



COLUMBIA UNIVERSITY
CENTER FOR THE STUDY OF HUMAN RIGHTS

***DARFUR
EARLY RECOVERY
AND
DEVELOPMENT
DOSSIER***

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14 July 2008



Figure 1. Map of Darfur

Data Source: http://www.msf.org/source/countries/africa/sudan/2006/Map_Sudan_Darfur.gif

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PREFACE

On Human Rights, Humanitarian Assistance, and Development

The role of human rights has expanded over the past generation in ways that create new challenges and opportunities. Globally, experts and advocates of humanitarian assistance, conflict resolution, development and human rights have professionalized in different ways, and they operate separately. Their institutionalization presents structural hurdles for cooperation. Yet the central aim of improving the well-being of the most vulnerable peoples and societies is central to all of these disciplines.

In this context, a rights-based approach has been adopted by UN agencies and leading NGOs, and the rhetoric of mainstreaming rights has become a refrain even for development agencies. But how does mainstreaming human rights occur in practice, especially in places where conflict, lack of security, and political considerations overwhelm almost all other considerations? Since the 1990s, the global community has assumed various doctrines embodying a multifaceted approach to aid including the use of force, political intervention, trade and environmental protection. In 2001 this was reformulated as the "Responsibility to Protect". This doctrine of R2P, which aims to maintain human security in the face of threats to stability, including economic, demographic, and ecological factors, presents a predicament because remedies are often contradictory.

The desire to achieve coherence in aid, development, and security policies has led to focused work reunifying aid and politics. This is informed by the recognition that, notwithstanding the aspiration to embrace rights without prioritizing any single objective, certain preconditions need to be met. These include reframing the relationship of security to rights (encompassing social, economic and political rights) and redefining the agenda of experts and agencies in the field. The politicization of aid and rights means that they are playing a particularly prominent role in war zones and complex emergencies. As this report is being completed, the impending indictment by the ICC of President Omar Hassan al-Bashir of Sudan for crimes of Genocide presents the predicament of peace versus justice in an acute manner.

What do rights mean in a crisis situation? How are rights manifested in shaping policies? The naiveté of previous generations that humanitarian aid can ignore politics has brought us face to face with grim realities, including the need to confront refugee warriors who manipulate vulnerable refugee populations. This requires the recognition that ethical work must consider politics. These multiple concerns have been discussed under the umbrella term of "coherence," concluding that, while it is crucial to incorporate political circumstances, these often present an intractable dilemma. The international community has come to realize that prioritizing humanitarian aid, followed by conflict resolution and only then paying attention to rights becomes counter-productive. Widespread injustices are at the heart of factors which cause and aggravate the conflict, hinder aid and security, and enable perpetrators to commit crimes with impunity. The practice in protracted conflicts to delay development projects until security has been established and conflict is over is increasingly untenable. Scarcity and the lack of development have themselves become ongoing sources for conflict.

In recent years, the right to development has become increasingly recognized on its own terms. Development has a role in ending conflicts and can contribute to conflict resolution, presenting a tangible payoff for the conflicting sides to engage in the process. The notion that human rights play an intrinsic part in development and that development provides the means to achieve human rights has become part of the consensus, if not always the practice, of international norms.

The expanded international solidarity in the 1990s, including the trend to intervene in cases of humanitarian crisis, suffered a serious setback as a result of the Iraq war. The legitimacy of international intervention declined and skepticism about humanitarian justification, in contrast to political realism, increased. This undermined further solidarity among states.

In addition to asserting human rights and traditional means of advocacy, today's study of human rights must be reconfigured to face the question of how to join analysis and advocacy, as well as analyze and integrate the tension among conflicting ethical commitments: rights, aid, security and development. An expanded definition of rights means that many more academic disciplines and separate specialties get involved in the articulation of rights.

The goal of the Center for the Study of Human Rights is to encourage greater attention to the multiplicity of factors that impact crisis and to foster interaction among specialists in these areas. This effort is related to an ongoing conversation about the changing meaning of sovereignty and the evolving doctrine of the Responsibility to Protect. None of these are traditional human rights work, but all have become intertwined, especially the emerging claims on access to security, resources, labor, and the environment.

It is in this spirit, that we convened multiple stakeholders to discuss the Darfur crisis and to imagine how focusing on rights and complex emergencies reshape our understanding. In this case our interest was not merely academic (in the best sense of the word), rather, the challenge was precisely to incorporate political realism with solidarity and ethical motivation.

It remains to acknowledge and offer heartfelt thanks to the people who helped bring this project to fruition. This work emerged from discussions with my Columbia University colleagues, Dirk Salomons and David Phillips. It was David Phillips who organized every aspect of the endeavor, and he continues to lead the project as it moves to its next phases. We owe him a great deal of appreciation and gratitude. Many others participated in various stages. Thanks to Guido Schmidt-Traub, Maha El Adawy, Gonzalo Pizarro, Siegfried Tobias and Bashir Jama for helping to draft this report and to Althea Arnold for her editing and coordination. We are grateful to Vahan Kololian and Alidad Mafinezam from the Mosaic Institute for their support, as well as the Governments of Canada and Norway. Hamid Ali, Niemat Ahmadi, and others from the Darfur Leaders Network also played a valuable role.

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INTRODUCTION

The Darfur Development Initiative is a project of the Center for the Study of Human Rights at Columbia University (CSHR). It is offered as a contribution to the peace process for Darfur, by focusing on opportunities for recovery and development in areas of relative stability that are less affected by the conflict, or in the event of a peace agreement. Such a perspective, in turn, might also add a new dimension to the Darfur-Darfur dialog and to peace negotiations between Darfuri movements and the Government of Sudan (GOS). This dossier describes water resources and conditions in the related sectors of agriculture, pastoralism and health. The dossier is prepared for international donors to Darfur, international NGOs working in Darfur, Darfuris and the GOS.

CSHR appreciates the need for a holistic approach to conflict in Sudan. It recognizes that conflict elsewhere in Sudan, especially caused by obstacles in implementing the Comprehensive Peace Agreement (CPA) that ended the North-South civil war, could seriously affect the already desperate situation in Darfur. Regarding charges by the International Criminal Court's prosecutor, President Omar Hassan al-Bashir has responded by reaching out to Darfuris with promises of peace, restitution, and development. Notwithstanding the need for accountability, the ICC's action presents an opportunity to leverage an agreement with Khartoum to deepen its cooperation with the international community in a development plan for Darfur.

The Darfur Early Recovery and Development Dossier is focused on the needs, project opportunities, and implementation strategies specific to Darfur. However, CSHR recognizes that the development strategy embodied in the dossier should take both an all-of-Sudan and a regional approach, including Chad. If there is to be progress by linking development with efforts to foster peace, development investments must have rewards for all the institutional stakeholders.

Background

Darfur is geographically located in the far western part of Sudan. Bordering Darfur is Libya to the north, Chad to the West, and Central African Republic to the Southwest. Darfur is about the size of Texas with a land area of about 114,000 square miles and a population of 6 million. Darfur's varied climate ranges from desert and semi-arid in the North to richer savanna lands in the South. Major tribal groups are the Fur, Masalit and Zaghawa.

The Darfur conflict erupted in 2003 when, in response to demands for more development and self-rule, the GOS launched coordinated attacks against the Darfuri movements that involved tanks, armored personnel carriers, heavy weaponry, and aerial bombardment. The GOS also sponsored Arab militias ("janjaweed") who destroyed homes, herds, farms, and communal infrastructure. The janjaweed killed, raped and pillaged civilians from 2,700 villages in Darfur and in Chad just inside the border. About 250,000 people died, most in 2003-04. More than 2.5 million were displaced, including 250,000 refugees, during the peak of the conflict in 2003-04 (USHM, 2007).

The Bush administration called these atrocities “genocide.” It attempted to ratchet up pressure and kick-start meaningful negotiations aimed at establishing security, allowing displaced persons to go home, and catalyzing a political process for meaningful self-rule by Darfuris. United Nations Security Council (UNSC) Resolution 1564 (18 September 2004) demanded that the GOS accept an expanded peacekeeping force from the African Union (AMIS) or face sanctions. At its peak, the AU force included 7,000 troops at a cost of \$450 million a year. However, AMIS was overwhelmed by the enormity of the conflict, lack of resources, and limitations to its mandate.

