



M A L I

Gorom-Gorom

Djibo

Dori

N I G E R

NIAMEY

BURKINA FASO

OUAGADOUGOU

Nouna

Dédougou

Réo

Koudougou

Tougan

Yako

Kongoussi

Kaya

Bogandé

Manga

Tenkodogo

Fada-N'Gourma

B E N I N

G H A N A

T O G O

CÔTE D'IVOIRE

THE FINANCIALISATION OF MALARIA IN AFRICA:

BURKINA FASO, ROGUE CAPITAL & GM/GENE DRIVE MOSQUITOES



AFRICAN CENTRE FOR BIODIVERSITY

DISCUSSION PAPER

APRIL 2022

The African Centre for Biodiversity (ACB) is a research and advocacy organisation working towards food sovereignty and agroecology in Africa, with a focus on biosafety, seed systems and agricultural biodiversity. The organisation is committed to dismantling inequalities and resisting corporate industrial expansion in Africa's food and agriculture systems.



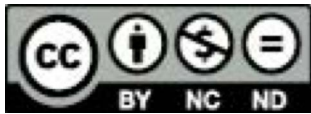
**AFRICAN CENTRE
FOR BIODIVERSITY**

© **The African Centre for Biodiversity**

www.acbio.org.za

PO Box 29170, Melville 2109, Johannesburg, South Africa.

Tel: +27 (0)11 486-1156



This publication is licensed under a **Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License**. This publication may be shared without modification for non-commercial use provided the African Centre for Biodiversity is acknowledged as the source. Prior written agreement is necessary for any commercial use of material or data derived from this publication.

Researched & written by Sasha Mentz-Lagrange and Stefanie Swanepoel, with input from ACB staff

Cover image, design and layout: Xelos Design Consultants

Acknowledgements

The ACB acknowledges the generous support of various donors. The views and opinions expressed in this report are those of the ACB and do not necessarily reflect the official policy or position of our donors.

Table of contents

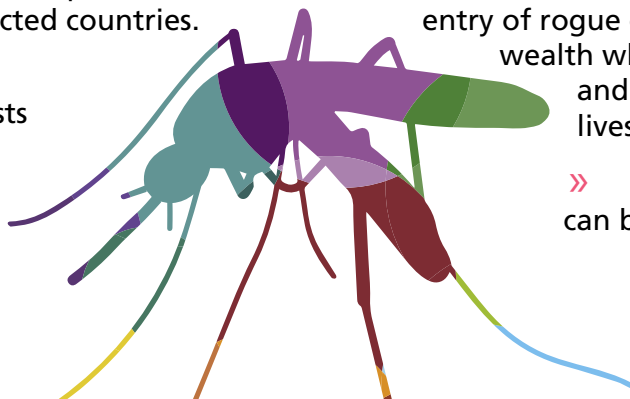
Acronyms and abbreviations	4
Key findings	5
Introduction	7
Historical drivers of poor healthcare systems in Africa	8
Divestment of funds due to austerity measures	8
State looting and corruption in Africa	8
Rogue capital and financialisation	8
The financialisation of malaria	10
Philanthrocapitalism and the power of the Gates Foundation	12
Shift towards patented product development solutions	14
Predominant antimalarial financing institutions	14
The Global Fund to Fight AIDS, Tuberculosis and Malaria	15
Venture capital	16
False solutions	17
Burkina Faso as a case study	18
Political history of Burkina Faso	20
Malaria and healthcare in Burkina Faso	20
Healthcare funding mechanisms in Burkina Faso	20
Target Malaria in Burkina Faso	22
Financialisation of malaria in Burkina Faso	24
Conclusion	25
References	26

Acronyms and abbreviations

ACB	African Centre for Biodiversity
AU	African Union
BMGF	Bill & Melinda Gates Foundation
CDC	Centre for Disease Control
GAVI	Global Alliance for Vaccines and Immunizations
Global Fund	The Global Fund to Fight AIDS, Tuberculosis and Malaria
GM	Genetically modified
IMF	International Monetary Fund
ITN	Insecticide-treated nets
MMV	Medicines for Malaria Venture
PDP	Product development partnership
PMI	President's Malaria Initiative
RBM	Roll Back Malaria
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
USAID	United States Agency for International Development
WHO	World Health Organization

Key findings

- » Africa's primary healthcare systems are in poor shape. Almost 50% of Africa's population cannot receive the healthcare they need. Chronic public divestment due to austerity measures imposed by international finance institutions from the 1970s through to the 1990s, coupled with corrupt and mismanaged economic governance, has resulted in poor or non-existent health infrastructure.
- » As well as mismanagement of public funds, there are increasing reports of corruption, including the demand for illegal fees and bribes. The United Nations Economic Commission for Africa's (UNECA) 2019 Economic Report on Africa estimates that up to US\$72 billion has been lost to corruption.
- » This context has created an enabling environment for the World Health Organization's (WHO) top-down focus on specific diseases in Africa. Donors who have stepped in to fill the need for funding tend to focus on disease, not on building equitable and efficient broader healthcare systems. However, disease is an outcome of many interlinked factors (such as environment, income, health, education) and so cannot be treated discretely.
- » Global investment in combatting malaria has grown from US\$960 million in 2005 to US\$2.5 billion in 2014 (Shretta et al., 2017). The lion's share of this has been captured by research institutions and universities in the US, Switzerland and the UK. A scandalous paltry 1% of malaria funding ends up in local research institutions in affected countries.
- » Donors and philanthrocapitalists drive funding of research and development
 - » of patented products, such as new insecticides and drugs to counter resistance; vaccines; and genetically modified (GM) and gene drive mosquitoes. Between 2009 and 2019 product development partnerships (PDPs) received 75% of global malaria funding; governments received only 5%.
 - » Leading the capture of this market, and a prime instigator of many of these PDPs, is the Bill & Melinda Gates Foundation (BMGF). The Foundation is second only to the US in funding the WHO and is demonstrably authoritative in setting the agenda for fighting malaria. The Foundation is also the main funder of the Target Malaria project, the first project to have released GM mosquitoes on the continent of Africa, and whose intention it is to release gene drive mosquitoes in several African countries in the future.
 - » Malaria, along with other diseases, is increasingly financialised – financial markets, institutions, actors and motives play a pivotal role in disease response. Country and donor funds are invested into research and development non-profit organisations, for example, that partner with market actors (such as pharmaceutical companies) to bring the product to market. Patents are sought and royalties procured from the sale of the product to country governments. These royalties are then accumulated by the research and development company, using vehicles such as endowment funds.
 - » Weak and corrupt governments are more vulnerable to financialisation and the entry of rogue capital, which extracts wealth while impacting significantly and negatively on people's lives and ecologies.
 - » Philanthrocapitalism can be viewed as an example





