



CONCEPTUAL

THE IMPACT OF WAR ON THE HEALTH SERVICES AND NGOS IN SUDAN: 2023-2025: AN UPDATE

Dr Haitham Bashier

Team Leader at Public Health Emergency Management Centre, EMPHNET, Jordan

Email: hitha2000@gmail.com; hbashier@emphnet.net

ORCID: 0000-0002-9648-5473

Dr Huda Hakim

Technical Specialist at the International Academy of Public Health (IAPH), Jordan

Email: hakimhuda@hotmail.com; hhakim@iaph.org

ORCID: 0000-0001-9924-8652

Professor Mokbul Morshed Ahmad

Professor at the School of Environment, Resources and Development,

Asian Institute of Technology, Thailand

Email: morshed@ait.ac.th

ORCID: 0000-0002-4003-0920

ABSTRACT

PURPOSE: This paper examines the impacts of Sudan's war from 2023 to 2025 on health services and the operations of non-governmental organisations (NGOS) in Sudan.

DESIGN: This conceptual paper employs qualitative methods, including an analysis of secondary data, key informant interviews, literature review, humanitarian reports, and conference proceedings.

FINDINGS: The findings identify disruptions to the health system and significant setbacks faced by NGOs.

ORIGINALITY: All information and recommendations are based on the authors' first-hand experience and engagement in the Sudan health system before and during the war.

RESEARCH LIMITATIONS: The ongoing conflict and its rapidly evolving nature may limit access to data, necessitating frequent updates to the findings.

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PRACTICAL IMPLICATIONS: The paper recommends strategic directions and interventions to rebuild and strengthen Sudan's healthcare system

KEYWORDS: *Sudan War; Health System Disruption; NGO Operations; Post-Conflict Recovery; Service Sustainability; Qualitative Methods.*

INTRODUCTION

The war in Sudan, which began in April 2023, has killed thousands of civilians, displaced millions of families, and caused massive damage to infrastructure. The health sector has suffered severe damage, disruption of its functions, and increasing demand. Rebuilding the health system is crucial for sustainable health services, and the current conflict can provide an opportunity to rethink the structure and function of the system in Sudan.

This conceptual paper employs qualitative methods to examine the impacts of Sudan's civil war, from 2023 to 2025, on health services and the operations of NGOs. The paper proposes strategies for rebuilding and strengthening Sudan's healthcare system in the post-conflict period.

PRE-CONFLICT HEALTH SYSTEM CHALLENGES

Decades of continuous conflict, political instability, and economic crises have significantly impacted Sudan's health system, resulting in strained healthcare services and a struggle to meet the people's needs. Hospitals lack essential resources, medical professionals face overwhelming demands, and communities, especially the most vulnerable, are left without reliable care. The goals of Universal Health Coverage (UHC) and the Sustainable Development Goals (SDGs) benchmarks for 2030 are far from being achieved.

Since Sudan's independence in 1956, its health system has witnessed contradictory visions and strategies. The political regime from 1989 to 2019 had set a clear vision, but unfortunately it did not follow that vision with an aligned implementation. Competition at leadership levels, tensions between federal and state levels, corruption, and fragmentation of financing systems were the key impeding factors. Under-investment in primary healthcare services and public health preparedness further weakened resilience.

The country's economic situation and political unrest have diverted attention away from effective investments to ensure a resilient health system, resulting in a weakened health system with significant shortcomings, including a severe shortage of healthcare workers with only four doctors for every 10,000 people (Mohammed *et al.*, 2023). Out-of-pocket health expenditures have burdened almost 10% of the population. The instability put international aid of around US\$300 million to public health projects on hold. This fragile system had to face the burdens of disease, millions of malnourished children (UNICEF, 2024a), one of the highest maternal mortality rates in the world (Elhadi *et al.*, 2020) and a response to an unprecedented pandemic (OCHA, 2024).

The years between 2018 and April 2023 were characterised by frequent changes in higher and technical leadership positions, without a clear vision or strategy. This uncertainty resulted in further

deterioration of the health system. Prior to the outbreak of the armed conflict in April 2023, Sudan had a long history of persistent instability, resulting in a protracted, complex crisis characterised by violence and displacement (UN, 2025).