International mediators brokered the Darfur Peace Agreement (DPA) requiring that the GOS limit activities of its armed forces and disarm/demobilize the janjaweed (by mid-October 2006) as the precursor to demobilization of rebel forces (5 May 2006). Drawing on the CPA, the DPA awarded the fourth highest position in the GOS to a Darfuri as well as seats in the national assembly and Darfur state legislatures to Darfuris. The DPA also empowered Darfuris to choose their leaders and determine the political status of Darfur.

Though the DPA was heralded at the time, it was never implemented, as only one of the many rebel groups signed up, in addition to the GOS. UNSC Resolution 1769 (31 July 2007) ultimately merged AU peacekeepers into an AU/UN hybrid force and the United Nations Assistance Mission in Darfur (UNAMID) took over from AMIS at the end of 2007. Resolution 1769 called for 26,000 peacekeepers and civilian police, the largest peacekeeping deployment in the history of the United Nations. To date, though, only 9,000 peacekeepers have been deployed. Bureaucratic delays have resulted from restrictions by the GOS on which countries can contribute troops. Assigning UN personnel to areas that lacked infrastructure and water also delayed deployment. Though it has a budget of \$1.7 billion and a robust mandate to protect civilians, UNAMID lacks manpower and resources. Troop-contributing countries are reluctant to deploy peacekeepers absent a ceasefire and when there is no peace to keep. Compounding problems, the existing forces lack equipment such as helicopters and armored personnel carriers (Polgreen, 2008).

Political talks between the GOS and Darfur rebel groups have also stalled. After the DPA, fragmentation increased between more than 20 Darfuri factions. Two of the largest rebel groups, the Justice and Equality Movement (JEM) and the Sudanese Liberation Army (SLA), refused to participate in negotiations convened by the UN in November 2007. With continued in-fighting between the movements, prospects for a political solution remain remote.

The Darfur conflict is entering a new and especially lethal phase. Early 2008 saw an increase in violence marked by GOS attacks against civilians using war planes on IDP camps and targeting rebel movements along the border. During the first quarter of 2008, about 1,000 people were displaced each day. The janjaweed have also re-emerged.

In addition, the Darfur conflict risks becoming a regional conflagration; Sudan’s President Omar Hassan al-Bashar accused Chad of backing Darfur rebel groups and Chad’s President Idriss Deby accused Bashar of supporting Chadian rebels based in Darfur. Sudan’s survival is also threatened by a breakdown in the CPA and risks of renewed conflict between North and South. Though such concerns remain serious, the recent Abiyeh power and oil-revenue

sharing arrangement has allayed fears of the CPA's imminent collapse, which would have serious repercussions nationwide.

Assistance Framework

While establishing security and addressing Darfur's ongoing humanitarian emergency are the immediate priorities of the international community, the need for a three-pronged strategy – security, early recovery, and development – is widely accepted by experts on the ground. In addition to humanitarian assistance, the international community also pledged reparations, recovery, rehabilitation, and reconstruction assistance.

The Trust Fund for Victims (TFV) was established in 2004 with a pledge by the GOS for \$30 million. Envisioned as the vehicle for addressing individual claims, the TFV was augmented by the Declaration of Principles for Resolution of the Darfur Conflict (5 July 2005), which maintained: "Rehabilitation and reconstruction of Darfur is a priority. To that end, steps shall be taken to compensate the people of Darfur and address grievances for lives lost, assets stolen or destroyed, or suffering caused."

The United Nations General Assembly affirmed the right to reparations in resolution 60/147 (16 December 2005) that proclaimed the "Basic Principles and Guidelines on the Right to a Remedy and Reparation in Response to Gross Violations of International Human Rights Law and Serious Violations of International Humanitarian Law." However, reparations are not a substitute for longer-term investment in development activities that take a community or regional approach (i.e. "collective reparations"). Reconstruction is part of a broader strategy that targets vulnerable populations victimized by conflict.

The DPA also established Property Claims Committees to identify and compensate economic losses as a result of the conflict. It created the Darfur Rehabilitation and Resettlement Commission to be supported by a Darfur Reconstruction and Development Fund (DRDF) (DPA, 2006). The DRDF emphasized assistance to the agricultural sector through the provision of seeds, tools and fertilizers. It sought to restore livestock populations by providing animals and veterinary services. The DRDF also envisioned the rebuilding of basic infrastructure (i.e. roads and wells) (deWaal, 2006). The GOS committed to provide DRDF with \$300 million (year 1) and \$200 million/year (years 2-3). In addition to a donor's conference, the international community also committed to conduct a Joint Assessment Mission (DJAM) aimed at identifying Darfur's longer-term reconstruction and development needs (DOS Fact Sheet, 2006).

The DJAM was envisioned as an early recovery and strategic framework for development within which more detailed development strategies could be nested. However, the DJAM was overtaken by escalating violence and never got off the ground.

The UN established the Darfur Community Peace and Stability Fund (DCPSF) (24 October 2007). Donors pledged an initial sum of \$50 million to support peace-building at the local level through assistance to early recovery/foundational activities. The goal of DCPSF is to promote an environment that is conducive to peace through activities that help create the conditions for stability, security, justice and social equity. The scope of the DCPSF includes

livelihoods, governance/rule of law, peace support at local level, and expansion of basic social services. It is envisioned that UN agencies and NGO partners will apply to this fund to support priority programs promoting peace and stability in Darfur. (Note: At the Sudan Consortium meeting in Oslo (5-7 May 2008), donors pledged about USD 4.8 billion in total support to humanitarian, recovery and development efforts in the whole of Sudan (2008-2011).

The Columbia Initiative

Columbia University's CSHR convened a meeting of Darfuris, Darfur experts, UN personnel and representatives from donor countries (3 December 2007). Participants agreed that a lasting solution needs to address root causes of the conflict, which lie in the extreme poverty of the region. They concluded that, since the historic marginalization of Darfur in regard to economic development is one of the prime sources of unrest, sustainable peace will require solutions to the development crisis, alongside strategies that address immediate security and humanitarian needs during the early recovery phase.

By mainstreaming post-conflict planning and focusing on a "development horizon," participants also discussed how a peace dividend might have positive bearing on the conflict. (Participants cautioned that focusing on development activities should not diminish the importance of political talks, creating conditions of security, or undermine efforts to hold perpetrators accountable and finalize reparations.)

Darfur's regions have experienced different degrees of deadly conflict causing displacement and the destruction of infrastructure and livelihoods. Whereas the international community has set up mechanisms for rehabilitation and reconstruction, it is unlikely to start serious post-conflict planning until after a peace deal has been negotiated. No country wants to pour resources and manpower into a problem with no end in sight. The DCPSF exists to fund projects. However, few projects have yet been identified.

The CSHR believes that this makes its focus on development and water-related projects all the more important. While Darfur faces many development challenges, CSHR hopes it can play a useful role bridging the gap between the current and post-conflict phases in the following areas:

- *Water* (supply infrastructure, water storage and conservation, integrated resource management, sanitation facilities and awareness).
- *Agriculture* (soil health, improved inputs, extension/credit services, storage and marketing, nutrition, links to forestry and energy issues).
- *Pastoralism* (land/water access, animal husbandry/veterinary services, cooperatives/marketing).
- *Health* (neonatal care, childhood immunization, emergency obstetric care, antenatal care, epidemic awareness, malaria prevention).

The dossier describes (i) conditions in Darfur, (ii) immediate/quick impact projects that can be implemented right away in areas of relative stability less affected by the conflict and, to the extent possible, budgetary implications, (iii) longer term development goals, and, (iv) data gaps and recommendations for future research methodology. CSHR plans to convene a Darfur -Darfur Development Dialogue including technical experts and Darfuris with ties to the political movements (Cairo – November 2008).

