

Armed Conflicts and Food Security

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Abstract

Despite the end of the Cold War conflicts are still very frequent and most of them occur in developing countries. However, the nature of conflicts has changed and the proportion of civilian fatalities has increased markedly. The causes and consequences of conflicts are often a complex mix of inter-linked economic, environmental, political, cultural and religious factors. The human, social and economic costs of armed conflict are massive. Thousands of men, women and children die each year as a direct and indirect consequence of war. About 25 million people were displaced by the end of 2001. GDP per-capita is estimated to decline by about 2.2 % per year during conflict, with sectors which have high transaction costs hit more severely. Although the agricultural sector is typically less affected than industry per-capita agricultural production falls by about 1.5 % per year in periods of conflict. Food production is usually reduced, and in some cases collapses, leading to hunger and starvation and forcing large numbers of people to migrate. Food aid buffers food-intake levels to some extent but calorie availability per-capita-per-day does fall by an average of about 7 percent as a result of conflict. Food itself frequently becomes a weapon during conflict. The destruction of rural infrastructure, the loss of livestock, deforestation, the widespread use of land-mines as well as the population movements lead to long-term food security problems, particularly when these factors interact with natural disasters. Subsistence farming, crop diversification, divestment and migration are some of the survival strategies that people resort to. Agricultural sector recovery depends on successful demobilization of soldiers, land de-mining and the reconstruction of rural infrastructure, in particular roads and irrigation.

Key Words: Conflict, Human and Economic Development, Food Security, Food Aid, Military Expenditure.

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I. INTRODUCTION¹

During the forty-year period of the Cold War² there were 120 wars involving many developing countries. Five of these involved more than one million casualties each, and a further six claimed more than 200,000 lives (de Soysa et al, 1999). Between 1950 and 1990, some fifteen million deaths were caused directly or indirectly by wars of all types - including international conflicts, civil war, and government violence against citizens (Steward and Fitzgerald, 2001).

The end of the Cold War saw a transition towards peace in many areas in which conflict had been fuelled by East-West antagonism. But as this antagonism declined new wars broke out and in the period 1990-2001 there were 57 different major armed conflicts in 45 locations around the world (SIPRI, 2002). Most of these locations were in developing countries and more than half of the least developed countries³ have experienced major armed conflicts during the past twenty years (Fitzgerald, 2000). Most of these conflicts occurred in Asia and sub-Saharan Africa.

These post-Cold War conflicts were very different from those by proxy or the anti-colonial and national liberation struggles which had characterized developing countries' wars during the Cold War era. Tensions which had been suppressed by the superpowers' confrontation over several decades resurfaced, often exacerbated by ethnic and religious tensions, and by poverty. Civilian fatalities climbed from 5 percent of war-related deaths at the beginning of the century to more than 90 percent in the wars of the 1990s. Indeed, recent conflicts have tended to be much more violent, and have witnessed new weapons and patterns of conflict, including the indiscriminate use of land-mines and antipersonnel cluster bombs, as well as the proliferation of light weapons. As a result many of the victims have been civilians, mainly women and children, causing massive harm to the human development in these countries (UNDP, 1998). Conflicts destroy years of progress in building social structure, establishing functioning government institutions, fostering community-level solidarity and social cohesion and promoting economic development. Very often these conflicts are sustained through the pillage of natural resources, illicit trade, labor exploitation, land grabbing and mafia-style criminal activities. The conflicts in Liberia, Democratic Republic of Congo, Angola and Sierra Leone fall into this category (IFPRI, 2001).

¹ In this paper a "major armed conflict" is defined as: the use of armed force between the military forces of two or more governments, or of one government and at least one organized armed group, resulting in the battle-related deaths of at least 1000 people in any single year and in which the incompatibility concerns control of government and/or territory. This definition is that used by SIPRI (Stockholm International Peace Research Institute, <http://www.sipri.org>)

² The Cold War began shortly after World War II and lasted until the early 1990s. This period of East-West global nuclear confrontation resulted in nearly half a century of war by proxy, with the two major powers supporting opposing groups in developing countries, with finance, arms and sometimes even manpower.

³ Using the UN classification.