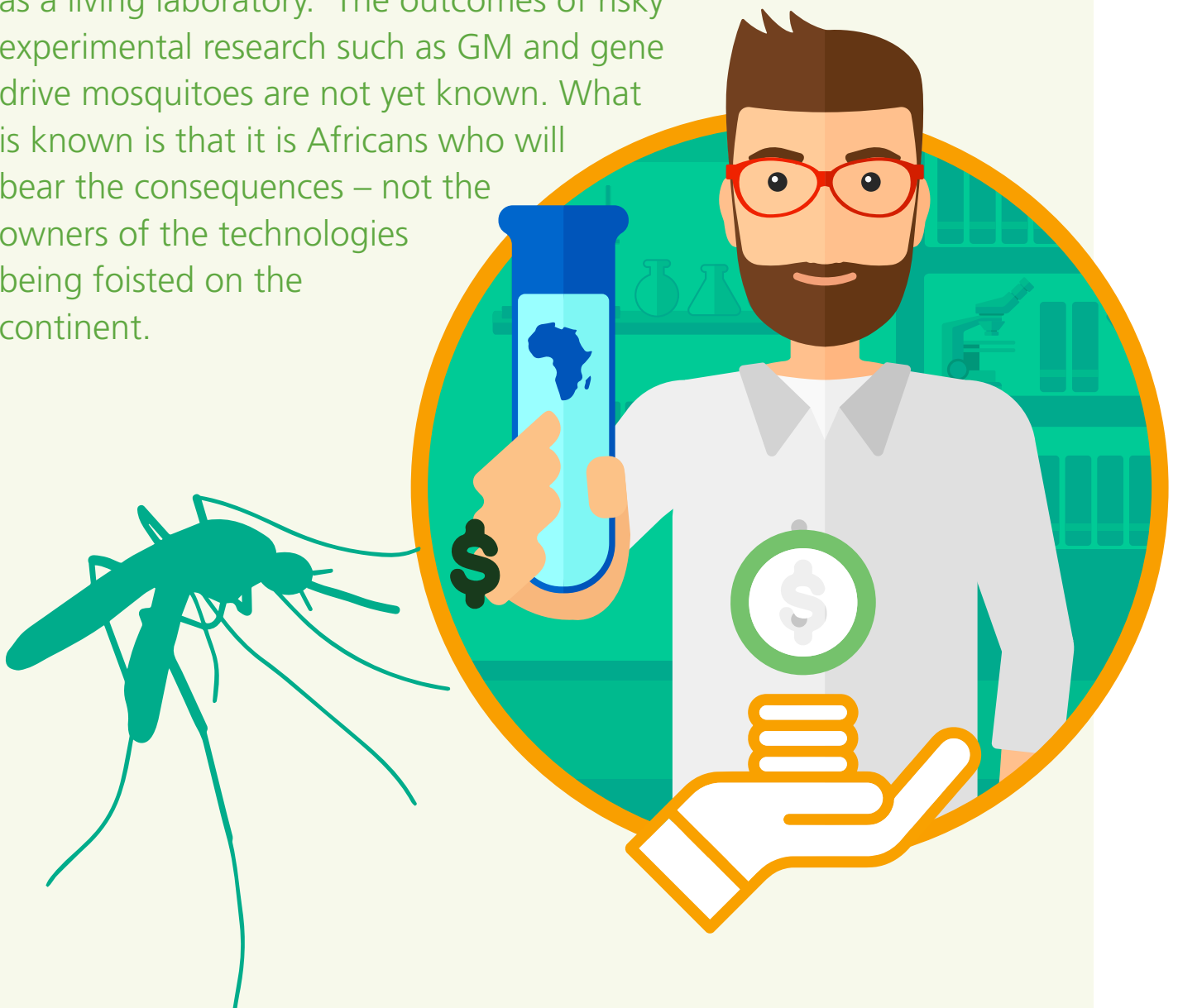
of rogue capital, in that philanthropists have no regulatory oversight and no need to consult with and be accountable to governments and society on the nature and intent of their funding. They are, thus, able to use their vast fortunes to fund, and therefore influence, the very bodies that should be playing an oversight role, such as the WHO.

- » Burkina Faso is a good example of how rogue capital can enter a country and experiment with patented products, with impunity and no fear of accountability. The country – characterised by weak governance, widespread corruption, poor social infrastructure, and high vulnerability to climate change, combined with extensive land degradation – is highly dependent on foreign aid. It is, therefore, no surprise that Burkina Faso adopted genetic engineering technologies and continues to use them despite their failure to deliver (for example, its experiment with GM cotton proved a dismal failure). The Burkina Faso government has approved the release of GM mosquitoes and controversial human trials of a partially effective GM vaccine.
- » An arsenal of malaria tools has been deployed on the continent since the early 2000s, but these are failing to bring down the curve of deaths and infections that
- have plateaued in recent years. Africa is being served with chemical, drug-based, high-tech, risky and untested solutions, thus removing communities from finding solutions, and again making them passive “recipients” of externally imposed solutions, including GM and gene drive mosquitoes.
- » In Europe and the US, the history of malaria eradication is strongly tied to improved sanitation and socio-economic conditions; yet these solutions only marginally feature in the discourse on malaria eradication in Africa.
- » African citizens need to demand the decolonisation of public health and propose sovereign solutions that will serve their priorities. We must demand that governments direct funding to where it is really needed: the public healthcare system, sanitation, access to clean water and improved housing. We must vehemently contest and ward off increased privatisation of the health sector. Radical policy interventions are also needed that address historical divestments in health and enable recovery.

Introduction

This paper seeks to understand the financialisation of malaria as a vehicle for rogue capital in a context of a weakened state (through capture, corruption and coups) and the power that limits effective interventions.

It uses Burkina Faso as a real-world example to illustrate how both historical and modern factors create conducive conditions for philanthrocapitalists and the companies they fund to exploit Africa as a living laboratory. The outcomes of risky experimental research such as GM and gene drive mosquitoes are not yet known. What is known is that it is Africans who will bear the consequences – not the owners of the technologies being foisted on the continent.



Historical drivers of poor healthcare systems in Africa

Divestment of funds due to austerity measures

Loan conditionalities imposed by the World Bank and the International Monetary Fund (IMF) in the 1980s and 1990s slashed public spending on healthcare services, orientating funds towards debt repayments and encouraging governments to open public services to private interests. To fill the gap in healthcare spending, developmental agencies and donors entered the health sector in many countries, but often with a targeted focus on specific diseases (tuberculosis, HIV-Aids, dengue fever and malaria, for example). Funds were directed towards these diseases to the neglect of the broader health system and, in a sense, African governments gave over responsibility for healthcare to donors and private interests.

State looting and corruption in Africa

Additional and compounding drivers of substandard healthcare have increasingly included widespread corruption and poor or mismanaged economic governance. The 2014–2015 Afrobarometer survey found that corruption, illegal fees and bribes were commonly mentioned as reasons for people not getting appropriate health treatment. On a scale from 0 (very corrupt) to 100 (very clean) – only 5 African countries out of a sample of 49 scored above 50 in 2017 and 22 countries had deteriorated in score. The study notes that “poor governance is associated with poorer

health outcomes, including lower levels of life expectancy, higher mortality rates, and lower levels of subjective health feelings” (Hsiao et al., 2019).

The United Nations Economic Commission for Africa’s (UNECA) 2019 Economic Report on Africa estimates that up to US\$72 billion could be gained if corruption was eliminated and public officials made accountable – this is a third of the “estimated average investment financing gap of US\$230 billion for achieving the Sustainable Development Goals” (UNECA, 2019). The African Development Bank (2013) notes that in some countries, 95% of public funding for health never reaches on-the-ground programmes due to poor governance. Africa scores the lowest in the world for indicators on both democratic accountability and corruption (UNECA, 2019). Further, alluding to weak governance is the rapid turnover of health ministers on the continent, resulting in a lack of continuity in programmes (African Development Bank, 2013).

African countries will need to take ownership of their health systems and radically eradicate corruption and state looting and improve governance and processes, including of procurement, to ensure that they can serve their citizens with at least basic healthcare services.

Rogue capital and financialisation

Financialisation is understood as the growing role that financial markets, institutions,



CREDIT PHOTO: FREE WIND 2014 / SHUTTERSTOCK.COM

actors and financial motives play in shaping international and national economies and societies (FIAN International et al., 2020). The goal is to generate financial profits through wealth extraction and transferring income flows from the real economy to the financial sector (FIAN International et al., 2020). In essence, it focuses on making money out of money, which means that those who don't have money are increasingly marginalised in very real economic and social terms.

There was a radical shift in the late 20th century towards embracing financial markets as the ultimate arbiter of 'truth' with a concurrent shift towards understanding and managing everything (such as land, food systems, biodiversity) as potential financial assets (FIAN International et al., 2020). This has been supported by the deregulation of financial institutions and the growing involvement of the private sector in public affairs – everything from water supply to state pensions.