CSHR's dossier reflects the linkage between development and a "rights-based approach" focusing on participatory decision-making. A rights-based approach integrates international human rights principles/standards into every phase of the development cycle (i.e. planning, implementation and evaluation). The dossier focuses on empowerment of vulnerable groups including women by mainstreaming gender issues in its thematic categories (<http://www.unhcr.ch/development/approaches.html>). Gender mainstreaming has been defined by the United Nations as the process of assessing the implications for affected populations in all activities, including legislation, policies and programs (ESOCOC Agreed Conclusions 1997/2). CSHR's rights-based approach reflects international commitments embodied in articles of the Declaration on the Right to Development, the International Covenant on Economic, Social and Cultural Rights, and the International Covenant on Civil and Political Rights. The Commission on Human Rights also affirmed the need to apply a gender perspective in the implementation of the right to development by ensuring that women play an active role in the development process (Resolution 2000/5).

The dossier also includes strategies for positively influencing the political negotiations by identifying key development dimensions that need to be addressed as part of a political settlement/peace agreement for Darfur. Focusing on development must not, however, obscure today's negative trends. Political talks between Darfuris are stalemated and show little sign of revival, and the deployment of additional peacekeepers is stalled by the reluctance of troop contributing countries and the continued obstructionism of the GOS.

Development cannot be a substitute for progress in these efforts. Yet, development activities must be tried. Not trying would mean accepting the status quo, which is tantamount to abandoning the people of Darfur to misery with no hope for improvement in their lives.

EXECUTIVE SUMMARY

Following is a summary of findings and recommendations. (More elaborate descriptions of conditions on-the-ground can be found at <http://hrcolumbia.org/darfur/dossier.htm>).

Water

Darfur is situated in the limit of the Sahel zone and Saharan desert zone. The region's ecological diversity in part results from its wide-ranging zones of rainfall that includes a (i) desert zone north of 16°N, with less than 100mm of rainfall annually and variability in rainfall of 35–60 per cent; (ii) a Sahelian zone of 12–16°N, with 100mm–150mm of rainfall annually, 9.5–12 arid months and 25–35 per cent variability; and (iii) a Sudanic zone of 9–12°N, with 6.5–9 arid months, 500mm–900mm rainfall annually and 25–30 per cent variability.

There is a single rainy season (June–September). With the exception of the northern parts of North Darfur, which are distant from the major population centers, the Darfur region has no fossil waters or deep regional aquifers. Shallow aquifers exist which can be used for human and animal consumption as well as irrigation purposes but will have to be very carefully managed. Uncontrolled deforestation, due to extraction of fuelwood, charcoal production, and land degradation is widespread across Darfur. Deforestation further compounds the ecological impact of the decline in rainfall over the past thirty years, which is less than 50% of the average rainfall in northern Sudan.

Regarding water requirements, Darfur's population growth rate is much higher than the rest of the country. While the population of Sudan has increased by a factor of four since the 1950s, the Darfur region experienced a seven-fold increase over the same period to reach some seven million by 2006. Northern Darfur is sparsely populated with the ongoing conflict leading to a further concentration of Darfur's population. As a result, the pressure on land and environmental stress are rising in areas with concentrations of Internally Displaced Persons (IDPs). Darfur is mainly rural (>70% of total population) and young (~44% in the 0-15 year-old range). The conflict has urbanized the population and established larger consumption centers in West, Central and South Darfur. Even in the most optimistic scenario for returnees, more than 30% of the population is expected to remain resident in urban areas. This translates into the need to provide safe/sustainable water supply and sanitation to over 2 million people. As the number of people and animals increase, agriculture and grazing are likely to remain the main drivers of consumption.

Agriculture and pastoralism have traditionally co-existed. However, changing environmental conditions along with a dramatic rise in human and livestock population have led to further strains on available land. Rising numbers of livestock have increased the demand for pasture and water. As a result, pastoralists have changed their seasonal migration patterns with larger herds tending to remain for longer time periods in southern Darfur before returning North. The increase in population puts further pressure on scarce resources, such as fuelwood. Furthermore, the increase in food demand, which results from the population increase, has also depleted scarce available groundwater resources.

Both water quantity and quality are of concern. The majority of village-cluster or town water yards and hand pump systems have been destroyed by the conflict. In addition, many systems have outlived their lifespan or have collapsed from inadequate maintenance. Low rainfall and IDP-induced water drilling have also exacerbated scarce water supplies. The most commonly used water harvesting structure for domestic supply in the region is the hafir, a dugout fed by rainwater and run-off. However, increasing siltation and poor maintenance have led to a serious decline in total water storage capacity. The humanitarian aid effort in Darfur has led to the drilling and establishment of hundreds of wells and water points since 2003. Many of these boreholes are located in or near camps for displaced persons, with high flow pumps servicing populations of several thousand or more. These camps are commonly established in arid regions where groundwater is the only reliable source of water for up to ten months of the year. There are health implications, as poor water quality can contaminate shallow wells and contribute to the spread of cholera and diarrhea.

Three options exist to address vital water storage requirements: (i) man-made storage reservoirs, (ii) shallow groundwater, and (iii) deep, fossil groundwater. Where topography is suitable (e.g. Marra Mountains) and for parts of the farming community, interannual variability can be dealt with by constructing microdams. These are low cost solutions that can store summer rains for later use in small scale irrigation. Microdams also help to reduce flooding during the wet period. Two types of systems exist: regular small scale dams that can usually supply a few hundred hectares and earth filled dams. In the later case, with the terrain terraced in incised valleys, these structures are simple to design and can be quickly constructed. The stored groundwater stored behind the dam is then available for agriculture throughout the year.

Small-scale irrigation interventions are not adequate in arid settings that lack grass cover. Fodder storage for pastoralist animals and/or alternative means of backup supply is essential during drought. Fresh groundwater usually exists in shallow aquifers along the wadis in much of Western Darfur. Although these aquifers are of variable quality and limited quantity, they can be easily tapped. Generally, in other arid regions, the alluvial fillings of the wadis contain freshwater due to their recurrent recharge during runoff events.

Vast fossil groundwater reserves exist north of Wadi Hawar in North Darfur (as part of a southern extension of the Kufra Basin). However no detailed information on the extent, potential yields and water qualities is available at this stage. It is important to gather additional information about these systems (i.e. resource size, recharge characteristics, etc.) as underground storage eventually turns out to be considerable. Under any circumstances, the development of these resources will be very costly due to deep drilling and the requirement to channel the water to population centers over large distances of several hundred kilometers.

Water resource management, given sustainability constraints, requires resource identification and quantification. Management is informed by computational models. However, management efforts are hampered considerably by a lack of data, especially in semi-arid and arid environments.

Recommendations

Quick impact initiatives must proceed while gathering data. In the short term, shallow aquifers around the wadis can be exploited via micro-dams and artificial groundwater reservoirs. The development of the fossil groundwater reserves in North Darfur has to be explored as a more long-term water supply option. Other interventions should:

- Expand water access through construction of small-scale water storage, shallow tube wells, and repair of water management infrastructure that has been damaged or fallen into disuse. Construction of *jessours* and small dams in the Mara Mountains is a priority.
- Provide supplementary irrigation to increase agricultural productivity through the introduction of high efficiency low-cost technologies, such as treadle pumps where enough groundwater is available; and, preferably, low cost drip irrigation systems.
- Provide water harvesting structures by launching rehabilitation and construction of new hafirs; construction of *qanats*, microdams, and other groundwater harvesting structures such as micro water catchment systems and rainwater harvesting, as practiced in much of North Africa.
- Improve sanitation access through construction of improved pit latrines, flush toilets, septic tanks and
- Develop a drought early-warning system for West Sudan comprising of low-cost meteorological stations, access to satellite data on regional ocean-atmosphere conditions, and climate forecasting software. Such a system could be fully operational in 6 months.

A comprehensive water and sanitation plan is also needed to:

- Identify and implement water management policies for the region.
- Develop a rapid response strategy to the sanitation crisis, and
- Undertake a detailed needs assessment by convening an inter-sectoral water management working group to consider requirements for human consumption, agriculture, pasture, health, education, and industry. The needs assessment should develop a full list of interventions to be presented to donors in the existing sectoral clusters, which will also be responsible for overseeing their implementation. Identifying synergies across the clusters that may affect implementation and cost.

