contributions, multilateral cooperation, and dignity.

4. BETTER PREPARATION OF NATIONAL HEALTH SYSTEMS OF AFRICAN COUNTRIES TOWARDS HIGHER RESILIENCE

Sustainable health ecosystems must be developed locally, and be patient-centered. Patient-centered approaches recognize the fact that many patients are affected by more than one condition, including infectious and non-infectious diseases.

This multi-morbidity has various consequences – one condition may increase the risk of another or exacerbate symptoms, and treatments for different diseases may interfere with one another. These factors have important implications for both the design and the implementation of interventions.

Strong healthcare systems everywhere are a fundamental premise of a system preparing against possible global epidemics. To ensure rapid responses in times of emergency, countries need to commit to building their clinical research and regulatory capacities in advance and promote regional cooperation and harmonization. Global Health initiatives need to support these efforts and establish mechanisms of effective global collaboration. Necessary steps toward the adequate development of resilient health environments include an increase in investments, a focus on NTDs, education of qualified medical personnel, researchers from Africa for Africa, on-site solution development, and the need for good coordination.

On-Site Solutions

Sustainable health ecosystems must be developed locally because they are a precondition for local health improvement.

5. BETTER DEVELOPMENT OF RESEARCH STRUCTURES, GOVERNANCE IN THE FRAMEWORK OF PHARMACEUTICAL MARKETS AND ACCESS TO PHARMACEUTICAL PRODUCTS

Pricing and funding mechanisms must be developed that encourage and incentivize the research in and of neglected diseases. Innovative public-private partnerships and novel funding mechanisms are required if we are to continue investing in neglected diseases that primarily affect low and middle-income countries and where there is limited sales potential in high-income markets to offset drug development costs. Product-Development-Partnerships could increase collaboration efforts between research foundations and industry at international scale. The future of health and wellbeing in the Global South will depend on the development of strengthened people-centered health systems delivering care to all those in need, in ways adapted to the specific circumstances of individual nations.

Pharma Industries

Pricing and funding mechanisms must be developed that encourage the research in and of neglected diseases.

BACKGROUND

As a result of the Lindau Laureate Meeting 2018 and the statements of participants, thoughts, and contributions this collection shows the major lines of the discussion:

1. **Germany's and Europe's responsibility for Global Health**
2. **Increasing investment in research on poverty-related and neglected diseases**
3. **Improving (health) infrastructure in the Global South**

Global Perspectives Initiative

GP Side Event "Health Innovation in Africa"

The 68th Lindau Nobel Laureate Meetings of Medicine (where 39 Nobel laureates met 600 young scientists from 84 countries) focused on Global Health and the medicine of tomorrow. On this occasion, the Global Perspectives Initiative invited to a breakfast discussion dedicated to the topic of Health Innovation in Africa. The Global North has responsibilities and must strive for a global structure that allows for access to health – independent of a person's origin. Research alone is insufficient. The participating experts highly encouraged increased political commitment of researchers themselves.

THE DISCUSSION ON PAPER

The Global Perspectives Initiative formulated three central demands that jointly serve as the discussion's base. The expert's comments are summarized underneath each demand.

1. Germany's and Europe's responsibility for Global Health

Edith Phalane

Although Germany joined the Global Health debate later compared to other G7 countries, Germany has become an evident player in Global Health over the last 10 years. This is demonstrated by its expansion in the political and financial engagements in Global Health. The recent meeting of the G20 ministers of health held in Berlin further shows the country's dedication to Global Health. I believe Germany and the EU have more to offer in terms of moving Global Health forward. Germany's and the EU's responsibility for Global Health is starting to become evident, in particular with regards to the Global South, specifically Africa. The UNAIDS' and Germany's healthcare partnership on the importance of strengthening innovation and health systems in Africa is one example. The country's commitment to Global Health also became visible during the Ebola outbreak when Germany demonstrated strong governmental leadership and proven health security engagement. My research focuses on the long-term cardiovascular health of the HIV-infected population. In this field, I believe there is more that still needs to be done in terms of addressing new HIV infections and management thereof as well as the increasing rates of cardiovascular diseases (CVD). HIV continues to be a global pandemic. It is a burden not only in the Global South but also in the Global North, with its innovative and cutting-edge technologies and better healthcare systems. This indicates vulnerability and gaps that need to be addressed in Global Health policies.

CVD are one of the leading causes of mortality and morbidity globally, and this continues to place a challenge on health systems and policies. Germany and the EU can assume more responsibility by addressing causes and management of CVD globally by integrating a global approach.