This shift further entrenches dispossession, inequality and poverty for the have-nots –

Financialisation – under the guise of free market economies – is an abstract concept, and tends to be 'hidden' behind “opaque webs of investment”, “offshore tax havens” and other “deliberate strategies of global finance to obfuscate operations” and deny accountability (FIAN International et al., 2020:9).

those who don't have access to or ownership of financial assets. In this sense, assets imply anything from ownership of the means of production to patents. A good example is companies focused on the research and development of GM plants. Typically, these companies are not involved at all in the actual farming or agricultural sector but through 'creating' a patented gene or genetic construct now have a vested interest in the real agricultural economy, and the adoption of GM seed, for example, can irreversibly alter the orientation and future direction of agriculture in a country.¹

For this reason, FIAN International, the Transnational Institute, and Focus on the Global South (2020) have termed it rogue capital. Rogue capital is characterised by an extraction of wealth with real material negative impacts on people's lives and ecologies (FIAN International et al., 2020) to provide returns on investment to shareholders – who very seldom are connected to the system that is being plundered. When rogue capital enters a country with a weak governance system that is highly corrupt, it is able to shape to a significant degree the conditions in which it operates.

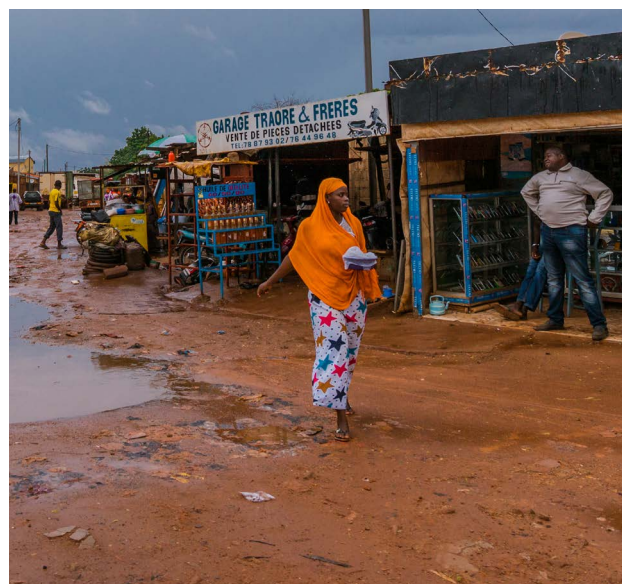
The financialisation of malaria

The financialisation of 'big' diseases is nothing new. Tuberculosis, AIDS and now COVID-19 have generated billions of dollars in grants for research and development in search of cures. Malaria is no different. The global fight against malaria has taken a financialised approach – illustrated in the way in which the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) and many other venture capital consortiums, along with other international antimalarial programmes, approach the problem, and how philanthropy-capitalist foundations and venture capitalists use their influence to shape global health policy.

The global orientation of large-scale, multi-country efforts to eradicate malaria has shifted since the mid-1990s. In 1955, the

WHO launched the Global Malaria Eradication Program to interrupt transmission in all endemic areas outside of Africa (Najera, 1999). The programme relied on vector control – mainly indoor residual spraying – and systematic detection and treatment of cases. The campaign succeeded in eliminating malaria in 37 of the 143 countries or economies where it was endemic in 1950 (Wernsdorfer and Kouznetzov 1980), including some lower-income areas with tropical climates such as Maldives, Mauritius, Réunion, Taiwan, China, much of the Caribbean, Brunei Darussalam, most of China, Hong Kong SAR, and Singapore (Feachem et al., 2010).

In many other countries, the burden of disease and deaths from malaria was greatly reduced. For example, in India, the number of malaria cases declined from an estimated 110 million in 1955 to fewer than 1 million in 1968; and in Sri Lanka, they declined from an estimated 2.8 million cases in 1946 to just 18 cases in 1966 (Mendis et al., 2009). But mounting resistance to antimalarial drugs and insecticides increased the costs and in 1969 the World Health Assembly recommended that countries with endemic malaria focus on controlling rather than attempting to eradicate it. As a result, multilateral agencies reorientated funding from malaria towards general health programmes. Underfunded domestic programmes were unable to prevent a resurgence of malaria during the 1970s and 1980s (Abeyasinghe et al., 2012).



CREDIT PHOTO: NOVANYALCIN / SHUTTERSTOCK.COM

1 See www.acbio.org for more information on the impact of GM seed adoption in Africa.



With governments increasingly reliant on external aid, particularly for priority diseases such as malaria, reduced donor funding leaves these focal areas extremely vulnerable. Health development support declined from 2009 following the global economic crisis (African Development Bank, 2013).

It was the international and regional campaigns in the late 1980s and early 1990s that set the stage for financialisation of the disease. In 1998, the Roll Back Malaria (RBM) initiative was implemented, following on from the adoption of the Global Malaria Control Strategy in 1992 (Shretta et al., 2017). These well-funded initiatives opened space for research and development of malaria control tools – long-lasting insecticide-treated nets (ITNs), fast diagnostic tests and new

antimalarial drugs, like artemisinin-based combination therapies (Shretta et al., 2017). Then, programmes like the Global Fund and other financing mechanisms enabled the rapid rollout of these new tools (Shretta et al., 2017).

The Global Malaria Action Plan 2008–2015 set in play the mobilisation of resources by countries and partners. The African Leaders Malaria Alliance was launched in 2015, setting regional goals to eliminate malaria by 2030 (Shretta et al., 2017). In the same year, the RBM Partnership’s Action and Investment to Defeat Malaria Strategy (ratified by the WHO) was launched, setting a goal for a 40% reduction in malaria-related deaths by 2020 (Shretta et al., 2017). Further publications, resource guides and strategies followed, and global investment in malaria control grew from US\$960 million to US\$2.5 billion a year between 2005 and 2014 (Shretta et al., 2017).

With governments increasingly reliant on external aid, particularly for priority diseases such as malaria, reduced donor funding leaves these focal areas extremely vulnerable (African Development Bank, 2013). Official health development support to Africa started to decline in 2009 following the global economic crisis (African Development Bank, 2013). The African Development Bank (2013) noted almost a decade ago that this trend was likely to significantly impact those countries heavily dependent on this funding from development banks, United Nations agencies and organisations like the Global Fund.

Philanthrocapitalism and the power of the Gates Foundation

The Bill & Melinda Gates Foundation (BMGF) is the second largest funder of the WHO: when its funds are combined with funds from the Global Alliance for Vaccines and Immunizations (GAVI) – which it also funds significantly – the Foundation provides more funding for the WHO than any country, including the United States. The BMGF is also the main funder of Target Malaria and a core funder of GAVI (a public-private partnership that facilitates the bulk sales of vaccines to poor countries) with a permanent seat on the board. As of 2021, the BMGF had committed US\$4.1 billion to GAVI. It has been noted that “it is to be suspected, with some reasonableness, that Gates have held the golden share of the organization’s funding for nearly a decade now” (Dentico 2020:164). The BMGF is possibly also the most prominent philanthropic foundation investing in healthcare innovations in Africa, most particularly technofixes to significant social problems such as healthcare and food security.

Established in 2000, the BMGF has disbursed US\$60.1 billion dollars since inception and has used its portfolio to establish significant influence in the global health sector. An example is the Foundation’s contribution of slightly more than US\$2 billion to the Global Fund by the end of 2019: this is 75% of all private sector contributions to the Global Fund. The WHO has noted that the BMGF provided up to 85% of philanthropic funding for malaria research and product development in 2016/17, and contributed 25% of all malaria research and development funding, at US\$1.8 billion, between 2007 and 2018 (WHO, 2021).

Their disproportionate influence on global health strategies was already flagged in 2008 by the head of WHO’s malaria programme Arata Kochi, who stated in a memorandum to WHO director Margaret Chan that BMGF domination of funding into malaria research would result in “capturing the world’s best malaria scientists in a single ‘cartel’ [so that] everyone has a vested interest in safeguarding

Of the roughly 260 000 philanthropic foundations in the world, 75% were established in the last 20 years; combined, they control more than US\$1.5 trillion (Vallely, 2020), significantly more than many countries’ annual budgets combined.

each other’s research [...] and the result is that independent review of the scientific evidence is becoming increasingly difficult” (as cited in the New York Times 2008).² Kochi further noted that the BMGF’s decision-making was a “closed internal process, and as far as can be seen accountable to none other than itself” and he indicated his concern that the Foundation’s determination to have its research used to guide WHO’s recommendations was dangerous to the global health policymaking process (Philanthropy News Digest, 2008).³ It is not just malaria that the BMGF funds; the Foundation contributed 12% to the WHO’s total budget in 2018/19 – US\$531 million – while the United States government contributes only 20% (Cheney, 2020).