To address the data challenges necessary to design and implement a sound water and sanitation solution, it is necessary to collect, systematize and make available information on water availability, water quality, rainfall patterns, stream flows, etc. A comprehensive resource assessment and monitoring program involves the systematic collection of groundwater quantity and quality data over time. This requires steps to:

- Complete targeted comprehensive hydrological and hydro-geological surveys.
- Identify and map potential sources for water supply; and
- Consolidate existing databases and supplement with remote sensing information.
- Develop management models of shallow groundwater reserves that help as decision-making tools. Develop local expertise to run and maintain these models.

Agriculture, Pastoralism and Energy

Agriculture is broadly defined to include pastoralism, crop production, forestry, fruit and vegetable production, as well as other types of rural development. Increasing agricultural productivity would help meet the food and nutritional needs of Darfur's population that has increased seven-fold since the 1960s and currently represents almost 19% of Sudan's 34.5 million people.

In 2004, approximately 60% of the population were primarily farmers and most of the remaining 40% were primarily pastoralists. Historically some tribes tended to specialize in nomadic pastoralism and others in small-scale crop farming, although many groups have diversified activities. Farming communities, such as the Fur, have aspired to produce livestock as a means of acquiring wealth, while the nomadic communities expanded into cultivation with mixed success.

The productivity of crop farming is hampered by low and declining rainfall; land and soil degradation; destruction of woodlands from pressures associated with fuelwood and charcoal extraction, grazing and expansive agriculture; poor traditional land tenure and dysfunctional user arrangements; isolation from extension services and markets. Soil value is also a problem. The soils of Darfur are either sandy or made up of dark clay. The sandy soils are mainly stabilized sand dunes (known as *gəz*) that have both low holding capacity and low fertility. The clay soils, including the soils of the Jebel Mara area, are found in the central plains of Sudan. These are soils with high clay content and substantial water retention capacity. Millet is the staple food for more than 75 percent of the population and is cultivated throughout Darfur. Sorghum and other cash crops (groundnuts, sesame, and roselle or kardadeh – a local plant used as tea) is essential for the local economy. Gum Arabic from acacia trees on farms and rangelands is the most prevalent cash crop, despite market access issues.

Only half of the land that was cultivated before the onset of the Darfur conflict is currently in use. Excess exploitation by repeated grazing and cultivation without fallow or rest periods has depleted soil fertility. In response, Darfur's farmers have developed various coping strategies. To improve production, they have increased the area under cultivation; used animal drawn plows (mostly donkeys); improved water harvesting using terraces; diversified products; intercropped and farmed on different plots. UN agencies, in particular the Food and Agriculture Organization (FAO), have provided vegetable seeds and gardening tools to

the poorest and most vulnerable households in conflict areas. Vegetables help improve the vitamin intake of the community while also generating income through sales at local markets.

Cowpea varieties used by the Darfur farmers could be improved with promotion of the dual-purpose and leafier cowpea cultivars that is widely planted by farmers in the dry lands of northern Nigeria (Inaizumi et al., 2000). In this event, added benefits would include food security during a critical period of the year, cash income, fodder, and *in situ* grazing after harvesting, in periods when the prices of cowpea grain peak, and when good quality fodder is scarce. There are only about 13 active extension workers in the Ministry of Agriculture for over 80,000 farmers in North Darfur, and 49 for 480,000 farms in South Darfur

Livestock is an important sub-sector in Darfur and the rest of Sudan, accounting for about 22 percent of total GDP and 53 percent of agricultural output. However, agricultural expansion has led to the loss of animal grazing routes especially the North-South corridor. The disruption of seasonal stock routes has compromised animal health increasing morbidity and mortality. Conflicts occur over water use for agriculture (crop and livestock production) and for human consumption. Salinization and mineral-rich water, which is typical for groundwater, high temperatures and high evaporation all contribute to land degradation.

Key interventions for improving livestock production include increasing access to veterinary services, water supply and markets. There is also need to improve fodder supply, in particular hay making, during the rainy season for use in the dry season. Failing rains reduce grass cover and threaten the livelihoods of the pastoralist communities. Fodder is especially scarce during the extended dry period (October-May). Improved transport facilities are essential to enhance market access. At present, there is only one abattoir in the region at Nyala. Consequently livestock are trekked by foot to far-away markets.

Firewood remains the main source of energy for most people in Darfur. Around one camp, for example, the collection of firewood and grass reportedly accounts for 70% of the livelihoods. Some estimates suggest that Darfur, with about 19% of the population of Sudan, consumes 31% of all firewood consumed nationally. The conflict has seriously exacerbated environmental degradation in areas around IDP camps where the systematic felling of trees and brush for firewood, shelter, brick making and charcoal often leaves the area totally denuded for a 3-10 km radius. Some 44 percent of forest locations suffer severe environmental degradation and up to half of the natural forests, including national parks, have been cut down for firewood, charcoal production and for construction (World Bank, 2007). This deforestation further compounds the ecological impact of declining rainfall and accelerates desertification.

Fuel efficient stoves represent a potentially promising intervention. Although there have been various programs in many IDP camps to promote the use of fuel efficient stoves, there has been no pro-active effort to promote alternative fuels as part of the humanitarian aid effort. Another option is increasing access to kerosene and gas. As an alternative to biomass, LPG or kerosene provides thermal heat that is 3-4 times more efficient and up to 10 times cleaner burning. Though the technology is promising, experience from around the world shows that the poor are often unable to afford fuel efficient cooking stoves without subsidies. This is particularly the case in rural areas where households do not tend to incur

any financial cost for the biomass they consume, which is collected by women and girls. Efforts to improve energy access and thus reduce deforestation must accompany efforts to prevent soil degradation. It is the combined effects of forest cover loss and soil degradation that drives the overall deterioration of Darfur's ecosystem.

Problems are compounded by the lack of human resources. The shortage of skilled technicians and managers has affected all sectors, including extension services that farmers needed most. Improving the skills of farmers is essential if Darfur's agriculture is to become productive and sustainable. Some NGOs are working with farmers in IDP camps to provide training on farmyard manure management, vegetable production, integrated pest management, post-harvest reduction and marketing. These agricultural support programs are also helping the IDPs rent land from the farming communities in the neighborhoods of the camps. NGOs are also providing veterinary services and training on improved fodder production and preservation practices.

Darfur's customary land policy is particularly disadvantageous to pastoralists. For instance, it allows expansion of farming areas without consulting the nomads who are typically not part of the community that manages customary land rights. This deprives pastoralists of grazing lands and contributes to conflict between the two communities. A particular challenge is balancing the needs of farming community in Darfur's regions, especially in the South and West, with those of the pastoralists who migrate south annually in search of pasture and water.

Recommendations

Darfur needs a development strategy that recognizes the links between the farming communities that also raise livestock, the Northern pastoralists who migrate seasonally between regions, and those who share rangelands, woodlands and water sources. Putting together the strategy will require a consultative process that engages key stakeholders -- national and local government, UN agencies and NGOs engaged in relief/development efforts, and research/educational institutions within and outside of the region.

The consultative process should determine an operational plan for implementing quick impact interventions. These include access to improved seeds, fertilizers, small scale water management technologies, extension services and measures to improve market access for farmers or those in the IDP camps who are able to do some limited farming around the camps.

Quick impact projects include:

- Expanding water harvesting and micro catchment restoration and rehabilitation to minimize/overtake land degradation.
- Developing food or cash for work programs that encourage farmers to build earth embankments around the wadis supporting vegetable production during the dry season.
- Improving agricultural productivity through investments in improved seeds, fertilizers, and small scale water management. All smallholder farmers should

- have access to these inputs, including farmers still on their own lands as well as those in IDP camps who farm around the camps.
- Diversifying the production base and adding value through agro-processing to make farming more profitable. Investments in grinding mills would also help create additional economic opportunities outside of subsistence agriculture.
 - Improving market access for livestock via better access to the railway line, locating loading facilities at appropriate markets, and rehabilitating and increasing the coverage of export-oriented slaughter houses.
 - Increasing agricultural extension, veterinary and animal husbandry services.
 - Exploring fish farming through simple ponds.