THE IMPACT OF THE WAR ON SUDAN'S HEALTH SERVICES

By 2023 Sudan was already experiencing its highest levels of humanitarian need in a decade (Çinar and Özer, 2023). The conflict further exacerbated this crisis, leading to widespread violence and suffering; estimates show that the conflict has killed more than 26,630 people and injured more than 33,000 others (IRC, 2025). More than 11.3 million have been forcibly displaced, including 8.1 million internally and 2.9 million across borders, resulting in the largest displacement crisis in the world (ReliefWeb, 2025; UNHCR, 2024).

INFRASTRUCTURE DESTRUCTION AND COLLAPSE OF ACCESS

The armed conflict has significantly impacted Sudan's already fragile health system (Aderinto and Olatunji, 2023; Hemmeda *et al.*, 2023). The conflict has led to a collapse of the functioning of the health system, exacerbating indirect mortality and morbidity (Emergency, 2024). However, the country's weak health information systems make it difficult to assess the impact of war-related service disruptions.

On 25 April 2023, Sudan's doctors' syndicate said that services have ceased in more than 70% of hospitals in areas affected by the clashes in several Sudanese states. As of June 2024, approximately 80% of hospitals in the most conflict-affected areas and 45% of health facilities in five states were non-functional, while the remaining facilities were overwhelmed with individuals seeking care (WHO-EMRO, 2024a). As of September, a total of 13 of the hospitals had been bombed, while 19 others were forcibly evacuated. The number of attacks on healthcare facilities in Sudan since the onset of the armed conflict in April 2023 has exceeded 100, with 108 incidents verified by the World Health Organization (WHO) by mid-September. In Khartoum, only 16% of health facilities are operational, while 61% have closed due to evacuations and armed conflict. Other reports showed various service disruptions, damage to health facilities, and attacks on healthcare providers (ReliefWeb, 2024). Among 59 non-operational hospitals, 17 have been attacked, and 20 have been evacuated; 12 of those evacuated have been converted into barracks. The remaining hospitals cannot operate due to power outages, fuel shortages, a lack of medical supplies, and a critical shortage of healthcare workers (Aderinto and Olatunji, 2023).

In addition, people with chronic diseases are unable to obtain treatment, while mental health needs are increasing, especially among children, as reported by WHO and the International Federation of Red Cross and Red Crescent Societies (IFRC) (Emergency, 2024). The ongoing and worsening violence hinders the ability of WHO and other agencies to verify both attacks and casualties independently (ReliefWeb, 2024).

The attacks and looting of the National Public Health Laboratory, the Central Blood Bank, and the National Medical Supplies Fund have resulted in severely low medical supplies and blood

reserves in several states, as well as heightened public health concerns due to the leak of dangerous biological samples from the National Public Health Laboratory (Aderinto and Olatunji, 2023).

MATERNAL, CHILD, AND CHRONIC DISEASES

Many maternity hospitals in Sudan have closed, leaving 11 million people, including 2.64 million women and girls of reproductive age and 262,880 pregnant women in urgent need of health aid (Abdelmola, 2023). The ongoing conflict has severely impacted maternal health, leading to unsafe deliveries and adverse outcomes such as miscarriages and stillbirths. Reports of sexual violence have also increased. The destruction of healthcare facilities has made essential services inaccessible and created a shortage of skilled workers (IRC, 2025).

Women's and children's healthcare services are significantly affected by the ongoing crisis. About 5.8 million (54%) of the internally displaced populations (IDPs) in Sudan are women and girls (UN Women, 2024). According to the United Nations Population Fund, more than 4 million women in Sudan are currently at risk of sexual violence and exploitation (Bonavina *et al.*, 2024). Additionally, there are more than 1.2 million pregnant and breastfeeding women, with thousands lacking access to basic maternal health services (UN Women, 2024). The conflict has significantly affected children, with millions fleeing their homes and being displaced both within the country and across its borders. Nearly 14 million children require humanitarian assistance (UNICEF, 2023).

Due to the conflict in Sudan, many cancer patients lost access to their critical care and life-saving medicines. The number of patients in the functioning cancer centres has nearly doubled, while paediatric patients at the National Cancer Institute (NCI) have quadrupled, often sharing beds in overcrowded conditions. This influx has resulted in a high turnover rate and increased mortality, with poor outcomes linked to declining care quality, medication shortages, and overworked staff. Approximately 275 children receiving cancer treatment had to flee with their families for safety (WHO-EMRO, 2024a). This disruption poses severe risks to both adult and child cancer patients, contributing to significant mortality that is hard to measure amid the ongoing conflict.