2 McNeil (Jr), D.G. Gates Foundation’s Influence Criticized, The New York Times, 16 February 2008,

3 Philanthropy News Digest. 2008. Gates Foundation criticized as too influential in malaria research. [Online] Available: <https://philanthropynewsdigest.org/news/gates-foundation-criticized-as-too-influential-in-malaria-research#:~:text=Arata%20Kochi%20said%20that%20while,itself%2C%22%20Kochi%20argued%20that%20the>



Vallely (2020:1) notes that “philanthropy is always an expression of power”. Of the roughly 260 000 philanthropic foundations in the world, 75% were established in the last 20 years; combined, they control more than US\$1.5 trillion (Vallely, 2020), significantly more than many countries’ annual budgets combined. The sheer scale of giving, as evidenced by the BMGF, will inevitably shift power to the donor, overshadowing the voices of governments (Vallely, 2020).

This can result in what even a billionaire such as Peter Kramer refers to as a “bad transfer of power” from democratic governments to billionaires, who now determine what is good for the people (Kramer in Vallely, 2020:1).

Because philanthropic funds sit outside of corporate regulatory oversight mechanisms, they can be disposed of according to the donor’s personal agenda.

The Global Policy Forum, independent policy watchdog for the United Nations General Assembly, has warned governments to “assess the growing influence of major philanthropic foundations, and especially the BMGF...and analyse the intended and unintended risks and side-effects of their activities” (Vallely, 2020:1).

The Forum cautions against applying business logic to the provision of public goods (Valleley, 2020). In addition, philanthropic foundations, which often generate financial returns through their investments, are eligible for tax relief and other incentives, thus enabling the very rich to avoid tax twice, while gaining control over matters that should be determined by the state (Valleley, 2020).

In summary, philanthrocapitalism can be viewed as an example of rogue capital, in that:

- Philanthropists have no regulatory oversight.
- They have no need to consult governments and society on the nature and intent of their funding.
- They can use their vast fortunes to fund, and therefore influence, the very bodies that should be playing an oversight role.

The G-finder online database that tracks funding in the health sector indicates that in 2020 there is a resolute orientation of malaria funding towards product development partnerships. Between 2009 and 2019, 75% of global malaria funding went to these partnerships, with governments receiving only 5% (G-Finder, 2020).

Shift towards patented product development solutions

Traditional measures to reduce or eliminate malaria in Africa have been to provide ITNs. More than 1.9 million were distributed in sub-Saharan Africa between 2004 and 2019, but only 36% of households owned a net for every two people; an increase of just 1% from 2000 (Lindsay et al., 2021). More recently, however, there has been a shift away from providing these relatively cheap responses, with development and philanthropic funding increasingly directed towards patented product development such as vaccines, and GM and gene drive mosquitoes. As insect resistance to in-use antimalarial insecticides and drugs has increased, funding is also being directed towards understanding and overcoming this resistance. This focus on research and development of proprietary products means that development of the broader healthcare system (infrastructure, logistics, personnel, manufacturing capacity) is being further undermined. These approaches ignore the very real determinants of health, which are access to affordable, effective water and sanitation and healthcare services.

The shift in funding from preventative measures that are readily available and affordable towards PDPs is extremely concerning. Between 2009 and 2019, 75% of all global malaria funding went to these, with governments receiving only 5% (G-Finder, 2020). The shift towards a financial model for malaria, which benefits the few financially, is well set in place.

Predominant antimalarial financing institutions

Below, we describe some of the key antimalarial financing institutions that are focused on creating financial assets (research and development of proprietary products) rather than addressing the root causes of malaria's spread – poor infrastructure and underfunded health services resulting historically from structural adjustment programmes, and corruption and weak economic governance. The proceeds of capitalist endeavours are subsumed into philanthropic funds and then spent to generate more capital under the guise of humanitarianism. The BMGF, with its extraordinarily high level of influence over global health policies, plays a significant role in all these examples.



The Global Fund to Fight AIDS, Tuberculosis and Malaria

Conceived of as a financial instrument with investments made by governments and philanthropic donors, the Global Fund was established in 2002 to finance investments into combatting AIDS, tuberculosis and malaria. Based on public-private partnerships as a key vehicle for investment and delivery, it controls the largest disbursement of malaria grants and has traditionally been led by private sector actors. The Global Fund draws on the financial sector for technical advice; uses the private sector as a distribution mechanism; and has created several financial instruments such as bonds, matching funds and results-based funding, which aim to raise capital and then provide a return on investment (Tchiombiano, 2019).

The Global Fund provides impressive disbursements:

- It invests more than US\$4 billion a year to support efforts in more than 100 countries (Global Fund, 2022).
- It currently provides 56% of all international financing for malaria programmes and has invested more than US\$14.7 billion in malaria control programmes since inception (Global Fund, 2022).
- In 2020, it helped to distribute 188 million insecticidal bed nets, provided preventative therapy for more 11.5 million pregnant women and testing for 259 million people, and facilitated the indoor residual spraying of 9.4 million structures around the world (Global Fund, 2022).

However, through these disbursements, the Global Fund undermines the public systems working on the ground to combat malaria. Grants go to national-level partners who report directly to the Global Fund, thus side-lining consultation with and inclusion of national governments. The role of governments in healthcare matters and, in turn, governments' accountability to society, is thus diminished. This can result in outsourcing large parts of national health systems to transnational consortia of experts (Grietens et al., 2019).

Understanding the Global Fund:

There is extensive private sector involvement.

- Traditionally the fund has been led by private corporate sector individuals that have as their vision the financialisation of 'assets', whether that be people or the environment.
- Increasingly, it is financial actors, such as private banks, insurance companies and audit firms, that provide technical assistance to the fund in assessing the operational and budgetary performance of grants and organisations.
- Private for-profit companies are brought into the procurement process; for example, Coca Cola helped distribute antimalarial drugs through the Last Mile Program while distributing its soft drink product (Tchiombiano, 2019).
- Despite the involvement of the private sector, funding for the Global Fund from this source remained at only about 5% between 2009 and 2019 (Tchiombiano, 2019).

The Global Fund has created financial tools.

- The Global Fund has created several financial tools such as development impact bonds, matching funds and results-based funding.
- These have aimed to raise capital from the market to finance health programmes and provide a return to investors when the objectives of the programme were reached (Tchiombiano, 2019).
- While malaria bonds have failed to generate enough interest, they are an example of how social problems are being financialised. It is in the context of this financialisation that business-focused attempts to deal with malaria – like Target Malaria – arise.

The Global Fund usurps control from national health authorities and has no accountability to citizens.

- The Global Fund operates by providing grants to national-level partners who then contract with sub-national implementation partners.

- It requires national beneficiaries to be compliant with strict financial management guidelines, and hence funding often goes to international non-governmental organisations or United Nations agencies.
- National organisations, possibly with more on-the-ground experience, can miss funding opportunities if they lack strong financial and managerial structures (Tchiombiano, 2019).
- Reporting goes back from national-level beneficiaries to the Global Fund, sidelining national health authorities.
- Tchiombiano (2018:41) notes that this tends to end up “undoubtedly weakening the leadership capacity of national authorities and blurring the border between the public and private sectors”.
- Lorway comments that this can result in “outsource(ing) large parts of national health systems to transnational consortia of experts” (Lorway, 2017 in Grietens et al., 2019:393).

Venture capital

A range of investment funds are looking to leverage off malaria.