Health

Health conditions in Darfur have been exacerbated by conflict. There is also a direct relationship between the public health crisis and environmental health (i.e. water and sanitation conditions). Darfur's health conditions have wide-ranging socio-economic consequences affecting individual well-being, as well as the vitality and productivity of Darfuris.

Sudan's 2004 UN Report on Millennium Development Goals states that since 1990 there has been relatively little improvement in Sudan overall with conditions in Darfur far worse than in Sudan on average (Sudan's MDGs, 2004). Sudan's Ministry of Health (MoH) lacks the overall capacity to meet the needs of Darfuris for curative, preventive, promotive and emergency health care. Poor access to remote areas due to the conflict and related conditions of insecurity have led to the total breakdown of the health care system. As a result, international aid agencies and NGOs have had to carry out work that should be provided by government authorities.

Darfur historically has the lowest density of health workers in Sudan. In 2003, in the three Darfur states, there were 2.5 physicians for every 100,000 persons, compared to the Northern state average of 18.4, and 48.9 for Khartoum (WHO, 2005). There are considerable disparities in health human resources within Darfur, with health workers concentrated in state capitals. Access to public health services in Darfur is much lower than in the rest of the country. For example, South Darfur has 22.7 hospital beds per 100,000 compared with 240 in Northern State and an average of 73.5 for the North of Sudan (MoH and WHO, 2003-2004). Sick people have to travel an average of 35 Km to find a doctor or health dispensary. Secondary and tertiary health care is practically non-existent outside of the state capitals (OCHA Consolidated Appeal 2007).

Darfur's most vulnerable among IDPs as well as resident populations are children under 5, children separated from their families, pregnant and lactating women, and the elderly. 65% of displaced persons are women and children (UNICEF). It is estimated that 1.8 million children have been affected by violence, disease, malnutrition and dependency. Of these, more than 600,000 children under the age of five have been displaced and many have been displaced multiple times.

In 1999, the mortality rate for children under 5 years old was 101, 96 and 104 per 1,000 in North, South and West Darfur respectively (World Bank, 2007). Since 2003, however, child mortality rates increased dramatically. A 2005 mortality survey conducted by the World Health Organization (WHO) and the MoH found that internally displaced persons (IDPs) experienced higher child mortality rates than non-IDPs, with exceptionally high rates in South Darfur. The infant mortality rate (IMR) is estimated at 120 per 1,000 births – more than double the national average for Sudan.

Water and sanitation problems compound health challenges. Health problems of Darfuris are made worse by cultural resistance to latrine use and limited knowledge of hygiene related issues. Even when health centers exist, facilities often do not have adequate water supplies, sanitation systems, latrines, hand washing stations with soap, and incinerator medical waste disposal facilities.

Diarrhea – which comes from feeding a child with an unclean bottle, drinking from open water sources, eating vegetables that have not been washed, eating without washing hands, open defecation and inadequate waste disposal -- and acute respiratory infection (ARI) are the leading cause of child deaths in Darfur. The high incidence of diarrhea is compounded by inconsistent and inadequate chlorination of wells and water supplies.

Other water borne diseases such as cholera are also preventable through a combination of measures including digging latrines to limit human waste exposure. Other major killers of children are diphtheria, tetanus, whooping cough, tuberculosis, polio and measles – all of which can be prevented via immunization. Despite efforts by the WHO and UNICEF to immunize children and women of child-bearing age, these diseases are widely prevalent due to the shortage of essential drugs and interruptions in the cold chain. Live vaccines, such as BCG against TB, polio, measles, require refrigeration to be effective. Coverage for children less than one year old through the Expanded Program on Immunization (EPI) is only 1%. In 2000, only 2.4% of children less than five years old were reported to be sleeping under insecticide-treated nets (ITNs). WHO reports that in 2008, the weekly attack rate of malaria was 1.5 cases per 1,000, higher than the mean attack rate of 1.37 cases per 1000 in 2007 and 1.22 in 2006 (WHO, 2008). Overall immunization coverage is low with immunization for measles at only 40.7% (WHO, 2008).

Linked to nutritional rates and overall health status, the child growth rate for IDP youths is less than rates for Sudan as a whole. Child malnutrition has increased, with higher prevalence in North Darfur. Like child mortality, acute malnutrition spiked in 2003-04 and then returned to pre-conflict levels (WHO, 2008).

Darfur's women have urgent and unique health care requirements. In addition to risks prevalent for the general population, women are vulnerable to risks associated with child-birth, sexual violence, and severe injuries from anti-personnel mines. Across Darfur's states, women and girls of child-bearing age lack adequate ante and post natal treatment, as well as an adequate system for delivery referrals when there are obstetric complications. The 2006 Sudan Household health survey found exceptionally high maternal mortality ratios – 1,580, 1,056 and 346 per 100,000 live births for South, West and North Darfur respectively with higher rates of maternal morbidity and mortality in camps.

A significant number of mothers are malnourished. Illnesses during pregnancy and complications during labor and postpartum are common. Consistent with these risk factors, current levels of maternal mortality are extremely high. The 1999 maternal mortality ratio (MMR) in the Darfur region was estimated at 524 per 100,000 births, while the northern state average was 509.

Use of antenatal care and the quality of care are low in Darfur. In 1999, less than half of pregnant women received antenatal care, ranging from 40% in North and South Darfur to 33% in West Darfur. This compares to a much higher average of 71% in northern states (WHO, 2008). In 1999, less than 4% of births occurred at a health facility in Darfur, compared to the northern state average of 14%. While several births were attended by village midwives, a large proportion of deliveries were not attended by any type of formally trained birthing provider. Access to Comprehensive Emergency Obstetric Care (EmOC), which includes blood transfusion and C-section, crucial to reducing maternal mortality, is limited to the main hospitals.

Women victimized by sexual violence also have special needs for physical care and psycho-social counseling. The UN's 2005 International Commission of Inquiry on Darfur determined that, "rape and other forms of sexual violence...were widespread and systematic." NGOs like Doctors without Borders and Amnesty International estimate the number of rape victims is in the tens of thousands. Victims of sexual violence are often stigmatized or have unwanted pregnancies. Treatment and counseling for victims of gender-based violence -- post-exposure prophylaxis, emergency contraception, prevention of sexually transmitted diseases like HIV/AIDS, hepatitis B, tetanus vaccination, and psycho-social care -- are inadequate.

The UNAIDS estimate of adult prevalence for Sudan as a whole is 1.6%. However, the conflict has exponentially increased and introduced a number of risk factors for spread of the virus: economic and social disruption, increase in poverty, population movements and displacement, violence, and presence of soldiers and armed groups. Rape associated with the conflict has been widely reported, putting victims at risk of HIV infection.

Health services and activities related to HIV/AIDS in general are weak in Darfur. Levels of awareness about the virus and its transmission are very low among the population, which directly impacts risk prevention behavior. While a Sudanese National HIV/AIDS Control Program (SNAP) exists in Khartoum, prevention activities in Darfur are few and sporadic. WHO and the SNAP have established a VCT centre in Nyala (South Darfur) and are planning one in Al-Fasher (North Darfur) (WHO, 2008). Issues of stigmatization and social acceptability however limit accessibility to these VCT centers.

WHO reports that annual TB incidence for Sudan as a whole is estimated at 180 per 100,000 (WHO, 2008). Population displacement, poor living conditions and disruption of health services due to conflict have also exacerbated risks associated with the disease. The National Tuberculosis Program supports diagnostic and DOTS centers across Sudan, including Darfur. Overall, in northern Sudan, about half of patients diagnosed with TB are under DOTS. This proportion is very likely lower in Darfur due to constraints on case detection and access to care.

85% of Darfuri women have been subject to the traditional practice of genital cutting and mutilation, which increases the birth complications, as well as maternal mortality and morbidity.

Women are also the primary victims of anti-personnel mines. As the primary gatherers of fuelwood, women travel outside of their villages or camps to secure an ever-dwindling supply of fuelwood, which is used for cooking. Away from their communities, they are vulnerable to rape and killing. Many have also suffered severe injuries coming into contact with anti-personnel mines along their harvesting route. Children are also at-risk, as they are more likely to come into contact with unexploded ordinance.