Table 1
Number of armed conflicts by region: 1990-2001

Year	Region				
	Europe	Middle East	Asia	Africa	Americas
1990	0	4	13	11	4
1991	1	6	11	11	4
1992	3	5	12	7	3
1993	5	6	10	7	3
1994	4	6	10	6	3
1995	3	6	11	5	3
1996	1	6	10	3	3
1997	0	4	9	4	2
1998	1	4	9	11	2
1999	2	3	9	11	2
2000	1	4	9	9	2
2001	1	4	9	7	3

Source: SIPRI, 2002, table 1A.2.⁴

Most frequently conflicts during this period have been internal conflicts over government (civil wars) and/or to a lesser degree, over territory, i.e. state formation (Mohammed, 1999). While some regions of the developing world registered a drop in conflicts in the 1990s the opposite was true for Africa. Most of the new conflicts between 1998 and 2001 took place in Africa and Asia (SIPRI, 2002).

The line between internal and international wars is often blurry. Foreign countries often take a major role in a country's internal conflicts, as for example in Korea, Vietnam, and Mozambique. On the other hand internal conflicts often spill across into neighboring territory. The conflict in the Democratic Republic of Congo (DRC) involved no less than six foreign countries in 1997 - Angola, Burundi, Namibia, Rwanda, Uganda and Zimbabwe.

Most of the problems underlying present internal wars pivot around four main factors: 1) Territory, and thus the process of state formation and nation building (Mohammed, 1999); 2) the rise or return of ethnic tensions and nationalism;⁵ 3) socio-economic factors; 4) and the armament-conflict nexus (Jung, et al, 1999).

Taken together, these characteristics explain why internal conflicts, being more prevalent among poor countries in recent years, tend to have different effects, often more disruptive for the economic and social system, than purely international conflicts. Between 1970 and 1995 eight of the 25 most important conflicts resulted in the death of more than 7 percent of their respective 1995 populations and created millions of internally displaced people and refugees (Steward et al, 2001). Many, probably, most of these people suffer serious food insecurity and armed conflicts have come to be one of the major dimensions of famine, hunger and malnutrition and vice versa.

In modern international conflicts, hunger is generally collateral, in part due to the efforts of

⁴ Reproduced with permission from Stockholm International Peace Research Institute (SIPRI). Please contact SIPRI reprinting any SIPRI data used in this paper, (<http://www.sipri.org>).

⁵ While some authors argue that ethnic hatred motivates the engagement in armed conflict, others support the view that ethnicity, and by extension, religious confessions and other cultural differences are politicized in order to mobilize larger groups in conflicts over distribution of resources.

the international community to institute drastic measures that prevent warfare from harming civilians. These instruments are not effective in civil wars. In such conflicts, hunger is often deliberately used, among other war crimes, as a weapon targeting not only combatants but also civilians (Messer, 1998). As a result, in 1994 people of at least 32 countries suffered malnutrition, poverty-related limitations in their access to food, and acute food shortages as a result of armed conflicts. Hunger is a particularly pernicious weapon since its effects continue to kill even when the conflict has ended. It is estimated that at least 10 countries faced persistent hunger in the aftermath of war or as a result of conflict-related sanctions by the mid-1990s (Messer, 1990). The purpose of this study is to provide a view of the relationship between armed conflicts and food security.

II. CAUSES AND CONSEQUENCES OF ARMED CONFLICTS: AN OVERVIEW

1. The causes of present-day armed conflicts

Intrastate civil wars may be caused by complex inter-linkages between economic, environmental, social, political, cultural and religious factors. Civil wars may be rooted in greed as opposing interests for resource wealth, or ethnic hatreds that manifest themselves in terms of nationalism, separatism, or a fight for an ethnic identity (Collier, 2000 and Collier and Hoeffler, 1998 and 2000).

The causes of civil wars can be divided into two categories, direct and indirect causes. The most direct causes of an armed conflict can be viewed as the events that spark hostilities between two (or more) parties. Though helpful to understand the start of civil wars, such direct causes provide limited explanation of the rationale for the conflict. For instance, the assassination of the democratically elected president Ndadaye, a Hutu, in 1993 would be considered as the direct cause of Burundi's current civil war. However, while the assassination marked the start of the civil war, the reasons for conflict lie in the greed and grievances underpinning the long history of ethnic confrontation in Burundi (Nkurunziza, 2002).

The more fundamental, indirect causes create the economic, political, social and environmental conditions which lead to war. The lack of power sharing, centralization of political administration, coups d'états, corruption of the ruling regimes, failure to promulgate permanent constitutions, and a lack of respect for human rights and democratic rules are some political characteristics of this environment (Mohammed, 1999).