On 27 April 2023, the National Centre for Kidney Diseases and Surgery (NCKDS) reported urgent needs after the bombing of the Shaheeda Salma Kidney Centre, which provided free dialysis (Aderinto and Olatunji, 2023). Healthcare access for haemodialysis patients showed poor indicators of approachability, acceptability, availability, accommodation, affordability, and appropriateness of service. Over half of the participants (56.9%) struggled to maintain regular haemodialysis sessions, and 65.2% of participants reported experiencing medical complications due to the inability to keep up with their treatments (Hemmeda *et al.*, 2023).

Epidemics and Malnutrition Emergencies

These unstable conditions have triggered multiple health emergencies, compounded by widespread shortages of food, water, shelter, and medical supplies. As of June 2024, the scale of food insecurity and malnutrition in Sudan had reached alarming levels due to the ongoing armed conflict (WFP, 2024). An analysis by the Integrated Food Security Phase Classification (IPC) indicates that Sudan

is experiencing the world's largest hunger crisis, with more than half the population (26 million) facing acute hunger, including 755,000 people facing catastrophic conditions (IPC, 2024).

The conflict has contributed to outbreaks of vaccine-preventable, vector-borne, and water-borne diseases, including measles, meningitis, polio, malaria, dengue, and cholera (USAID, 2024; UNICEF, 2024b). As of October 2024, the cumulative number of cholera cases had reached 17,649, with 543 deaths, and the number of dengue fever cases had reached 194, with 10 deaths (Dabanga, 2024).

HUMANITARIAN RESPONSE AND THE ROLE OF NGOS

The humanitarian response has been limited by inadequate international support, with only 11% of the 2023 plan funded, severe access challenges, and the politicisation of aid; co-ordination gaps further hinder effective responses. Local NGOs and civil society organisations have played a crucial role, but lack sufficient support and capacity to address the needs. Meanwhile, health information systems have been disrupted, complicating needs assessments and response planning.

LOCAL RESPONSE AND INTERNATIONAL ENGAGEMENT

Delivering humanitarian assistance during an active conflict has been a significant security and logistical challenge, and the international humanitarian response has struggled to keep pace with the scope and scale of Sudan's crisis. The way forward is to achieve peace in Sudan, as it is only in a state of peace that financial, logistical, and communication challenges can be overcome (Dafallah *et al.*, 2023).

UN agencies have co-ordinated efforts with NGOS to address complex security issues. Initially, health staff considered fleeing due to safety concerns. The co-ordinated cluster forum has improved co-operation across the health sector and enhanced Sudan's capacity to respond effectively. Despite all the consequences of the devastating armed conflict, the response from the international community has remained significantly inadequate (Gravellini, 2024; Ferragamo, 2024). The UN has achieved only 48% of its US\$2.7 billion funding goal for 2024 (OCHA, 2024).

Despite challenges such as limited funding and the politicisation of humanitarian aid, the Sudanese Red Crescent Society (SRCS) continues its operations, providing critical support in health, disease prevention, water, sanitation, shelter, tracing of displaced families, and psychosocial care. By 2024, SRCS had reached over 124,000 people with water, sanitation and hygiene (WASH) services, 150,000 with food aid, and 100,000 with essential health services, according to the International Federation of Red Cross and Red Crescent Societies (IFRC-MENA).

International organisations, particularly the World Health Organization (WHO), have also provided critical support and co-ordination (OCHA, 2024). WHO's approach includes co-leading the health cluster with the Ministry of Health, and co-ordinating over 80 health cluster members to ensure a unified response. Their work spans national and sub-national levels, including cross-border operations in countries hosting Sudanese refugees. Additional initiatives include a cholera vaccination campaign to address disease outbreaks. WHO partnered with the World Bank and

UNICEF to deliver comprehensive healthcare services, with 404,000 doses of oral cholera vaccine administered (WHO, 2023a; UNICEF, 2024c).