To improve health conditions, environmental issues can be addressed by:

- Rehabilitating and installing hand pumps.
- Drilling and equipping additional water wells.
- Tankering water and installing storage bladders.
- Constructing communal latrines.
- Providing basic tools, such as wheelbarrows, rakes and shovels, for solid waste management.

To inform future policies and programs, it will be necessary to gather information and raise awareness by:

- Conducting additional assessments gathering baseline health indicators on “Knowledge, Practice and Coverage.”
- Developing public health campaigns to mobilize action at the grass roots.
- Organizing house-to-house visits by community health workers and other outreach activities to determine specific needs, and;
- Mobilizing trained community health workers to conduct needs assessments and ongoing care.

Health care requirements would be served by:

- Launching a massive campaign to raise awareness and promote breast feeding to reduce diarrhea.
- Introducing oral rehydration packets and zinc therapy to reduce mortality from diarrhea.
- Distributing therapeutic milk, UNIMIX and BP-5 nutritional supplements.
- Providing bed nets and insect spray to avoid malaria.
- Providing vaccination support, such as special campaigns on polio, measles and vitamin A supplementation, as well ensuring the cold chain to ensure effectiveness.
- Providing midwifery training and delivery room kits, emergency obstetric care kits, and iron/folate supplementation, and
- Developing emergency preparedness system for disease outbreaks such as cholera and measles.

In addition to community participation in the design and development of health facilities via community health committees, building local capacity can be achieved by training humanitarian agency, government health workers in:

- Treatment of malnutrition, and emergency and disease preparedness.
- Child protection measures and measures to reduce children's and women's risk of sexual violence through a community-based response.
- Chlorinization of wells and other water supply sources, and
- Strengthening the health information system.

In the long-term, Darfur will need to rebuild, re-equip and re-staff health facilities, the challenge of sustaining improvements in health services for conflict-affected populations achieved under humanitarian and immediate recovery programmes, and the increased need to address certain health problems exacerbated by conflict, in particular HIV/AIDS (WHO, 2008).

PROJECT OPPORTUNITIES

The Darfur Development Initiative identifies projects that can be undertaken in parts of Darfur where there is relative stability or that have been less ravaged by conflict. Following are project summaries in the fields of water, agriculture, pastoralism, energy, health, research and education. These projects do not represent all the activities that require support. Nor are summaries intended to be comprehensive. Rather, they are provided to demonstrate the requirements of some UN agencies, international NGOs and local Darfuri organizations working on-the-ground. Project descriptions, organizational background, and contact information can be found as of 1 August 2008 at <http://hrcolumbia.org/darfur/dossier.htm>. Donors should directly contact implementing organizations.

- *Water Interventions in Darfur*: UNICEF proposes to provide access to improved and new water services for 27,500 persons, and improved and new sanitation facilities for 10,000 persons in North Darfur. Actions include rehabilitation of one water yard (w/ motorized pump, elevated water tank, distribution systems with water collection areas, taps and animal troughs); rehabilitation of 30 hand pumps; drilling and equipping 15 bore wells with hand pumps; construction of 3 water schemes at schools. Regarding sanitation, latrines will be built at schools servicing 1,200 students; 500 communal/household latrines will be rehabilitated. For hygiene promotion/management, actions include community mobilization and dissemination of hygiene promotion messages focusing on hand washing and latrine use to benefit 37,500 IDPs and conflict-affected persons. UNICEF will also organize 4 water resources management training workshops for 120 community leaders and Village Health Committee (VHC) members. It will train 30 hygiene promoters and provide soap to enhance hygienic practice. (Budget: \$500,000)
- *Expansion of Arable Land and Water*: Save the Children USA proposes to develop and manage water resources by harvesting water in catchments. The harvested water will help agriculture and livestock. It will also recharge the underground aquifer, thus maintaining the water level in the nearby wells and bore holes. Better water management will increase the amount of arable land in Darfur, where much productive agricultural land has been forcibly occupied by nomadic tribes. Funds will support construction of 2 check dams for water harvesting; rehabilitate 2 old hafirs (water catchment areas, similar to earthen livestock ponds); reconstruct 5 subsurface dams; and plant 500,000 trees through cash for work programs for unemployed youth (ages 16-22) who are susceptible to recruitment into militias. Programs will include skill building and training programs on forestry and forest management. Overall activities will benefit 100,000 persons in Kreneik (Total population: 44,273), Habila (21264), Mornie (80,000), Furbranga (41771), Geneina (85000) and nearby camps. (Budget: \$1.5 million)
- *Providing Water, Sanitation and Non-Food Items*: The Sudan Social Development Organization proposes to address acute water and health problems in El-Genaina. It seeks to reduce conflict over water resources; raise hygiene awareness; strengthen community capacity to manage boreholes through formation of committees; and support livelihoods through provision of non-food items needed during the rainy

- season (tents, blankets, mosquito nets, plastic sheets, sleeping mats, kitchen utensils, soap and sanitary kits). 12 hand pumps will be installed in 9 locations and 5 boreholes will be rehabilitated. Hygiene/ sanitation awareness training will be conducted. Community organizing will involve the formation of 3 water management committees, 3 maintenance committees and 3 environmental sanitation committees each in 3 locations. The project will benefit 336,378 persons in 12 IDP locations: Durti (9,003), Krinding I (21,793), Krinding II (16,463), Madinat el-hujjaj (3,886), Riyad (19,869), Krainik (29,338), Fur Baranga (40,438), Silai'a (70,038), Morni (72,250), Zalingi University (1,751), Ardamata (22,000), and Kulbus (29,549). (Budget: \$300,000)
- *Healthy Community Initiatives in South Darfur:* The United Methodist Committee on Relief proposes to rehabilitate 4 damaged water points by installing diesel powered submersible pumps that improve water yield. Stand-taps, donkey-cart stations and separate troughs for animals will also be built. A new bore well will be built in Sabanahema Village in North Adilla benefitting 43,000 individuals. Spare parts and maintenance training are also envisioned. In addition, UMCOR will assist 450 families (about 2400 individuals) to construct temporary simple-pit household latrines in the El Neeim and El Ferdous IDP camps of Al Daein locality. Five permanent latrines will also be built at schools in Al Daein and 5 water and sanitation community committees will be established. UMCOR will train 45 Community Health Workers (CHWs) and establish community health committees. Training will focus on recognizing basic diseases, pre and post-natal care, and community mobilization. Health services will benefit 51,000 persons including 5,400 IDPs in Adilla, El Daein and Bahar El Arab localities where 698,000 persons and 110,000 IDPs reside. (Budget: \$924,457)
 - *Greening Darfur:* Practical Action proposes to assist rural communities by providing increased access to water for agriculture, livestock and potable water use, which will increase food production and reduce pressure on rangelands. It will build 1,000 terraces for rainwater harvesting on farmer fields in the wadis; 4 earth dams each more than 1.5 Km in length will be built at Meidoub, Enugli, Abu Nahala and Wana. Potable water access for up to 10,000 households will be increased by constructing and capping 10 shallow (less than 30 meters) hand-dug wells around existing wells and rehabilitating 4 existing shallow wells. In addition, 2 hafirs will be built at Kuem and Karkara to provide potable and productive water for over 4,000 households and livestock. Food security of at least 5,000 households will be enhanced by re-establishing and expanding local systems for seed exchange and storage. More than 150 hectares of land will be reseeded as a first step to wider rangeland regeneration in 7 target areas in North Darfur directly benefiting livestock production in at least 75 villages. Other activities include establishment of a network of 10 new and 12 existing tree seedling nurseries. 33 newly established Village Development Committees and Women's Development Associations will be incorporated into existing community networks. A cadre of Village Extension Agents and Paravets will be established to oversee the agriculture, rangeland and water management priorities of the Village Development Committees and, to foster consensus, dialogue over