Box 1

Military Expenditure

In general, the extent to which military expenditure (milex)⁶ can predict or explain the outbreak of armed conflict appears to be limited (Omitoogun, 2001). However, some authors argue that a direct causal linkage between milex and armed conflict does exist (Mohammed, 1999). Given the limited government budget, increases of milex will be met at the expense of other government services, particularly social spending, rural development and maintenance work. Low spending on these crucial sectors creates a feeling of frustration and can lead to conflict. It also aggravates crime and violence in the country and consequently leads to increases in security spending and a further reduction in social spending. Once conflict is underway the relationship between milex and conflict is very strong as a great amount of the state's resources are diverted to the war effort.

Also, military expenditure (see tables B 1.1 and B 1.2) is a massive burden on a country's development. Milex affects economic growth and development directly and indirectly. In the short term the direct effects may be inflationary or lead to an increased capacity utilization in countries with no shortages of production inputs, foreign exchange rigidities, etc. The indirect effects of Milex work through investment and resource allocation decisions which typically will negatively impact on investment, human resource development and the balance of payment.

Table B 1.1

The ten African countries with the highest military expenditure to GDP ratio in 1992-2000.

Countries	Year								
	1992	1993	1994	1995	1996	1997	1998	1999	2000
Algeria	2.2	2.6	3.1	2.9	3.1	3.7	4.0	3.8	3.5
Angola	12.0	12.5	19.8	17.6	19.5	22.3	11.4	21.2	..
Botswana	4.3	4.5	3.9	3.5	2.9	3.1	3.9	3.7	3.7
Burundi	3.6	3.7	3.9	4.2	5.8	6.0	6.5	6.2	5.4
Djibouti	6.1	5.6	5.4	5.1	4.2	4.5	4.4	..	..
Eritrea	..	21.4	13	19.9	22.8	13.5	29.0	22.9	..
Ethiopia	2.7	2.9	2.4	2.0	1.9	3.4	5.1	9.4	..
Morocco	4.3	4.4	4.9	4.7	4.0	3.9	3.7	4.1	4.2
Rwanda	4.4	4.6	3.4	3.9	5.3	4.1	4.4	4.6	3.0
Zimbabwe	3.7	3.4	3.3	3.6	3.2	3.4	2.6	3.4	4.8

⁶ Military expenditures, i.e. the cost of maintaining a military establishment in war and peace, are almost always regarded as an official secret. Data are difficult to obtain and, when available, are often unreliable due to deficient accounting systems and/or the deliberate manipulation of figures. According to Brzoska (1995) there is no authoritative source on worldwide statistics of Milex but rather a number of interested institutions providing data on military expenditure. SIPRI provides some data on Milex and their definition is based mainly on that of the North Atlantic Treaty Organization. For the SIPRI data and the NATO definitions see http://projects.sipri.org/milex/mex_sources.html. and <http://www.nato.int/docu/pr/2001/p01-156e.htm>.

Source: The SIPRI Military Expenditure database http://projects.sipri.org/milex/mex_data_index.html

Military expenditure increased in all regions between 1998 and 2001, especially in Africa where such expenditure increased by over 31 percent in real terms between 1998 and 2001. This is the result of large increases in the military budgets of countries involved in wars and in those contiguous to conflict countries. During the same period, South Asian military expenditure, largely due to the India-Pakistan conflict in Kashmir, increased by 26 percent in real terms (SIPRI, 2002).

Table B 1.2

World and regional military expenditure estimates: 1992-2001
(Figures are in US \$ billion at constant 1998 prices and exchange rates.
Figures in italics are in percentage terms.)

Region ^a	Year										Overall % change 1992-2001
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	
Africa	9.3	8.8	9.3	8.9	8.5	8.8	9.3	10.9	11.3	12.2	32
North	2.7	2.8	3.3	3.1	3.3	3.5	3.6	3.8	4.2	..	55 ^b
Sub-Saharan	6.6	6	6.1	5.8	5.3	5.3	5.7	7	7.1	..	8 ^b
America	383	367	348	333	314	315	308	308	319	317	-17
North	364	345	326	307	290	288	282	283	294	289	-21
Central	2.4	2.5	3	2.7	2.7	2.8	2.8	2.9	2.9	2.9	21
South	16.9	19.4	19.2	23	21.2	24	22.9	22.1	22.4	24.7	46
Asia & Oceania	105	108	109	112	115	117	117	119	123	129	23
Central Asia	..	..	1.8	1.8	1.9	2.2	2.1	2.4	..	..	..
East Asia	84.6	85.6	87.5	90.2	92.9	93.9	93.6	94.4	96.4	101	19
South Asia	11.3	12.3	12.3	12.9	13.1	13.7	13.8	15.1	16.4	17.4	54
Oceania	7.5	7.8	7.7	7.5	7.4	7.5	7.8	7.5	7.4	7.5	0
Europe	296	278	275	239	235	238	227	233	241	242	-18
Central & Eastern	95.4	84.6	86.5	60.4	55.4	59	47.3	51.6	57.4	60.5	-37
Western	201	194	189	179	180	179	179	182	183	181	-10
Middle East	52.3	51	50.9	47.9	48.9	53.5	57.8	56.1	63.1	72.4	38
World	847	814	793	741	722	732	719	728	757	772	-9
Change in World total (%)	..	-3.9	-2.6	-6.6	-2.6	1.4	-1.8	1.3	4	2	