Dr. Brenda Kwambana

I think Germany and the EU, in general, are now at the convergence of not just a socio-political but also a Global Health crisis. With nearly 200,000 migrants entering Europe via the Mediterranean alone in 2017, there will be a need to refocus attention on infectious diseases such as tuberculosis. Malaria still kills 445,000 people every year around the world. In 2008 there were 156 million cases of pneumonia and 1.6 million deaths mostly among children under five years of age in the Global South. The burden of non-communicable disease continues to increase in high income and low-middle income countries. Despite major advances in Global Health through vaccines and antimicrobial therapy, there is great scope for Europe to play a central role in addressing Global Health challenges through strategic strengthening of partnerships with LMIC governments and research institutions. The European & Developing Countries Clinical Trials Partnership (EDCTP) which funds clinical research to accelerate the development of new or improved drugs, vaccines, microbicides and diagnostics against HIV/AIDS, tuberculosis and malaria, as well as other poverty-related infectious diseases in Sub-Saharan Africa, is an excellent model that should be extended.

Dr. Sambuddha Ghosh, MD

The first health ministers' meeting during Germany's G20 presidency in 2017, attracted a lot of investments and Global Health activities by many different stakeholders – which are still continuing. Germany could, therefore, play a strong political, conceptual, and financial role as Global Health leader. The new government must continue and further strengthen such Global Health commitments, which will see Germany make a significant contribution to the implementation of the Sustainable Development Goals. Germany and the EU both play critical roles in Global Health. This September is marked by the first high-level meeting on tuberculosis (TB) during the United Nations General Assembly in New York. The broad engagement of member states such as Germany and generally the EU will encourage other countries to place a higher emphasis of TB on their agenda. UN member states will also be requested to step-up their commitments through increased funding as a percentage of GDP, committing to detection, treatment, and elimination targets, and supporting a human-rights based approach to TB management. The strong involvement of Germany and the EU at this high-level meeting will be crucial to ensure its success.

Prof. Dr. Peter Kremsner

Germany, driven by the German chancellor Angela Merkel, prioritized health during its German G7 and G20 presidency in 2015 and 2017. As a result, health assumed a prominent place on the political agenda. This momentum should be used by Germany within the international as well as the European community. Germany has strong research organizations such as the German Centers for Health Research (DZGs).

Among those, the German Center for Infection Research (DZIF) hosts thematic units for poverty-related and neglected tropical diseases and additional infrastructure units – the African Partner Sites. Therefore, there is the capacity and chance – such as within the German government’s new strategy of cooperation with Africa Marshall Plan with Africa – for strong health research partnerships between Germany and Sub-Saharan Africa to strengthen Germany’s longstanding commitment to health systems and to efficiently tackle poverty-related and neglected tropical diseases. As Germany has become a visible actor in Global Health within the European Union, Germany should be more active and visible in European initiatives such as the European and Developing Countries Clinical Trials Partnership (EDCTP).

2. Increasing investment in research on poverty-related and neglected diseases

Dr. Brenda Kwambana

I investigated the links between the microbiome, vaccination, and carriage of the deadly pathogen *Streptococcus pneumoniae* (commonly called the pneumococcus) in the nasopharynx of babies in the Gambia. I started this work ten years ago as a doctoral student when there was very little interest in the microbiome let alone the upper airway microbiome. Back then, I had access to very crude molecular tools that had low sensitivity and were quite laborious to probe the microbiome. A year into my Ph.D. I met an American collaborator from a large genomics center who offered to perform highly sensitive next-generation sequencing to better understand the microbiome. As you can imagine, I gladly agreed to this collaboration because there was no other way I could have accessed these high-tech tools. Unfortunately, it took five years to get the sequencing data back and analyze it. By the time I published the paper, there were already other publications on the nasopharyngeal microbiome (mostly from Europe) – I had lost that race in a way. However, my study was still the first to describe the structure and organization of the nasopharyngeal microbiome from birth through the first year of life. I also showed that the pneumococcal vaccine did not significantly alter the nasopharyngeal microbiome among infants, as had been feared. The MRC Unit The Gambia at LSHTM has established a Genomics Center equipped with next-generation sequencing platforms and a high performance-computing center. This means that I now have even greater control and ownership of my research. For instance, I now only need a few days to go from a sample in the field to raw sequencing data.

Dr. Michael Makanga

The EDCTP is a public-public partnership between institutions mandated by national governments in Europe and Sub-Saharan Africa and supported by the EU. It was created as a European response to the Global Health crisis related to poverty-related infectious diseases. This research funding partnership aims to accelerate the clinical development of new or improved medicinal products while also strengthening African clinical research capacity. Poverty-related infectious diseases have an enormous negative impact on health, society and the economy. They particularly affect the world’s poorest and most marginalized communities.