- access rights and resource management will be fostered between livelihood interest groups. (Budget: \$2.5 million)
- *Livestock Asset Protection and Restocking of Animals in Daralsalam and Klimando Cluster of Villages:* Africa Humanitarian Action proposes to improve community access to preventative and curative veterinary and animal health care systems. This will be accomplished through animal vaccination, providing fodder to weak and sick animals, and by training 72 Community Animal Health Workers. Animal restocking and supplementary feeding programs are also envisioned. In addition, 500 sheep and goats will be provided to the most marginal members of target communities. Activities will benefit 24,000 households and 60,000 animals in Thanikarwi, Abudmargaret, Umkedoya, Umbetain, Kalamando Town, Hosajamat, Wada Town, Bahar Umdurman, and Dar El Salam Town (North Darfur/Dar El Salam and Klimando localities). This area just south of El-Fasher is rebel controlled. It is one of the safer areas in North Darfur state. (Budget: \$160,000)
 - *Fuel Efficient Stoves:* The Great Family Organization of Nyala proposes to train 40 trainers in the construction of simple fuel efficient stoves. The stoves, which are made from locally available low-cost materials (mostly clay), will reduce fuel consumption by 40%. 4,000 women will be trained and thereby engage in income generating activities. 600,000 fuel efficient stoves will be produced and distributed to rural areas. Not only will the project generate income, it will also help the environment by reducing fuelwood consumption as well as the exposure of women to harassment and sexual violence. Activities will be undertaken in the Um Labassa IDP Camp, Kass IDP Camp, and Eddel Fursan Locality in South Darfur. Activities will initially benefit IDPs and then community households. (Budget: \$150,115)
 - *Darfur Solar Cooker Project:* The Darfur Peace and Development Organization proposes to distribute solar stoves to Kalma and Secalee camps in Nyala, El Fasher and Kassab Camp near Kutum, North Darfur and Omdurman and Haj Yousif in Khartoum. After introducing the solar cooker and providing training to the target population, raw materials will be purchased locally for 500 solar cookers. Arabic language solar cooker manuals and teaching materials will be provided to trainers. Monthly training sessions on the production and use of solar cookers will be offered to a minimum of 20 women at several locations. Feedback will be obtained from users in order to assess their adoption of the new technology. At a price of about \$41/cooker, a minimum of 800 solar cookers will be made available during the first year. (Budget: \$149,899)
 - *Efficient Stoves for Darfur Camps:* The Darfur Stoves Project proposes to will build the capacity of Darfur NGOs to build and assemble the “flat pack” stove model developed by Lawrence Berkeley Laboratories using simple hand tools. Targeting end-users in North Darfur, each participating NGO will be able to assemble 100 stoves/day at a cost of \$20/stove. A pilot production facility, which the Darfur Stoves Project helped to establish, currently builds about 100 stoves a week and demonstrates that the stoves can be produced in Darfur. It is estimated that 25,000 stoves would save 30,000 tons of forest materials annually. (Budget: \$1,000,000)

- *Health, Water & Sanitation Support Program for Conflict-Affected Communities in Darfur:* The International Rescue Committee proposes to provide conflict-affected rural populations with curative and preventive primary and reproductive health care services to assure population health and well-being. It will provide adequate environmental health services to facilitate good public health and minimize environmental health risks. To be undertaken over 24 months, beneficiaries include conflict-affected rural populations in North, South and West Darfur – approximately 113,910 women, men and children. (Budget: \$1,000,000)
- *Bridging Gaps in Addressing the Need for Newborn Care in West Darfur:* Save the Children USA proposes to establish pediatric intensive care units at health care facilities in Geneina, Mornie and Furbaranga. Laboratory and other diagnostic equipment will also be provided. Blood safety activities will reduce the transmission of blood born diseases. Refresher trainings will be provided to paramedic staff enhancing their capacity to care for neonatal and pediatric emergencies. A maximum of 369,874 IDP children and their families will benefit. The project will be implemented in coordination with the WHO and UNICEF as well as national and international NGOs working in the area. (Budget: \$1,000,000)
- *Building a Public Health System:* The Zalengei Health Initiative proposes to establish health centers in the Gebel Marra region of Wadi Salih in southwest Darfur. The Zalengei Health Initiative will coordinate rotating teams of doctors (24) over 18 months. Project personnel will train vaccinators who in turn will train public health workers. Public information campaigns on the benefits of immunization will be organized in conjunction with local public health committees. Traditional midwives will be organized to implement family planning and enhance safe pregnancies. Health centers will receive medical equipment, medicinal drugs, food and rehydration bags. Care will also be offered in the case of severe injuries from land mines and bullet wounds. Since clean water and sanitation are integral to public health, the project will also train local communities to build simple latrines and sink wells. The project emphasizes capacity building to develop a well-trained medical staff from the local population and a network of organized public health facilities that can form the nucleus of a nascent public health system. (Budget: \$348,780)
- *Improving Primary Health Care Services:* Johanniter International Assistance proposes to improve the primary health care system in Ed Al Fursan by reducing the morbidity and mortality rates for both the general and nomadic populations. Medical staff will be trained on enhanced reporting of treatments, vaccinations, antenatal and postnatal care, malaria prevention, and systems for screening pregnant women and young children for malnutrition. Given the huge territorial expanse to be covered, health educators will use motorcycles for outreach to remote villages. (Budget: \$1,435,000)
- *The Darfur Women's Centre:* The Darfur Peace and Development Organization proposes to support women and girls who have been raped or sexually abused by providing trauma and psycho-social counselling. The program will provide private counseling and reproductive health services for a minimum of 300 survivors of rape

- and sexual trauma in Kassab camp. Bi-weekly survivor support groups will include both women receiving counseling and those unwilling to enter private counseling but receptive to a group activity (100-200 women). A minimum of 60 camp women will be selected to receive training in the process and practices of victim assistance and reproductive health. The Center integrates treatment and training, providing opportunities for women to restore their capacity to function effectively as mothers, wives and citizens. Rehabilitation includes job creation. By the end of 2008, at least 100 women will be engaged in handcraft production for export. Beneficiaries will come from North Darfur and the Kassab IDP camp near Kutum. (Budget: \$200,000)
- *Emergency Reproductive Health Interventions:* UNICEF proposes to train reproductive health service providers (25 Medical Doctors, 40 Medical Assistants and 140 Village Midwives) on basic and emergency obstetric care; conduct awareness raising and organization of local communities to support referral of pregnant women with complications to emergency obstetric care facilities; and provide essential reproductive health supplies, including iron/folate supplementation, sulfadoxine/pyrimethamine (SP) medication for malaria prevention, midwifery kits, and obstetric surgical kits. Technical assistance will be provided to enhance effective reproductive health services. As a result, health workers and health facilities will be better equipped to contribute to the reduction of maternal and neonatal mortality and morbidity in the Darfur region. Conflict-affected pregnant women, including IDPs, will have sustained access to life-saving obstetric care services in camps and other areas. About 50,000 pregnant women in the three Darfur states will receive a comprehensive package of prenatal care, including access to malaria and anaemia prevention interventions. Activities focus on building the capacity of service providers through basic and refresher training to enhance their knowledge and skills, provision of essential supplies and equipment, and to increase awareness about pregnancy, childbirth and their complications and facilitate utilization of services by local communities (supporting service provision as well as referral of complicated cases). Outreach to local communities will encourage them to play a more active and participatory role in minimizing the delay of women presenting for care and supporting early referral of pregnant women with complications during pregnancy and child birth. (Budget: \$500,000)
 - *Integrated Health, Nutrition, Hygiene, Water and Sanitation Programme:* The World Relief Organization proposes activities to increase awareness of interrelated health and nutrition issues at the community level; strengthen the capacity of peripheral health care units (PHUS); improve the access to clean water and sanitation facilities; develop local organizational and leadership capacity; and, strengthen Darfur's institutional capacity to facilitate the transition from emergency to development. Activities will benefit an estimated 200,000 persons in 12 rural communities near Nyala, Al-fasheer, and Al Geneina, who currently receive little or no support from NGOs or government agencies. The focus on capacity building means that, in addition to infrastructure rehabilitation, communities will develop the human resources of MOHS and village development committees to enhance project sustainability. (Budget: \$10,744,032)