Adjuvant Capital

This independent asset management firm was established by the BMGF and J.P. Morgan in 2019. The aim was to build “an impact investment portfolio from the most promising drug, vaccine, diagnostic, and medical device technologies ventures” (Adjuvant Capital, 2020) to tackle some of the “biggest global disease threats” being neglected by mainstream research (Fierce Biotech 2018), including malaria. The venture boldly states: “[I]t is possible to have one’s cake and eat it too, as these technologies are increasingly being commercialized at scale and are observably improving public health in historically overlooked markets” (Adjuvant Capital, 2021).

Medicines for Malaria Venture (MMV)

The MMV is funded by government agencies, corporations and private individuals, including the BMGF, to research and develop new

The firm is keenly interested in having a footing in pandemic research and is on the lookout for “public health and economic dividends”. Big pharma and charitable groups, including the BMGF, the Children’s Investment Fund Foundation, Dalio Philanthropies, the Ford Foundation, the MacArthur Foundation and Anthos Fund & Asset Management, among others, have recently announced they had raised a \$300 million venture in this regard (Fierce Biotech 2018).

malaria medicines (MMV, 2022). Established in 1999, the aim of MMV was to finance a portfolio of research and development projects to “provide new, effective and affordable medicines for the treatment and prevention of malaria” (MMV, 2022). In 2020, the single largest donor was the BMGF, which contributed 43.8% (US\$32.5 million) of total donations of US\$88.4 million (MMV, 2020). This contribution is part of a five-year unrestricted grant of US\$180 million from the BMGF – the largest single donation the MMV has ever received (MMV, 2020).

MMV focuses on growing a research and development portfolio of antimalarial drugs through a product development partnership model (MMV, 2022). It enters product development partnership (PDP) models, which to date have developed 14 proprietary medicines (MMV, 2022). As a non-profit organisation that is exempt from value-added tax (VAT) and other taxes, the MMV has an endowment fund that absorbs the revenues (profits) gained from commercialisation of drugs through pharmaceutical companies such as GlaxoSmithKline (MMV, 2020). This enables it to bypass the restrictions posed by operating through a not-for-profit venture,

which, in turn, enables it to receive exemption for VAT and other taxes (MMV, 2020). The portfolio comprises 65 projects, the largest ever developed on malaria, and it includes 13 proprietary medicines (MMV, 2022).⁴

Vir Biotechnology

This is another company supported by the BMGF, with a US\$40 million commitment in 2022 in equity investment and US\$10 million in grant funding to extend development of vaccines drawing from the development of the COVID-19 monoclonal antibody treatment for use against HIV and malaria (Schubert, 2022).

False solutions

The focus of philanthrocapitalism is on providing solutions that do not address the systemic causes of malaria transmission or that do not aim to improve overall health outcomes on the continent – in essence, false solutions. The funding being diverted into patented products, including vaccines and genetic modification technologies, must find a market; and what better market than Africa with its

4 “Coartem® Dispersible (artemether-lumefantrine), a child-friendly formulation developed with Novartis for treatment of uncomplicated malaria, two injectable artesunate products for the treatment of severe malaria, Artesun® from Guilin and Larinate 60 from Ipca Laboratories, Eurartesim® (dihydroartemisinin-piperaquine), developed with Alfasigma for treatment of uncomplicated malaria, Pyramax® tablets and granules (pyronaridine-artesunate), Shin Poong’s products for treatment of uncomplicated malaria in adults and children, two products for seasonal malaria chemoprevention (SMC) in children, from Fosun Pharma and S Kant, two artesunate rectal capsule (ARC) products for pre-referral management of severe malaria in children, from Cipla and Strides Pharma, Krintafel/ Kozenis1 (tafenoquine), a single-dose anti-relapse treatment developed with GSK, ASAQ Winthrop® (artesunate-amodiaquine) for the treatment of acute uncomplicated *P. falciparum* malaria, developed by Sanofi with DNDi, transferred from DNDi to MMV to support improved access and ASMQ (artesunate-mefloquine) for the treatment of acute uncomplicated *P. falciparum* malaria, developed by Farmanguinhos, DNDi and Cipla, transferred from DNDi to MMV to support improved access.”

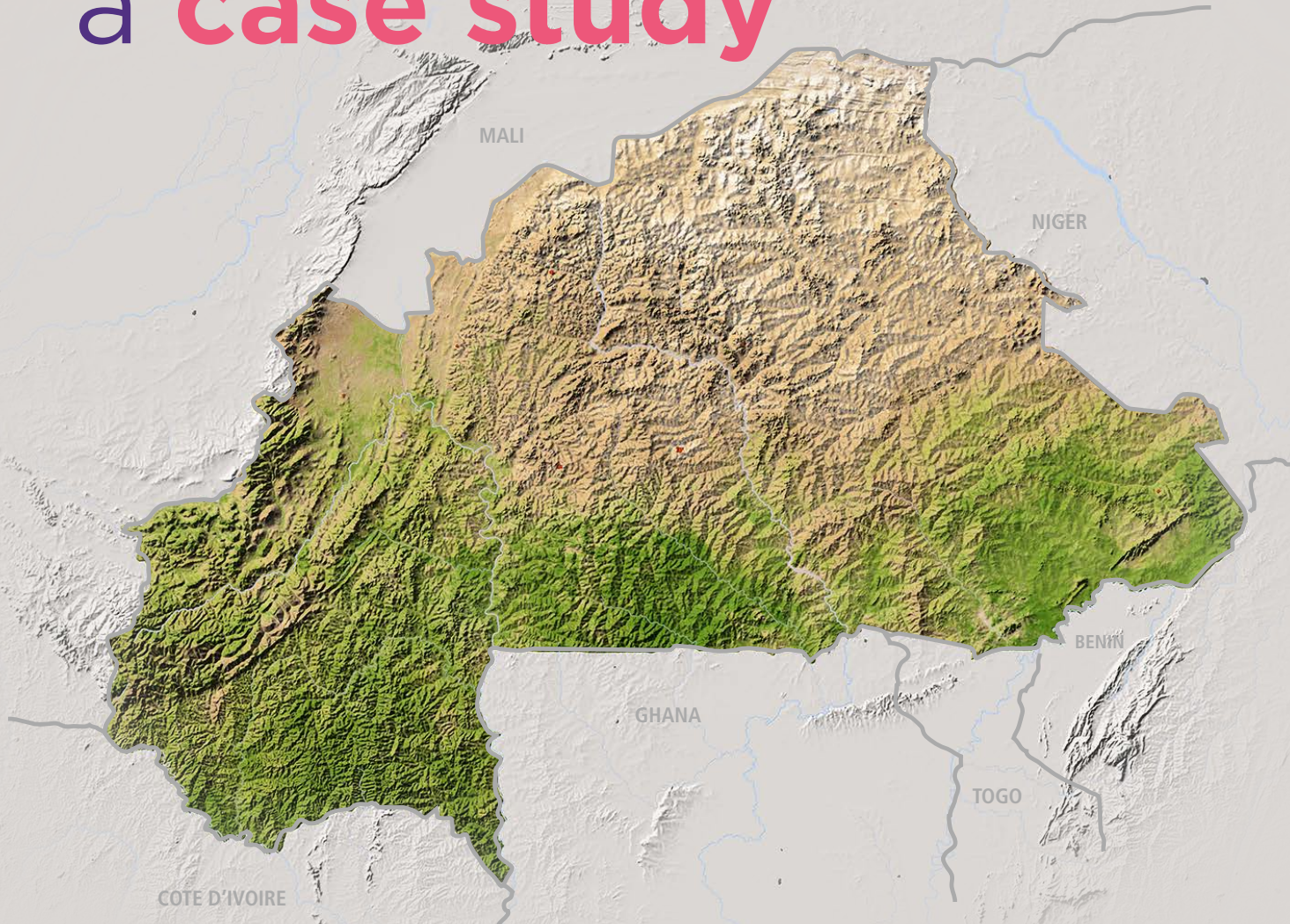
endemic disease challenges? The release of GM mosquitoes in Burkina Faso is a forerunner for gene drives, that is, the large-scale release of GM insects with the intent of altering the genetic make-up of wild populations or of eradicating it all together. The African Union (AU) has endorsed gene-drive applied research and deployment, despite there being no scientific evidence that it will eradicate malaria and in the absence of international governance standards.