Note: Sub-regional totals are presented only when based on country data accounting for at least 90% of the sub-regional total.

^a For country coverage of the regions, see http://projects.sipri.se/milex/mex_regions.html. Some countries are excluded because of lack of consistent time-series data. Africa excludes Angola, Benin, Congo (Republic of), Congo (Democratic Republic of, DRC), Libya and Somalia; Asia excludes Afghanistan; Europe excludes Yugoslavia; and the Middle East excludes Iraq. World totals exclude all these countries.

^b Change over the period 1992-2000.

Source: SIPRI, 2002.

Economic conditions are among the most crucial factors behind armed conflicts in developing countries. Sluggish economic growth, high levels of poverty, an unequal income distribution, lack of basic infrastructure and social services, wide regional differences, lack of access to agricultural land, and depletion of natural resources are the notable economic factors responsible for the emergence of civil wars.⁷

As regards environmental factors Homer-Dixon (1994) contends that degradation of renewable resources, especially soil erosion, deforestation and overuse of water supply, can also contribute to the likelihood of violent conflict. Changing environmental conditions lead to: a decrease in economic output; a change in agricultural production; population displacement, and; disruption of institutions and patterns of social behavior. These effects in turn lead to three types of conflict: frustration, group identity and structural conflicts.

Food and economic insecurity and natural resource scarcities - real and perceived - can also be major sources of conflict. When politically dominant groups seize land and food resources, deny access to food to other culturally or economically marginalized groups, and cause hunger and scarcities, violence often flares. In Ethiopia, Rwanda, and Sudan, food crises resulting from drought and mismanagement of agriculture and relief and development aid led to rebellion and government collapse, followed by even greater food shortfalls in ensuing years of conflict. Denial of the right to food has been linked to uprisings and civil war in Central America and Mexico. Food insecurity is also integral to civil conflicts in Asia. Competition for resources has generated cycles of hunger and hopelessness that have bred violence in Sri Lanka as well as Rwanda (Messer et al, 1988).

Countries heavily dependent on the import of primary commodities, such as fuel or food, are especially vulnerable to disruptions in international trade caused by conflicts. According to Collier (2000) the countries which have a substantial share of their GDP coming from the export of unprocessed commodities face a much higher likelihood of civil war than countries with more diversified economies. A country with a level of primary commodity dependence of 26% of GDP has a risk of conflict of 23%. The same country, but without primary commodity exports, would have a risk of conflict of 0.5%. Without exports of primary commodities such as gemstones and coffee, ordinary countries are much less likely to experience internal conflict. As the author argues, the rationale for this is that loot-able primary commodities incite to predatory policies on the part of the government, and to rebellion on the part of the opposition.

Other factors of risk outlined in Collier (2000) include education, demography and growth. While the average country in Collier's study has 45 percent of its young males in secondary education, a country that has 10 percentage points more of its youths in school cuts its risk of conflict from 14 percent to around 10 percent. Each percentage point on the rate of population growth raises the risk of conflict by around 2.5 percentage points. As regards economic growth, each percentage point off the growth of per capita GDP is found to raise the risk of conflict by around one percentage point.