The response to Sudan's ongoing public health crisis relies heavily on local actors and international organisations working together to address urgent health and humanitarian needs. With over 2.1 million individuals abroad, the Sudanese diaspora has played an instrumental role in providing financial, medical, and social support during the conflict. Their support extends to sustaining dialysis units, rehabilitating children affected by the conflict, aiding displaced individuals, and supporting thousands of Sudanese students to continue their education inside Sudan and abroad (Migration Data Portal, 2020).

Community Empowerment

Health outcomes in conflict-affected Sudan are influenced by various factors, relying not only on the healthcare system but also significantly on community actions and resilience (Fortnam *et al.*, 2024). Achieving improved health outcomes requires a decentralised, sustainable approach, where collaboration across sectors, such as education, economy, diplomacy, and the community, plays a central role in strengthening the health system (WHO, 2023b).

The “thriving communities” concept is a key strategy for addressing Sudan's ongoing health challenges. This concept emphasises providing access to preventive care and support before more intensive healthcare needs arise (Makheti, 2023). In the context of Sudan, where the healthcare system is under significant strain due to conflict and limited resources, an holistic, community-centred approach is essential to tackle health and development challenges. This approach prioritises preventive care, community engagement, and robust social support systems where individuals can maintain good health and manage risks before they escalate into more severe conditions (Aguilar-Gaxiola *et al.*, 2022). By fostering thriving communities, Sudan can ensure accessible health resources, promote wellness, build resilience, and reduce dependence on resource-intensive healthcare interventions, thus making a significant step towards long-term health improvements despite ongoing challenges.

UNDERSTANDING WHY SUDAN'S HEALTH CRISIS GOES UNNOTICED

To understand why Sudan remains a low-profile health emergency among stakeholders, we surveyed 78 organisations and international agencies to obtain their perspectives on responding to the Sudan emergency. Most of the agencies reported showed low interest in participating in direct response efforts. The main reasons were limited resources, further strained by the needs of other priority emergencies, such as the wars in Ukraine and Gaza. Additionally, many agencies questioned the governance and accountability of the system in the context of the war. This is why some of the agencies working in the country decided to adopt the “direct implementation” modality, despite the additional efforts required for logistics and administration.

Despite the Health Cluster's operational presence in Sudan since the conflict's inception, significant gaps remain in the health response (Bonavina *et al.*, 2024). Therefore, raising awareness

of the situation among stakeholders must be accompanied by concrete actions that go beyond relying on donor-dependent tactics and a focus on immediate needs. What is needed is a programmatic, multi-sectoral approach within the framework of a Comprehensive Health Action Plan designed to address the urgent health needs while recommending strategies and methods for building a resilient health system in Sudan post-conflict.

STRATEGIC RECOVERY: THE NEED FOR A COMPREHENSIVE HEALTH ACTION PLAN

The status of Sudan's health system and the momentum created by the willingness to rebuild it necessitate a new thinking to steer a transformation towards best practice. The post-conflict period presents an opportunity to redesign the systems and avoid the pre-conflict shortcomings and complex challenges. The aim is to shift Sudan's health system from a firefighting approach to a sustainable, resilient, decentralised, community-based, and equitable healthcare system that leaves no one behind. The shift must adopt health principles as a human right, and that people's health and well-being contribute to national prosperity and development.

There is an urgent need for a comprehensive health action plan (CHAP) to guide the recovery and rebuilding of Sudan's post-conflict health system (Ibrahim *et al.*, 2024).

CHAP requires a detailed analysis of knowledge gaps that guides the development of an humanitarian advocacy plan to "change policy, behaviour, practice, or mobilise other actors with leverage to ask for the desired change" (Claire, 2021). The plan must target diverse audiences, including political leadership, the Sudanese diaspora, civil society organisations, local NGOs, and regional and international partners, using various dissemination mechanisms, ranging from large-scale pledging conferences to small-scale email newsletters, to advocate for CHAP (EMPHNET, 2024; DRC, 2023).

CHAP must be inclusive, data-driven, and address short- and long-term humanitarian needs. Additionally, it should incorporate contingency planning for persistent conflict scenarios, build a resilient, adaptable, and decentralised health system, prioritise workforce development, ensure service continuity, respond to epidemics, invest in digital health solutions and innovation, and reform health financing. The proposed plan must include early recovery strategies aligned with "Build Back Better" principles that adopt risk-informed programming and climate adaptation in health planning. CHAP should also be aligned with Sustainable Development Goal 3 (SDG 3) that emphasises the importance of universal health coverage, access to essential services, and reducing maternal and child mortality, key concerns in Sudan's current context.