The BMGF is possibly the largest donor for malaria-related patented product development in the world. It is worth noting that the BMGF funds the African Union Development Agency (AUDA), which aims to create an enabling environment for GM technologies in Africa. The BMGF also funds the Target Malaria Project, which conducted the first release of GM mosquitoes in Africa in Burkina Faso in July 2019.

Thus, the financialisation of a pressing global health challenge is well underway, with profits accruing to investors, and no concurrent dramatic decreases in malaria prevalence in Africa. Capital has gone rogue. When it does this in the context of a weak and corrupt state, there are few limitations to what it can demand and carry out. We turn now to the case study of Burkina Faso to explore the consequences of financialisation and rogue capital in the context of a weakened state.



Burkina Faso as a case study



Burkina Faso is a good example of the interplay between weak governance; widespread corruption; extensive land degradation; extreme vulnerability to climate change; poor water, sanitation and healthcare infrastructure; and high levels of dependency on external aid. This makes the country an easy target for rogue capital, which offers quick and false 'solutions' to endemic challenges such as malaria.

The country has experimented with GM cotton, and, despite the negative results,⁵ persisted down the narrow, techno-fix path when it approved the release of GM mosquitoes in 2019. It has also approved an experiment using the R21-MM vaccine (malaria vaccine) on its children, whose parents claim that they were not fully informed of possible side-effects. Still, malaria persists as a significant health challenge in the country, accounting for 61.5% of hospitalisations. And still, funding is not directed towards providing the infrastructure, public awareness and simple, affordable solutions that would make a real impact on healthcare.

⁵ See ACB's 2015 paper: <https://www.acbio.org.za/cottoning-lie-gm-cotton-will-harm-not-help-small-farmers-africa>

Overview of Burkina Faso



Burkina Faso is a landlocked country in West Africa.



Economy

- Largely agricultural
- Of the population, 80% is dependent on farming and food systems for survival and livelihoods (World Bank, n.d.).
- Highly dependent on external aid (Heritage, 2022).
- World's 17th largest gold exporter in 2019, but this has not had much impact on livelihoods or wealth and well-being of the population.



Population

Estimated at 20.9 million (Heritage, 2022)



Socio-economic status of citizens

- Of the population, 40% lives below the poverty line of US\$1.90 (World Bank, n.d.) and 80% is characterised as living in multi-dimensional poverty (Climate Centre, 2021).
- It ranks 155 out of 173 countries on the World Bank's Human Capital Index.
- Extreme poverty has risen by almost 3% in the recent past. This has significant impacts on food security and nutrition, which were already threatened (Relief Web, 2022).
- More than 25 million people in the region are struggling to access enough food to meet their daily needs (Relief Web, 2022). Burkina Faso is no exception.
- The price of maize has increased by 50% over five years, compared to the average rise of foodstuff in the country (Relief Web, 2022).
- COVID-19 economic lockdowns have severely impacted the West African region, hugely exacerbating poverty.

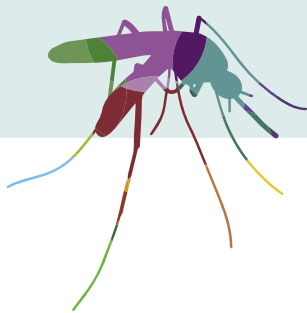


Political context

- In 2021, more than 1 300 incidents of crisis-related violence were recorded and more than 2 294 casualties (Moderan and Kone, 2022).
- The number of displaced people in the country rose radically from 50 000 in January 2019 to 1.4 million in August 2021 (World Bank, n.d.) due primarily to domestic unrest and attacks by jihadist insurgents (Moderan and Kone, 2022). The insurgents have targeted army personnel, government officials, teachers, civil servants and judicial staff, which has contributed to a breakdown in public services (Moderan and Kone, 2022).
- The more than a decade-long conflict between armed groups and government and international forces in the central Sahel region has devastated community life. In 2021, abductions and attacks increased, and the United Nations estimates that more than 1.5 million people (about 7.5% of the population) have been forced to leave their homes since 2018 (Makoni, 2022).

Political history of Burkina Faso

Burkina Faso has had a rocky political landscape since independence in 1958. The country has experienced five coups in that period, the latest being in January 2022 when Lt-Col Paul-Henri Sandaogo Damiba led a military coup to remove President Roch Kaboré of the People's Movement for Progress, elected in 2020 (Moderan and Kone, 2022). Kaboré's regime was heavily criticised for corruption and nepotism and there was a steady decline in support for his government (Moderan and Kone, 2022). This, and the inability to quell domestic unrest and insurgency attacks, are reported motives for the coup. Damiba has subsequently announced that the constitution has been suspended and government and parliament dissolved.⁶ The Economic Community of West African States (ECOWAS) suspended Burkina Faso from its governing bodies following the coup and warned of possible sanctions (Relief Web, 2022). In addition, the African Union announced that it has suspended the country (Relief Web, 2022).



Malaria and healthcare in Burkina Faso

Malaria is considered endemic in the country, accounting for a significant number of doctors' visits and hospitalisations.

- Burkina Faso had 3.4% of malaria cases and 3.2% of deaths in the world in 2020 (WHO, 2021).
- In 2017, malaria was responsible for 43% of visits to health providers (SevereMalaria, 2022) and an estimated 61.5% of hospitalisations (Climate Centre, 2021).
- The country allocates about 15% of its annual budget to healthcare, with malaria treatment provided for free (SevereMalaria, 2022), although conflict has led to the closing of many healthcare facilities.

Healthcare funding mechanisms in Burkina Faso

As of 2017, there were three primary financing mechanisms for health services in Burkina Faso: government-funded, the National Social Security Fund (for the formal sector) and the Community-Based Health Insurance scheme (for the informal sector) (SevereMalaria, 2022). The health system is comprised of three levels (USAID, 2019):

- The central level is responsible for developing strategies, resourcing, coordinating stakeholders and monitoring and evaluating performance.
- The intermediate level comprises 13 health regions and 8 regional hospitals.
- The peripheral level comprises 70 health districts, 45 district hospitals, 57 medical centres and 1 839 health facilities (as of 2017).

⁶ Du Plessis, C. Burkina Faso: A sorry state, in BusinessLIVE, 02 February 2022. [Online] Available: <https://www.businesslive.co.za/fm/features/africa/2022-02-03-burkina-faso-a-sorry-state/>.

The coup placed further strain on an already fragile healthcare system, and in December 2021, the Ministry of Health reported that about 30% of healthcare facilities around the country were impacted by conflict and that 149 facilities had closed completely, depriving 1.8 million people of healthcare (Makoni, 2022).

The consequences of the coup include the stopping of some donor funding into the country. For example, the United States government's Millennium Challenge Corporation has suspended its US\$450 million grant (Makoni, 2022). There are concerns in the country that public funds will be further diverted towards security and defence functions and away from healthcare and other public sectors (Makoni, 2022). Furthermore, many people cannot afford the transport costs to reach a hospital, or are scared to leave their homes, while conflict prevents healthcare workers from travelling to communities (Makoni, 2022).

Corruption in Burkina Faso

Burkina Faso scored 42 out of 100 on the 2021 Corruption Perceptions Index, which

measures perceptions of experts and businesspeople on the extent of corruption in the public sector (Transparency.org, 2021). It considers aspects such as bribery, diversion of public funds, nepotistic appointments and state capture by vested interests, as well as the frameworks in place that would constrain corruption (Transparency.org, 2021).

Surveys indicate that in Burkino Faso, "corruption and impunity are widespread" and "anticorruption laws and bodies are generally ineffective" (Heritage, 2022:1).

- More than a third of citizens perceive the judiciary and tax officials as being corrupt.
- Up to 15% of households admit having paid a bribe to the police.
- One in every 10 citizens note they paid a bribe in 2020 to gain a public service (Gain Integrity, 2020).
- Border officials are known to be open to bribes from companies importing and exporting.
- Corruption in public procurement processes is widespread (Gain Integrity, 2020).