- *Addressing Agricultural Vulnerability due to Climate Risk:* The Earth Institute proposes research on the design and management of water systems in Darfur. Undertaken over 2 years, activities will involve a hydrologist, agriculturalist, economist, climatologist and a remote sensor specialist. They will map shallow ground water resources and their potential through airborne electromagnetic surveys and other survey techniques that would identify promising groundwater locations and estimate salinity levels. The assessment will also analyze and quantify previous and future climate variability and its implications for different water development interventions. It will consider population dynamics, agricultural dynamics, and the competition for resources between agriculturalists and pastoralists. A detailed topographic and demographic analysis will be prepared. A development plan and a strategy for rural development based on water resource availability that takes into account supply and demand forecasts is also envisioned. (Budget: \$400,000 or \$1 million with aerial surveying)
- *Assessment of Water Quantity and Quality:* Thirst No More proposes to conduct applied research with the goal of furnishing clean, abundant disease-free water to 350,000 villagers, which is more than a third of the population living in North Darfur. The affected area is within 150 km of El Fasher, North Darfur. The study will focus on optimizing the use of historical data obtained by Thirst No More from well repairs in villages including analysis of well repair projects (over 70 Mark II wells repaired to date--51 in the last 12 months), as well as the feasibility for solar powered water purification units (4) and use of wind powered turbines. This study will be led by our in-country lead engineer stationed in El Fasher, Mr. Mark Hickox, and supervised by Thirst No More's Sudan Country Director, Mr. Charlie Michalik who have expertise in hydrology, mapping, geology, as well as test equipment and analysis tools. (Budget: \$100,600)
- *Anti-Personnel and Anti-Tank Landmine Survey in Darfur:* The Darfur Rehabilitation Project proposes to identify/map mine threat areas; develop mine clearance and mine awareness training; suggest mine clearance programs; and conduct community needs assessment associated with project development. Survey teams will map target areas of conflict where the mine threat is known to exist, as well as peaceful areas. The impact of landmines on populations will be assessed by province and in areas with high concentration of land mines including estimated annual casualty figures. The assessment will include the social and economic impact of land mines. A database will be prepared of government institutions and NGOs involved in mine-related activities. (Budget: \$441,000)
- *Non-Formal Education for Women and Youth in Darfur:* Mercy Corps proposes to provide non-formal education to vulnerable populations in the Zalingei corridor in West Darfur. The overall aim of the program is to reinforce community protection mechanisms, to be achieved through activities that facilitate access of preschool children and youth to non-formal education, protect and restore the psychological well-being of children, provide youth and women with vocational skills training. The emphasis on non-formal education will meet the variety of needs among youth and

children in camps. The structured activities of the project will provide a positive and stabilizing environment for these vulnerable groups, creating the opportunity to gain the income generation and socialization skills normally attained in their villages. This project will expect to meet the needs of approximately 14,500 targeted beneficiaries over the project timeframe. (Budget: \$700,000)

APPENDIX A

Acronyms

AMIS	African Union Mission in Sudan
ARI	Acute Respiratory Infection
AU	African Union
CHW	Community Health Worker
CPA	Comprehensive Peace Agreement
CSHR	Center for the Study of Human Rights
DCPSF	Darfur Community Peace and Stability Fund
DJAM	Darfur Joint Assessment
DOS	United States Department of State
DOTS	Directly Observed Therapy, Short-Course
DPA	Darfur Peace Agreement
DRDF	Darfur Rehabilitation and Development Fund
EmOC	Emergency Obstetric Care
EPI	Expanded Program on Immunization
ESOCOC	United Nations Economic and Social Council
FAO	Food and Agricultural Organization
GOS	Government of Sudan
IDP	Internally Displaced Person
IMR	Infant Mortality Rate
ITNs	Insecticide- treated nets
JEM	Justice and Equality Movement
LPG	Liquefied Petroleum Gas
MDGs	Millennium Development Goals
MMR	Maternal Mortality Rate
MoH	Sudan's Ministry of Health
NGO	Nongovernmental Organizations
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
PHUS	Peripheral Health Care Units
R2P	Responsibility to Protect
SLA	Sudanese Liberation Army
SNAP	Sudanese National HIV/AIDS Control Program
TB	Tuberculosis
TFV	Trust Fund for Victims
UMCOR	United Methodist Committee Relief
UN	United Nations
UNAIDS	The United Nations Joint Programme on HIV/AIDS

UNAMID	United Nations Assistance Mission in Darfur
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
UNSC	United Nations Security Councils
USHM	The United States Holocaust Museum
VCT	Voluntary Counseling and Testing
VHC	Village Health Committee
WHO	World Health Organization
WSS	Water Supply and Sanitation

APPENDIX B

Acknowledgements

Althea Arnold is project coordinator. She is currently Office Director of the National Committee on American Foreign Policy. She is a graduate of Connecticut College where she specialized in International Relations and researched migration issues in Southeast Asia and Sub-Saharan Africa.

Elazar Barkan is Professor of International and Public Affairs and the Co-Director of the Center for the Study of Human Rights at Columbia University and the Human Rights Concentration at the School of International and Public Affairs of Columbia University. Professor Barkan's research interests focus on the role of history in contemporary society and politics, with particular emphasis on the response to gross historical crimes and injustices, and human rights abuses. In addition, Professor Barkan is Director of the Institute for Historical Justice and Reconciliation at the Salzburg Seminar, which promotes reconciliation in societies divided by historical conflicts and human rights abuses. His recent books include *The Guilt of Nations: Restitution and Negotiating Historical Injustices* (2000); *Claiming the Stones/Naming the Bones: Cultural Property and the Negotiation of National and Ethnic Identity*, (an edited volume with Ronald Bush, Getty, 2003); *Taking Wrongs Seriously: Apologies and Reconciliation* (an edited volume with Alexander Karn, Stanford University Press, 2006).

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Gonzalo Pizarro joined the UN family in October 2005 as Policy Advisor for Water Resources of the UN Millennium Project. The Millennium Project was commissioned by the United Nations Secretary-General in 2002 to recommend a concrete action plan for the world to reverse the grinding poverty, hunger and disease affecting billions of people. As of Jan 1, 2007, the advisory work formerly carried out by the Millennium Project secretariat team is being continued by an MDG Support team integrated under the United Nations Development Program. Since joining the Project he has led the work in infrastructure, including water, energy, and transportation. He has also worked on issues of disaster mitigation and environmental sustainability. He has also been the focal person for several countries across continents, such as Malawi, Ghana, Tajikistan, Kyrgyzstan, Ecuador, El Salvador and Dominican Republic, helping the MDG-based National Development Strategy processes in them. Before joining the UN Millennium Project team Gonzalo worked as an independent consultant on Water Resource Management and Environmental Sustainability issues. He has worked in countries such as the Kyrgyz Republic, Chile, Argentina, Colombia and Uruguay. Gonzalo holds a PhD on Environmental Engineering from the Graduate School of Arts and Sciences of Columbia University, with a focus on Water Resource Management, a M.Sc. on Environmental Engineering from Carnegie Mellon University with

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The **Mosaic Institute** assisted the Darfur Development Initiative. We are grateful to Vahan Kololian for his support and to Alidad Mafinezam.

We are also grateful to Roland Paris at the **University of Ottawa** for his help with peer review and report dissemination.

APPENDIX C

Center for the Study of Human Rights at Columbia University

Established in 1978 at Columbia University, the Center for the Study of Human Rights is committed to three core goals of providing excellent human rights education to Columbia students, fostering innovative interdisciplinary academic research, and offering its expertise in capacity building to human rights leaders, organizations, and universities around the world. In its first year, the Center for the Study of Human Rights defined its academic task as follows: "To enhance the knowledge and understanding of human rights as a subject of scholarly inquiry." More recently the Center has adopted a more goal-oriented phrase to define its education mission: "To integrate human rights into the intellectual and programmatic life of the University." Columbia University is home to more than 50 members of faculties whose scholarship, to a greater or lesser degree, includes work on human rights. Together they offer more than 30 courses each year on human rights or human-rights-related topics. In promoting the study of human rights at Columbia University, the Center has devoted its resources primarily to supporting professional education in the School of International and Public Affairs, and to a lesser extent in the schools of Law, Social Work, and Public Health, as well as Teachers College. The Center has initiated new research initiatives among cross-disciplinary scholars within the Graduate School of Arts and Sciences. The aim of these new initiatives is to "mainstream" human rights within academia, rather than allow it to remain a component in different professional programs.

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