Finally, CHAP should consider building local capacities through training, community health initiatives, and leadership development. It should foster multi-sectoral collaboration to address social determinants of health. A key success of the response and long-term health plan is the advocacy for depoliticised, sustained funding beyond emergency aid.

BUILDING A RESILIENT HEALTH SYSTEM IN SUDAN POST-CONFLICT

Sudan's current public health crisis is a complex emergency arising from interrelated causes, including political unrest, ongoing violent conflict, and extreme weather conditions driven by climate change (UN, 2022). The health response in Sudan is on the edge of collapse, and many potential supporters remain unaware of or uninvolved in the support efforts. This situation necessitates collaborative efforts to enhance and rebuild Sudan's health system.

WHO's Health Systems Framework identifies six core components for strengthening health systems: leadership and governance, service delivery, health system financing, health workforce, health information systems, and medical products, vaccines, and technologies (WHO, 2010a). These components are inter-related and necessary for creating a resilient health system that ensures quality care, efficient resource use, and effective management to meet population health needs (WHO, 2010b). WHO defines health system recovery as the rebuilding, restoration, and improvement of the health system's components and core public health functions in alignment with the principles of building back better and sustainable development (WHO-EMRO, 2024b). Building on WHO's health systems framework, theories and frameworks of health systems strengthening and resilience emphasise the importance of three key levels of capacity: absorptive, adaptive, and transformative (WHO, 2017; Blanchet *et al.*, 2017). Absorptive capacity focuses on a health system's ability to absorb shocks and manage routine health needs. Adaptive capacity refers to the system's flexibility to respond to changing circumstances and emerging challenges. In contrast, transformative capacity highlights the system's ability to undergo fundamental changes that improve long-term health outcomes (Blanchet *et al.*, 2017). These capacities work in tandem to ensure that health systems can respond to crises and evolve and thrive in the face of future challenges (Witter *et al.*, 2023).

To achieve resilience in Sudan, a comprehensive re-orientation of the health system is necessary, focusing on redefining essential health services, enhancing emergency response capacity, and ensuring sustainable, co-ordinated actions among diverse stakeholders (WHO, 2022). This re-orientation must match the unique characteristics and needs of different localities in Sudan. It should consider redefining the essential health service package, building emergency response capacity, skilling and empowering the health workforce, and co-ordinating efforts across actors and resources to establish a sustainable, resilient health system. Rebuilding efforts must foster meaningful, sustained action to address the health crises exacerbated by ongoing conflict. It is crucial to unite diverse stakeholders to provide immediate relief, rebuild health infrastructure, and lay the foundation for a resilient health system capable of facing future challenges.

GOVERNANCE AND LEADERSHIP REFORM

Reforming governance is the foundation of the health system. Sudan's health system is in dire need of restructuring its governing bodies to ensure a co-ordinated, accountable, and decentralised system (Al-Safi, 2024). The Federal Ministry of Health (FMOH) white paper Re-shaping Future Health System in Sudan: Bridging Divides and Ensuring Equity, the SAPA workshop on Reimagining the

Health System in Sudan, Kigali, 2025, and the EMPHNET 8th regional conference, September 2024, recommended strategic shifts required for the health system. They identified a need for comprehensive, bottom-up, integrated, and national health policies. They expressed the necessity of a whole-of-government and whole-of-society approach with the engagement of diverse stakeholders, fostering partnerships across sectors. The health system in Sudan should utilise health information systems and leverage technology such as Artificial Intelligence (AI) and machine learning to make data-driven decisions. The renewed health system in Sudan has to address the social determinants of health and tackle inequalities in health and other related factors such as housing, education, and employment, to improve the health outcomes. The rebuilt health system should have clear roles and responsibilities, foster transparency, enforce performance standards and benchmarks, and have strong regulatory mechanisms and financial accountability. In addition, there must be a shift to bottom-up, integrated national health policies rooted in equity (FMOH, 2025).