Target Malaria in Burkina Faso

GM and gene drive mosquitoes are spearheaded in Africa by Target Malaria, a consortium that purportedly “aims to develop and share new cost-effective and sustainable genetic technologies to modify mosquitoes and reduce malaria transmission” (Target Malaria, 2021). The long-term goal is to develop a GM mosquito with the gene drive technology that will either alter or suppress the wild population (Target Malaria, 2021).

Target Malaria receives its core funding from the BMGF and Open Philanthropy (funded by Cari Tuna and her husband Dustin Moskovitz, co-founder of Facebook and Asana). To date, Target Malaria has projects in Burkina Faso, Ghana, Mali and Uganda.

In 2018, Burkina Faso’s National Biosafety Agency authorised the importation of male mosquito eggs that were genetically modified to be sterile (Scudellari, 2019) from Polo d’Innovazione di Genomica, Genetica e Biologia-PoloGGB in Italy (Target Malaria, 2021). About 6 400 GM mosquitoes (along with about 8 500 non-modified mosquitoes)

Further, Target Malaria did not follow proper protocols and publish a full environmental risk assessment or undertake genuine, transparent and meaningful public consultation (ACB, 2019)

were released into the village environment of Bana in July 2019 by Target Malaria in collaboration with the National Institute of Health Sciences (Target Malaria, 2021). Bana is notably not a contained environment for this first release of GM mosquitoes in Africa.

This was not a gene drive, in that the mosquitoes were not modified to pass on the sterility genes. The aim of the release was to build capacity for the team in “how to import, rear, transport and release and monitor non gene drive genetically modified mosquitoes” (Target Malaria, 2021:1). Essentially, the people of Bana were used as human guinea pigs in an experiment that did not even aim to curb malaria outbreaks. This experiment has been extensively criticised by more than 170 civil society organisations around the world. They note that the release was an unethical experiment that did not benefit the population in the village in which it took place, particularly as it was not focused on reducing the mosquito population and thus the risk of malaria transmission (ACB, 2019).

Testimonies taken from people in the affected villages indicate that people were not fully informed of the project and its potential risks (ACB, 2019). Further, Target Malaria did not follow proper protocols and publish a full environmental risk assessment or undertake genuine, transparent and meaningful public consultation (ACB, 2019). Of significant concern is the request by Target Malaria for volunteers to use a vacuum tube to capture live mosquitoes that landed on their bodies, as the mosquitoes had to be captured alive. Volunteers were asked to undertake this task for six hours at a time for compensation of just US\$0.70 an hour (ACB, 2019). This essentially capitalises on people’s poverty to gain human test subjects in an experiment in which they could very well contract malaria.

The most beneficial and sustainable solutions in any country would be to ensure that:

- information is shared with citizens about malaria – how it is spread and how to prevent it; and
- government invests in providing adequate basic services for drinking water, waste management and sanitation to reduce proliferation of breeding grounds, and in providing access to bed nets and effective healthcare.

These are preventative steps that not only combat malaria but also build up the social infrastructure that supports human reproduction and sustainability. But how a country determines its response to malaria is often not based on the most logical, efficient and affordable solution; rather it is shaped by vested interests, both inside decision-making bodies and externally by those who seek to profit from programmes to combat malaria. In this sense, responses can be said to be shaped by the logics and interests of finance, rogue capital and elite capture by a handful of politicians.



Financialisation of malaria in Burkina Faso

In 2017, the US President's Malaria Initiative (PMI) was the largest malaria donor, followed by the Global Fund, with €68.2 million dedicated to malaria in Burkina Faso. In 2021, the Global Fund confirmed four new grants to Burkina Faso for combatting HIV, tuberculosis and malaria totalling €205.1 million (Global Fund, 2021). The World Bank is also putting money into malaria through a US\$37 million loan to support 'neglected tropical diseases', which includes malaria (USAID, 2015).

The US President's Malaria Initiative (PMI) in Burkina Faso

The PMI is heavily invested in Burkina Faso, with a budget of US\$23 million in 2019 (USAID, 2019). The investment is focused in the following areas: entomologic monitoring and insecticide resistance management and monitoring; providing ITNs and monitoring durability of the nets; and a pilot programme to deliver sulfadoxine-pyrimethamine to pregnant women, if the initial study on its effectiveness is valid (USAID, 2019). In addition, funds have been used to train trainers, health workers and other stakeholders in the fight against malaria, along with other projects such as behavioural change studies (USAID, 2019). Since the rainy season can last up to nine months in the southern regions (USAID, 2019), *P. falciparum* infection is throughout the year and the country (USAID, 2019).

The Global Fund in Burkina Faso

The Global Fund has invested in strengthening Burkina Faso's health system by:

- Funding the recruitment of 17 668 community health workers and their training in preventing, diagnosing and treating malaria, pneumonia and diarrhoea in 2017 (USAID, 2019).
- Supporting community-based organisations in awareness raising at the community level.

There have been issues of corruption and fraud related to Global Fund investments in Burkina Faso. In 2015, wholesalers Liz Telecom/Azimo and Disgefa were found to have distributed 2 million mosquito nets that did not meet WHO standards, using Global Fund monies (the nets were valued at just more than €9 million) (Global Fund, 2022). These nets were a third of a mass distribution carried out by the Global Fund.



Conclusion



PHOTO CREDIT: ONI ABIMBOLA/SHUTTERSTOCK.COM

The privatisation of healthcare, directed by the IMF and World Bank's structural adjustment programmes, has diluted public financing and responsibility for country-level primary healthcare in Africa. This situation is compounded by the poor governance, corruption, graft and greed of some African leaders. And it has paved the way for private profiteering, taking advantage of some of Africa's biggest health challenges.

Within this context, the significant funding of financialised models for combatting malaria by the BMGF and other philanthrocapitalists is of grave concern; it undermines domestic healthcare systems by subverting the state's responsibility to their peoples; it subverts the accountability of public institutions that are then beholden to a funder and not the people they are meant to serve; and it diverts both funds and focus from the root causes of many diseases – poor living conditions, poor or no social infrastructure (health, water and sanitation) and lack of education. Burkina Faso is no exception in this regard.

Given the failure and lack of public acceptance of GM crops on the continent, it appears that private capital has changed tack to push GM through healthcare – which would provide more obvious financial benefits, in that

healthcare is perceived as a more critical need – and thereby attempt to gain public approval. Such approval then opens the doorway for genetic engineering of pretty much everything, from crops, to insects, to our own bodies.

Africa is, yet again, a laboratory for capitalistic interests (and those who profit from these) to experiment with new and risky technology; a technology that once unleashed cannot be reined in; a technology with known ecological risks, including ecosystem collapse; a technology that is developed with public funds, but is patented and sold back to the public sector for profit; a technology that is 'owned' by those who will never feel the consequences of its use; a technology that is not home-grown or appropriate for the African context.

African states must find "sovereign system solutions to ecological, economic and health crises" (ACB, 2020), particularly as development and private funding of health is being directed towards patented product development. Africa's future health, food security and socio-economic well-being is already at risk. And when this rogue capital enters a country context characterised by corruption, collusion and looting, there is little opportunity to stop it.