More than 1 billion people, including 400 million children, are suffering from the three major poverty-related diseases — HIV/AIDS, malaria and tuberculosis — and the neglected infectious diseases combined. Malaria and tuberculosis alone lead to the death of an estimated 2.1 million people annually. Poverty-related diseases increase infirmity and insecurity, undermine productivity, and thus perpetuate the cycle of poverty. Sub-Saharan Africa is disproportionately affected; approximately 90% of all malaria-related deaths occur in this region which also accounts for 68% of all people living with HIV and 72% of AIDS-related deaths.

Dr. Sambuddha Ghosh, MD

As a leader and largest private sector funder of TB research and development, Otsuka has learned over the last 40 years of our TB development programme that we cannot do it alone. Innovative public-private partnerships and novel funding mechanisms are required if we are to continue investing in neglected diseases that primarily affect low and middle-income countries and where there is limited sales potential in high-income markets to offset drug development costs. As a result, Otsuka supports a variety of incentives such as priority review vouchers, accelerated approval mechanisms, international regulatory harmonization programmes, national and international funding and cost-offsetting programmes, international bulk-procurement and purchasing mechanisms, regulatory fee waivers for orphan and neglected diseases, R&D prizes for neglected diseases, and multi-sectoral collaborations, among others. Unfortunately, many of these incentives remain theoretical or have been implemented in only a handful of countries. We strongly believe that these types of incentives, and others, are urgently required in order to ensure continued research, development and commercialization in priority neglected diseases such as tuberculosis.

Prof. Dr. Peter Kremsner

The strong and longstanding health research partnership between the Institut für Tropenmedizin der Universität Tübingen and the Centre de Recherches Médicales de Lambaréné (CERMEL) in Lambaréné, Gabon is a good example for an already existing strong health research partnership between Germany and Sub-Saharan Africa, an important element of creating research capacities within Africa. Institutionalised funding by Germany would strengthen those who developed strong capacities that meet international standards in health research in the Global South and support building lasting health research and education infrastructure.

3. Improving (health) infrastructure in the Global South

Dr. Brenda Kwambana

Many African-based scientists are facing the same challenges I did a few years ago. They usually have access to excellent cohorts and patients coupled with an efficient production of field data and samples. However, beyond that, there is a high dependence on external collaborators typically in Europe and the USA for more sophisticated analyses. This invariably puts them at risk of having very slow turnaround times to publication, low prioritization of their work and loss of ownership of their research.

African-based researchers can easily become “sample collectors” as opposed to credible researchers. The lack of access to advanced technologies (capacity) and training in the tools to interact with “big data” (capability) are probably the most critical bottlenecks hindering African-based researchers from taking a lead role in addressing the continent’s most pertinent public health challenges. To establish a stronger role for Africa-based researchers on the international stage, there needs to be a concerted effort to equip African research institutions with well-managed world-class research facilities that can allow them to be at par with their counterparts abroad. Secondly, we need to ensure that African researchers can access high-level training and collaborate as equals and not subordinates. Organizations such as The Africa Research Excellence Fund (AREF), which invest in talented, emerging researchers in Africa, are helping to change the landscape of African-based science. AREF nurtures Sub-Sahara African health research at its most vulnerable points by ensuring early-career researchers have the capabilities needed to advance their careers. We desperately need more of such efforts to effectively strengthen research in Africa and ensure that its scientist can compete for competitive funding globally.

Prof. Dr. Jürgen Kluge

I believe the starting positions are so different on the globe that we certainly need “horses for courses” and differentiated answers. In very poor countries the solution could be public-private partnerships.

Dr. Michael Makanga

The population in LMICs, especially in Africa is progressively increasing over time, particularly the young population (0–30 years). These countries bear the highest burden of disease, mainly infectious diseases but the investment in research and research capacity development by low-income countries is meager. Furthermore, for diseases predominantly affecting resource-limited settings, there is little incentive for the industry to invest in innovations. Alternative funding mechanisms are required to address this market failure. The future of health in Sub-Saharan Africa, better health and wellbeing will depend on the development of strengthened people-centered health systems delivering care to all those in need, in ways adapted to the specific circumstances of individual nations. Efficacy trials focus on the intervention, but to have public health impact there is also a need to get close to the patient – paying attention to key contextual issues, such as patient co-infections, co-morbidities, and personal circumstances; health service delivery mechanisms, including prevailing barriers to health service access; and socio-economic and political contexts. These issues are set within the wider global context of the strive for universal health coverage, as countries increasingly consider how health systems can provide populations with comprehensive, integrated and sustainable access to healthcare. Patient-centered approaches recognize the fact that many patients are affected by more than one condition, including infectious and non-infectious diseases. This multi-morbidity has multiple consequences – one condition may increase the risk of another or exacerbate symptoms, and treatments for different diseases may interfere with one another.