The interaction between economic factors and geography and history are also found to impact significantly on the risk of war: the more the dispersion of the population over the national territory, the greater the difficulty for the government to control rebel groups, the greater the risk of war occurring (Collier, 2000). As regards history, it matters from at least two

⁷ However, the lack of access to land is not a necessary condition for conflict to emerge, since policies aiming at the extraction of wealth from rural areas via biased taxation systems and lopsided pricing policies render unnecessary to dispossess land by force to acquire wealth emanating from it. See: Fairhead, J. (2000) and Duffield (1994). On the way illegitimate though legal public policies transfer forcibly assets from politically weak to strong individuals or groups, see Nafziger and Auvinen (2000) and Ngaruko and Nkurunziza (2000).

perspectives. First, if a country has recently had a civil war its risk of further war is much higher. Immediately after the end of hostilities, the risk of renewal of war amounts to 40 percent, and this risk falls by only one percentage point for each additional year of peace. Second, countries with large diasporas face higher risk of conflict. For a country that saw the end of civil war five years ago and which has a large Diaspora the risk of renewed conflict stands at 36 percent. However, for countries with a very small Diaspora the chances of conflict are only 6 percent. Diasporas often have a rather romanticized attachment to their country of origin and may nurse resentments towards the present dominant political power. They are typically much richer than the people in their country of origin and they can afford to finance their grievances. But most of all, they do not have to suffer any of the dramatic consequences of renewed conflict because they do not live in the country. Often they also have power of pressure for secession. For example, the (peaceful) secession of Slovakia from the then Czechoslovakia was initiated not in Czechoslovakia itself, but in the Czechoslovak Diaspora organizations in North America (Collier, 2000).

Also the ethnic and religious composition of the country matters. If there is one dominant ethnic group constituting between 45 percent and 90 percent of the population, the risk of conflict doubles. As Collier (2000) argues, the rationale for this is that a share between 45 percent and 90 percent is enough to give control but is not enough to make discrimination against a minority pointless. However, while ethnic dominance is a problem, ethnic and religious diversity surprisingly makes the society rather safer. In fact, ethnic polarization is found to increase the risk of civil conflict in authoritarian and totalitarian political regimes, while political liberalization is found to be a higher priority than economic development, or economic liberalization, to reduce this risk (Elbadawi and Sambanis, 2001).

Does hunger cause war?

Though hunger is not explicitly included in the set of independent variables tested for their potential effect on civil war, some of its characteristics point to the weakness of its impact (Collier, and Hoeffler, 1998). In its extensive definition, an armed conflict is assumed to meet four conditions: (i) the conflict aims to overthrow the government or to secede from it; (ii) the government in power at the time of the breakout of hostilities is a primary actor either through direct repression or through direct engagement of rebel fighters; (iii) both sides of the conflict have the ability to inflict death upon each other, with the stronger forces sustaining more than 5 percent of the number of fatalities suffered by the weaker forces; (iv) military action takes place with more than 1,000 battle related deaths per annum.

While condition (ii) might be easily met by most of armed conflicts referred to by the literature, it is unlikely for hungry people to undertake actions intended to overthrow the government, as the case of Iraq illustrates. The doctrine underlying the embargo imposed after the 1991 war rested on the assumption that it would help lead to the overthrow of the government responsible for the war. This embargo has led to a rise in chronic malnutrition but has not significantly increased the risk for the government to be overthrown.

While hunger is unlikely to initiate war, it might prolong its duration. In many parts of Africa, the prospect of starvation may have been a non-negligible impediment to the demobilization and disarmament of fighters as measures to end armed conflicts. In Mozambique, for instance, hunger has led impoverished government soldiers to maintain a climate of violence, as they frequently undertook raids to appropriate relief food supplies. Once these soldiers had diverted substantial quantities of food aid, the raiding operations decreased notably (Keen and Wilson, 1994). Yet, hunger alleviation has also been suspected of prolonging war's duration. In

1989, Operation Life Line was criticized as prolonging the war effort in Sudan by providing recognition and legitimacy to insurgents and giving everyone time for a respite that encouraged them to fight on (Messer, 1998).

2. Consequences of armed conflicts

Accounting for the cost of war and its aftermath is an area that is still insufficiently studied. To a large extent this is due to the difficulty to collect data suitable for micro level analytic studies in war-torn areas (Mohammed, 1999). Below we consider: a) the human and social consequences, and b) the economic consequences.

a. The human and social consequences

The human costs of conflict are not only the result of direct violence - casualties from fighting between combatants, the undisciplined behaviour of troops, deliberate terrorising of civilians and the sowing of landmines - but also arise from hunger, forced migration and the collapse of public services stemming from the wider effects of prolonged conflict on the economic and administrative structure of the country as a whole. The indirect consequences of conflict - including deaths from hunger and disease - generally far outweigh the direct destruction and battle deaths (Steward and Fitzgerald, 2000).