HEALTH WORKFORCE RECONSTRUCTION

The health workforce is a strategic domain of the health system, characterised by complexity, dynamism, and a multi-stakeholder nature. Health workers and community volunteers are tangible assets who support practical, cost-effective, and participatory approaches to address growing health demands (Khairy *et al.*, 2024). The current war has significantly impacted healthcare workers in Sudan, as many have been killed or have left the country due to the conflict; the remaining healthcare workforce faces increasingly challenging working conditions (WHO, 2024).

Over 100 attacks on healthcare providers have been verified since the eruption of the conflict, resulting in 183 deaths and 125 injuries (WHO, 2024). These violent incidents have not only resulted in loss of life but also contributed to the severe shortage of qualified healthcare professionals, with only 10% of the pre-conflict Ministry of Health staff remaining in service (Awadalla, 2024). More than 100 ambulances and 400 vehicles and trucks have been looted, with partial or complete destruction of health institutions and medical supply stores (Awadalla, 2024; Badri and Dawood, 2024).

In addition, the interruption of health and medical education and professional training programmes affected the supply side further by limiting the number of graduates and trained workforce. Unfortunately, those impacts will remain even after the war has ended.

This situation necessitates co-ordinated planning and resource mobilisation to fill the current and future gaps in the health workforce. This strategic planning can be an opportunity to rethink Sudan's education system to be more competency-based and needs-oriented, utilising the available technology. The plan must consider a better working environment, career pathways, retention policies, continuous development, and protection of workers, while ensuring the quality of these programmes. This will enable the graduation of workforces that meet national needs, considering the proportion of those who will migrate (Hemmeda *et al.*, 2023).

HEALTH FINANCING REFORM

Underfunding, fragmentation, corruption, inefficiency, and lack of prioritisation have shaped health financing in Sudan. Therefore, the current momentum of rebuilding the health system in Sudan requires transparent and transformational interventions.

More sustainable resources are needed to finance a sufficient health system, and reliance on national capacity should increase. Mechanisms that ensure efficient and rational resource use are also required. The health finance system should be managed transparently and be accountable as part of a whole governance system.

These measures are necessary to transition from out-of-pocket-financed healthcare to a healthcare system that protects marginalised and vulnerable populations. The private sector can significantly secure more resources through a strategic and innovative partnership with the public sector built on win-win models.

CONCLUSIONS

Sudan's health sector faces unprecedented challenges. Despite severe setbacks, strong community resilience, strategic partnerships, and co-ordinated multi-sectoral efforts offer hope for rebuilding. Strengthening emergency response capacity, decentralising services, investing in resilience, and embedding innovation are essential steps towards creating a sustainable, adaptable, and inclusive health system in Sudan.

Ultimately, by integrating health system resilience into recovery plans and fostering robust, multi-sectoral partnerships, Sudan will establish a resilient health system that can effectively advance the Sustainable Development Goals (SDGs).

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BIOGRAPHY



Dr Haitham Bashier is an expert in Emergency Management and a specialist in Training and Capacity-Building. He is the Director of the Public Health Emergency Management Centre (PHEMC) in Jordan, and was previously the Executive Director of the International Academy of Public Health (IAPH) in Jordan. He worked as an Assistant Professor at the School of Medicine, National University in Sudan. He served as the Director of Teaching and Education at the Public Health Institute and the Director of the Emergency and Humanitarian Action at the Federal Ministry of Health, Sudan. His published work primarily focuses on emergency management, capacity building, and training.



Dr Huda Hakim has served as an Assistant Professor of Community Medicine at various universities in Sudan and Saudi Arabia. Her areas of expertise include epidemiology, communicable diseases, biostatistics, primary health care, research methodology, professionalism, medical ethics, education quality, and the E-learning system. Dr Hakim is a researcher and external examiner at various universities, with published work focusing on public health awareness, health behaviour, and medical education. She has made significant contributions to public health practices through her work with the Expanded Program on Immunisation of the Ministry of Health and UNICEF in Sudan.



Dr Mokbul Morshed Ahmad is a Professor of Development Planning, Management and Innovation at AIT. He was an Assistant Professor of Geography and Environment at Dhaka University. He holds a PhD in Development Geography from Durham University, UK. He has an MSc in Geography and Environment from Dhaka University and an MSc in Rural and Regional Development Planning from AIT. He worked with the government of Bangladesh as a civil servant. Dr Mokbul teaches and researches on international development, NGOs, community development, human conflicts and adaptation to climate change. He has published articles in many journals and books and written eight books.

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