These factors have important implications for both the design and the implementation of interventions. A further key global trend is the need to prepare for and manage infectious disease outbreaks and epidemics. As outlined in the 2018 report of the World Bank's International Vaccines Task Force, clinical research capacity needs to be built in advance of outbreaks, so that research on treatments and preventive measures can be rapidly initiated when outbreaks occur, and essential evidence on effective control strategies can be generated as swiftly as possible. To ensure this rapid response in times of emergency, countries need to commit to building their clinical research and regulatory capacities in advance, and promote regional cooperation and harmonization, while Global Health initiatives need to support these efforts and establish mechanisms of effective global collaboration.

Dr. Michael Makanga contributed the following key points and strategies to the development of strong research capacity in LMICs by writing:

- Improved clinical research mentoring opportunities, both institutionally and individually
- Development of research networks that can offer learning and support opportunities
- Support for LMICs to define their own clinical research agendas
- Strengthened national and regional research networks – to be locally relevant and sustainable
- Increased health research funding from national governments as well as from international donors: in order to generate and sustain improvements in clinical research capacity, governments must commit the needed resources to finance the associated capital and recurrent costs
- Promote advocacy and research diplomacy to demonstrate the impact of clinical research
- Improved career pathways for clinical researchers in LMICs

He further summarized the following conditions to the build-up of eco-systems of resilient health environments:

- Increasing investments
- Focus: poverty-related diseases
- Educate qualified medical personnel and researchers from Africa for Africa
- Solutions developed on site
- Coordination need: architecture of research structures
- Multilateral agreements can help

Please direct any comments or queries regarding the content of this paper to Daniel Greve: d.greve@globalperspectives.org

LINDAU NOBEL LAUREATE MEETING 2018 PARTICIPANTS

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**Contribution of
R&D to Resilient
Health Systems**

Participants

Prof. Dr. Stefan Kaufmann is founding Director of the Max-Planck-Institute for Infection Biology, where he heads the Department of Immunology. He served as scientific advisor on “Health” for the G7 summit in Elmau (2015) and G20 summit in Hamburg (2017).

Prof. Dr. Agre is Director to the Johns Hopkins Malaria Research Institute at Johns Hopkins University, and serves as Program Director of the International Centre of Excellence for Malaria Research in Zimbabwe and Zambia. He was honoured for the discovery of aquaporin water channels with the Nobel Prize (shared) in 2003.

Prof. Dr. Aaron Ciechanover is Director of the Technion Integrated Cancer Centre at the Technion Israel Institute of Technology. He was honoured for the discovery of ubiquitin-mediated protein degradation with the Nobel Prize (shared) in 2004.

Dr. Roseanne Diab is Executive Officer to the Academy of Science of South Africa, and senior Professor of Environmental Studies at the University of KwaZulu-Natal in Durban, South Africa. She has served on a number of international commissions, including the Commission on Atmospheric Chemistry and Global Pollution.

Dr. Sambuddha Gosh is trained MD and associate Director of the department of Infectious Diseases and Pulmonology at Otsuka Novel Products GmbH. Otsuka says to focus on filling the gaps in tuberculosis treatments through research and development, and responsible access to medicines.

Dr. Jürgen Kluge is Chair of the Lindau Nobel Laureate Meetings Foundation Board, responsible for the annual Laureate Meetings in Lindau. He serves as independent consultant to numerous advisory boards. Until 2006, he was CEO to McKinsey & Company in Germany and Austria.

Prof. Dr. Peter Kremsner is Director of the Institut für Tropenmedizin and Chief Executive Officer at the Comprehensive Infectious Disease Center of Universitätsklinikum Tübingen. He is one of the most frequently cited scientists in the field of parasitology and malaria in Europe.

Dr. Brenda Kwambana is Senior Scientific Officer at the Medical Research Center Unit The Gambia, a leading health research site in West-Africa. She serves as Deputy Head of the WHO Collaborating Center for New Vaccines Surveillance and leads technical missions during bacterial meningitis outbreaks.

Dr. Michael Makanga is Chief Executive Officer at the European and Developing Countries Clinical Trials Partnerships (EDCTP). Dr. Makanga has spent 21 years working on medical product development and clinical regulatory activities in sub-Saharan Africa.

Edith Phalane is PhD Candidate at North-West University in South-Africa. Her research focuses on the impact of long term HIV infections. Phalane participated at this year’s Lindau Nobel Laureate Meetings as Young Scientist.

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