Estimates on conflict-driven internally displaced people in 48 countries suggest that at least 25 million people were displaced by the end of 2001 (Norwegian Refugee Council, 2002). This figure greatly outnumbers conventional refugees which, as of January 2001, were estimated at 12 million (UNHCR, 2001 and 2002). Afghans constitute the largest single refugee population in the world with an estimated 3.6 million people or 30 percent of the global refugee population. Civilians from Burundi are the second largest group with 568 thousand refugees living mainly in Tanzania. At the end of 2000, Asia hosted the largest refugee population (almost 45 percent), followed by Africa (30 percent) and Europe (19 percent).

In at least 32 countries people suffered from malnutrition, poverty-related limitations in access to food, and acute food shortages as a result of armed conflict. At the same time, at least 10 more countries experienced persistent hunger in the aftermath of war, or as a result of conflict-related sanctions (Messer, 1998).

The human consequences of war are multidimensional. They include not only the death toll, but also disruptions to the health service infrastructure and human capital formation. In this regard, Sudan is a case in point (Mohammed, 1997). Apart from the 1.5 million deaths, about 325 thousand persons took refuge outside Sudan during the 1983-1993 episode of civil war. In addition, about 3 million were displaced internally between 1983-1990, and over one year, 1989, about 10,000 children were recruited as soldiers. The destruction of infrastructure included the destruction and closure of schools and hospitals. Immunization, preventive medicine and malaria eradication services stopped completely in the South, while malnutrition affected most of the children in the region.

Conflicts take a heavy toll on the health of the affected population, with between a third and half of those affected suffering from mental distress. The most frequent diagnosis made is post-traumatic stress disorder (PTSD), often along with depressive or anxiety disorders (WHO, 2001). For instance, it is reported that during the Sudanese civil war the number of cases of

schizophrenia, depression and alcoholic addiction in many young people increased significantly (WHO, 2001).

Sexual violence and abuse are commonly used to humiliate and degrade, instil terror, and promote social division. This phenomenon can also be found in Mozambique, Yugoslavia, and in other countries. Cairns (1997) estimates that some 80 thousand women and girls were raped in former Yugoslavia. Mass rape was practiced in Rwanda as well as in many other countries.

b. Effect on economic development and government finances

Armed conflicts directly reduce production in areas of combat and may cause it to stop altogether. Economic establishments are often direct targets of military attacks, which aim to reduce the opponent's economic capability and to paralyze its ability to finance the war. These attacks reach all economic sectors but its main effects are felt drastically in sectors with high transaction cost. The destruction of transportation networks leaves most of the industries ineffective. In addition, civil wars also reduce labor supply in affected areas.

Box 2

Armed conflict in Bosnia and Herzegovina: Consequences for farm animal resources

Until 1991 Bosnia and Herzegovina (BiH) - a small mountainous almost completely land locked Mediterranean country - was one of the six republics of the Federal Republic of Yugoslavia. In December 1995 the Dayton Peace Accord ended the war among various ethnic groups which had erupted following the declaration of independence (March 1992). The country is divided into two entities: Federation of BiH (FBiH) and Republika Srpska (RS).

The war destroyed much of the infrastructure and devastated the economy. It is estimated that 2.3 million people (out of a total population of 4.5 million) left their homes and 329 thousand were killed. In 2001 the total current GDP of BiH's was only US\$ 4.8 billion, 45 percent of its 1990 level of US \$ 10.6 billion. In per-capita terms it dropped from US \$ 2,690 to 1,210. Industrial production dropped to only 10% of its pre-war level. Total war damages are estimated at around US\$ 100 billion, of which direct damages to agriculture were over US \$ 4.5 billion while the indirect costs have not been defined. De-mining of the land will cost more than US \$ 7.5 billion.

In 1991 in Bosnia and Herzegovina there were 853 thousand cattle, 1,317 thousand sheep, 617 thousand pigs, 95 thousand goats, 96 thousand horses and 6.7 million poultry. Small farmers kept the major part of animals, mainly in extensive production systems with an average of 2.28 cattle or 13 sheep per farm.

Available estimates suggest that during the war the total number of farm animals halved. Between 1991 and 1995 the number of cattle, sheep, pigs, horses and poultry declined by 60, 75, 90, 65 and 68 percent respectively. In the Republika Srpska some 50 percent of cows and heifers were lost during the war. The animal production sector has also been affected by the reduction in the area cropped (55 percent in FBiH and 75 percent in RS).