References

- Abeyasinghe, R., Galappaththy, G. and Smith, G. 2012. *Malaria control and elimination in Sri Lanka: documenting progress and success factors in a conflict setting*. PLoS ONE 7(8).
- ACB. 2019. Gene drive organisms: *What Africa should know about actors, motives and threats to biodiversity and food systems*. [Online] Available: <https://www.acbio.org.za/gene-drive-organisms-what-africa-should-know-about-actors-motives-and-threats-biodiversity-and-food>
- ACB. 2020. *Profiteering from health and ecological crises in Africa: The Target Malaria project and new risky GE technologies*. [Online] Available: <https://www.acbio.org.za/sites/default/files/documents/202006/profiteering-health-and-ecological-crises-africathe-target-malaria-project-and-new-risky-ge0.pdf>.
- Adjuvant Capital. 2020. About. [Online] Available: <https://www.bing.com/search?q=Adjuvant+Capital+is+possible+to+have+one's+cake+and+eat+it+too%2C+as+these+technologies+are+increasingly+being+commercialized+at+scale+&q&form=QBRE&sp=-1&pq=adjuvant+capital+&sc=6-17&sk=&cvid=6C51032DCB2D4FB5BC32A8614837C0F8>.
- African Development Bank. 2013. *Health in Africa over the next 50 years*. [Online] Available: https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Economic_Brief_-_Health_in_Africa_Over_the_Next_50_Years.pdf.
- Cheney, C. 2020. *'Big concerns' over Gates foundation's potential to become largest WHO donor*. 5 June. [Online] Available: <https://www.devex.com/news/big-concerns-over-gates-foundation-s-potential-to-become-largest-who-donor-97377#:~:text=WHO's%20list%20of%20top%20,or%2012%25%20of%20WHO's%20budget>.
- Climate Centre. 2021. *Burkina Faso*. [Online] Available: https://www.climatecentre.org/wp-content/uploads/RCCC-ICRC-Country-profiles-Burkina_Faso.pdf.
- Dentico, N. 2020. *The Philanthropic Monopoly of Bill & Melinda Gates*. [Online] Available: <https://navdanyainternational.org/wp-content/uploads/2020/10/THE-PHILANTHROPIC-MONOPOLY-OF-BMGF.pdf>
- FIAN International, Transnational Institute, and Focus on the Global South. 2020. *Rogue capitalism and the financialization of territories and nature*. [Online] Available: https://www.tni.org/files/publication-downloads/rogue_capitalism_and_the_financialization_of_territories_and_nature.pdf
- Feachem, R.G.A., Phillips, A.A., Hwang, J., Cotter, C., Wielgosz, B., Greenwood, B. et al. 2010. *Shrining the malaria map: progress and prospects*. The Lancet 376(9752):1566-1578.
- Gain Integrity. 2020. *Burkina Faso Country Report*. [Online] Available: <https://www.ganintegrity.com/portal/country-profiles/burkina-faso/>.
- G-Finder. 2020. *Next generation chemical vector control: essential tools in the battle against malaria*. [Online] Available: https://s3-ap-southeast-2.amazonaws.com/policy-cures-website-assets/app/uploads/2020/08/20002153/GFINDER_SNAPSHOT_MALARIA_VCP.pdf.
- Global Fund. 2022. *Global Fund Overview*. [Online] Available: <https://www.theglobalfund.org/en/overview/#:~:text=The%20Global%20Fund%20is%20a,in%20more%20than%20100%20countries>.

- Grietens, K.P., Gryseels, C. and Verschraegen, G. 2019. *Misdirection in the margins of malaria elimination methods*. *Critical Public Health* 29(4):390-400. DOI: 10.1080/09581596.2019.1597965
- Heritage. 2022. *Index of Economic Freedom: Burkina Faso*. [Online] Available: <https://www.heritage.org/index/country/burkinafaso>.
- Hsiao, A., Vogt, V. and Quentin, W. 2019. Effect of corruption on perceived difficulties in healthcare access in sub-Saharan Africa. *PLoS ONE* 14(8): e0220583. <https://doi.org/10.1371/journal>
- Lindsay, S.W., Thomas, M.B. and Kleinschmidt, I. 2021. Threats to the effectiveness of insecticide-treated bednets for malaria control: Thinking beyond insecticide resistance. *The Lancet* 9(9): E1325-E1331. DOI:[https://doi.org/10.1016/S2214-109X\(21\)00216-3](https://doi.org/10.1016/S2214-109X(21)00216-3)
- Makoni, M. 2022. Burkina Faso crisis hits health care. *The Lancet* 399(10325): 616.
- Mendis, K. 2009. *From Malaria Control to Eradication The WHO Perspective*. *Tropical Medicine and International Health*, 14:802-809.
- MMV (Medicines for Malaria Venture), 2020. *Financial view*. [Online] Available: https://www.mmv.org/sites/default/files/uploads/docs/about_us/Finances_2020.pdf.
- MMV (Medicines for Malaria Venture), 2022. *Our history*. [Online] Available: <https://www.mmv.org/about-us/what-we-do/our-history>.
- Moderan, O. and Kone, F.R. 2022. *What caused the coup in Burkina Faso?* [Online] Available: <https://issafrica.org/iss-today/what-caused-the-coup-in-burkina-faso>.
- Nájera, J.A. 1999. Prevention and control of malaria epidemics. *Parassitologia* 41(1-3):339-347
- Relief Web. 2022. *Weekly Regional Humanitarian Snapshot: Burkina Faso*. [Online] Available: <https://reliefweb.int/sites/reliefweb.int/files/resources/External%20weekly%2025-31%20Jan%202022.pdf>.
- Schubert, C. 2022. *Vir to extend COVID-19 treatment approach to HIV, malaria with \$50 million from Gates Foundation*. 14 January. [Online] Available: <https://www.geekwire.com/2022/vir-to-extend-covid-19-treatment-approach-to-hiv-malaria-with-50m-from-gates-foundation/>.
- Scudellari, M. 2019. Self-destructing mosquitoes and sterilized rodents: The promise of gene drives. *Nature* 571: 16-162.
- SevereMalaria. 2022. *Burkina Faso: malaria facts*. [Online] Available: <https://www.severemalaria.org/countries/burkina-faso?msckid=0efbc0acb99a11ecbf0eed060651f5c1>.
- Shretta, R., Liu, J. and Cotter, C., et al. 2017. Malaria Elimination and Eradication. In: Holmes, K.K., Bertozzi, S., Bloom, B.R. et al. (Eds). *Major infectious diseases*. 3rd edition. Washington (DC): The International Bank for Reconstruction and Development / The World Bank. Chapter 12. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK525190/> doi: 10.1596/978-1-4648-0524-0_ch12.
- Target Malaria. 2021. *Results from months of monitoring following the release of non-gene drive genetically modified mosquitoes in Africa*. [Online] Available: <https://targetmalaria.org/>

results-from-months-of-monitoring-following-the-first-release-of-non-gene-drive-genetically-modified-mosquitoes-in-africa/.

Tchiombiano, S., Defraissy, J. and Dabis, F. 2019. *The Global Fund's Sixth Replenishment Conference: a challenge for France, a challenge for global health*. *The Lancet* 394(10205):1214-1215.

Transparency International. 2021. *Corruption Perceptions Index*. [Online] Available: <https://www.transparency.org/en/countries/burkina-faso>.

UNCTAD. 2015. *Africa's oil, gas and mining sectors must create more direct and indirect jobs to drive prosperity*. [Online] Available: <https://unctad.org/news/africas-oil-gas-and-mining-sectors-must-create-more-direct-and-indirect-jobs-drive-prosperity>.

UNECA (United Nations Economic Commission for Africa). 2019. *Fiscal policy for financing sustainable development in Africa. Economic Report on Africa 2019*. [Online] Available: https://www.uneca.org/sites/default/files/fullpublicationfiles/era2019_eng_fin.pdf.

Vallely, P. 2020. *How philanthropy benefits the super-rich*. [Online] Available: <https://www.theguardian.com/society/2020/sep/08/how-philanthropy-benefits-the-super-rich>.

Wernsdorfer, W.H. and Kouznetsov, R.L. 1980. Drug-resistant malaria--occurrence, control, and surveillance. *Bull World Health Organ.* 58(3):341-352.

WHO (World Health Organization). 2021a. *World Malaria report 2021*. [Online] Available: https://cdn.who.int/media/docs/default-source/malaria/world-malaria-reports/world-malaria-report-2021-regional-briefing-kit-eng.pdf?sfvrsn=338167b6_25&download=true.

World Bank. n.d. *Burkina Faso*. [Online] Available: [https://www.worldbank.org/en/country/burkina-faso/overview#1.0countries%20and%20territories,%20and%20Uzbekistan%20\(2018\)](https://www.worldbank.org/en/country/burkina-faso/overview#1.0countries%20and%20territories,%20and%20Uzbekistan%20(2018))