Data on animal performance have been lost. During the war a nucleus herd of the endangered local cattle, Busa, was destroyed together with relevant documentation. The breeding and

conservation program for the Bosnian Mountain Horse has been seriously affected. As a result of the displacement of the human population, a number of flocks of improved local Pramenka sheep have been destroyed.

The importation of exotic breeds, which started on a larger scale at the end of the last century, has been continued after the war as a part of the agricultural rehabilitation programs. The planned, and partly realized, emergency importation of 60 thousand cows meant to alleviate the difficult economic position of farmers affected by the war. However, unless there are supporting measures and changes in production systems the productivity of exotic breeds will soon decline. The local Busa breed, which was adapted to low input production systems, is almost extinct.

Sources: World Bank Atlas (various editions); UNDP (2002); Ministry of Foreign Trade and Economic Relations (2001).

i) Economic growth is almost always negatively affected. Collier found that during civil wars GDP per capita declines at an annual rate of 2.2% (Collier, 1999). De Melo et al. (1996) find that between 1989 and 1994, tensions in the European transition economies reduced economic growth by 9 percent annually. Sometimes the impact is very dramatic, as in Mozambique and Nicaragua, but aggregate output is less affected where the conflict is confined to one geographic region and the decline in exports can be contained, as in the case of Sri Lanka or in the recent conflicts in Uganda. Nevertheless, even in Sri Lanka, the total cost of the conflict between 1983 and 1996 amounted to about US\$ 4.2 billion, twice the country's 1996 GDP (Gupta et al, 2002).

The agricultural sector is usually badly hit in conflicts in developing countries, for lack of inputs and the use of anti-personnel mines which make farmers' agricultural land unusable.⁸ To secure food farmers are often forced to move in the course of the conflict, as a result of fighting. Agricultural output plummeted in Afghanistan, Mozambique, Cambodia, Uganda and Nicaragua during the worst war - periods. However, it held up in Sri Lanka and did not fall so dramatically in Sudan - cases where the conflict was more confined geographically.

Box 3

The impact of conflict on agricultural and food production.

To compare agricultural and food production growth rates in war and peace time we selected a sample of 38 countries which had experienced conflict between 1961 and 2000.⁹ The data was divided into the following periods: 5 years preceding conflict (BEFORE); war or civil conflict (CONFLICT); 5 years after conflict (AFTER); peace (PEACE, i.e. not including BEFORE OR AFTER).

⁸ The Post Conflict Unit of the World Bank estimates that over 100 million landmines are deployed worldwide and claiming 25,000 casualties each year. See <http://extsearch.worldbank.org/servlet/SiteSearchServlet?q=land+mines>

⁹ The countries are Afghanistan, Angola, Bangladesh, Burundi, Cambodia, Chad, Colombia, Democratic Republic of Congo, Republic of Congo, Djibouti, Ecuador, El Salvador, Guatemala, Guinea-Bissau, Honduras, Iraq (1991), Kenya, DP Republic of Korea, Kuwait, Laos, Lebanon, Lesotho, Liberia, Mozambique, Namibia, Nicaragua, Niger, Nigeria (Biafra conflict only), Peru, Rwanda, Sierra Leone, Somalia, Sri Lanka, Sudan, Uganda (only 1978-79 Uganda-Tanzania conflict), Viet Nam, Yemen, Zimbabwe.

The results are shown in the table B 3.1 below. Both per-capita agricultural and food production indices dropped significantly during CONFLICT as compared to the BEFORE period running up to the outbreak of war or civil conflict. The average per-capita levels of both indices remain low in the AFTER conflict period indicating the recovery can take a considerable amount of time.¹⁰

Table B 3.1

Level and growth of agriculture and food production indices before, during and after conflict.

VARIABLE	AVERAGE			
	5 YEARS BEFORE CONFLICT	DURING CONFLICT	5 YEARS AFTER CONFLICT	DURING PEACE**
AGRICULTURE PER-CAPITA PRODUCTION INDEX LEVEL	117.5 (YYY)	107.2 (YN)	101.7 (Y)	..
FOOD PER-CAPITA PRODUCTION INDEX LEVEL	113.4 (YYY)	103.8 (NY)	101.3 (Y)	..
AGRICULTURE PRODUCTION INDEX GROWTH RATE	3.29 % (YNN)	0.64 % (YY)	3.85 % (N)	2.90 %
AGRICULTURE PER-CAPITA PRODUCTION INDEX GROWTH RATE	0.42 % (YNN)	-1.53 % (YY)	1.23 % (N)	-0.07 %
FOOD PRODUCTION INDEX GROWTH RATE	3.56 % (YNN)	0.84 % (YY)	4.06 % (N)	2.81 %
FOOD PER-CAPITA PRODUCTION INDEX GROWTH RATE	0.64 % (YNN)	-1.32 % (YY)	1.44 % (Y)*	-0.17 %

Notes: Production indices are production valued in 1989-91 prices and are net of seed and feed.

Y(N) indicates statistically significant (insignificant) at least at the 10 percent level with regard to corresponding cell to the right (using either pooled or separate variance).

* Statistically significantly different from -0.0017 at the 10% level when variances are pooled, not otherwise.

** Peace time averages for per-capita levels of agricultural and food production are not meaningfully comparable to the other periods.

Source: Own calculations based on FAO and SIPRI (for conflict classification) data.

We note that the figures for the growth rates of agriculture and food (actual and per-capita) for PEACE are always a little lower than for BEFORE and AFTER. However, the differences between the growth rates for the three periods are always statistically insignificant.¹¹

The growth rates between PEACE and CONFLICT are always statistically significant. The results indicate significant loss in production due to war or civil conflict. Agricultural and food production levels in per-capita terms are on average about 10 percent lower during conflict, and in the five years after the conflict, than in the five years before conflict. Food production growth is 2 percent lower in the conflict period as opposed to peace time. In per-capita terms food production falls by about 1.3 percent per year, which is about 1 percent worse than during peace time. Results also show that growth rates in the five year after conflict period are always higher than in the five year before period, although the difference is never statistically significant.

Table B 3.2 shows food production, both overall and per-capita, trends under the war and peace time scenarios using the estimates reported in table B 3.1.¹² The calculations are shown for

¹⁰ The average levels of agricultural and food production during a war do not indicate their levels at the end of the conflict period – which might be more meaningfully contrasted to the five year post conflict levels.

¹¹ Except in one case for the per-capita food production growth rates in the AFTER and PEACE period's under the assumption of pooled variance in which case the difference is significant at the 10 percent level.

a 15 year period as this was the average length of conflict for the sample used. The average population growth rate for the sample countries is 2.53 over the 1961-2001 period.

Table B 3.2

Simulated food production indices for CONFLICT AND PEACE.

PERIOD	INDICES OF			
	FOOD PRODUCTION		PER-CAPITA FOOD PRODUCTION	
	PEACE	CONFLICT	PEACE	CONFLICT
1	100	100	100	100
2	103	101	101	98
3	106	102	101	97
4	110	103	102	95
5	113	103	103	94
6	117	104	103	92
7	121	105	104	91
8	124	106	104	89
9	128	107	105	88
10	132	108	106	86
11	137	109	106	85
12	141	110	107	83
13	145	111	108	82
14	150	111	108	81
15	155	112	109	79

Source: Own calculations.

Average food production would have increased by 55 percent as opposed to only 12 percent predicted in war time. With regard to per-capita agricultural production that translates into a hypothetical 9 percent growth as compared to a 21 percent decline.¹³

Conflict impacts on food production and this translates into a lower daily energy supply (DES - calories) per person per day (see table B 3.3).¹⁴ While cereal imports do increase during conflict it is food aid which jumps more substantially and helps to partly compensate for lost production. Nevertheless DES falls by about 7 percent as a result of conflict.

¹² BEFORE and AFTER growth rates were pooled with the PEACE years to obtain an average growth rate. They are slightly lower (0.0314 and 0.0317 for agriculture and food production respectively) as compared to the growth rates shown in the tables above. The growth paths are therefore more conservative in nature.

¹³ The corresponding estimates for agricultural production are very similar.

¹⁴ DES are calculated as production + imports + stock changes - exports.

Table B 3.3

The impact of conflict on the daily energy supply

VARIABLE*	AVERAGE			
	5 YEARS BEFORE CONFLICT	DURING CONFLICT	5 YEARS AFTER CONFLICT	DURING PEACE
DES	2224 (YNN)	2077 (YY)	2193 (N)	2209
Food Aid	50,432 (YYN)	195,529 (YY)	114,424 (Y)	68,387
Cereal Imports	358,308 (NNN)	425,449 (NY)	466,682 (Y)	350,449

*DES=daily calorie availability per person per day; Food Aid=Metric tones; Cereal imports: Metric tones.

Notes: Y indicates statistically significant at least at the 10 percent level with regard to corresponding cell to the right (using either pooled or separate variance).

Source: Own calculations based on FAO and WFP data.

ii) Exports are also invariably negatively affected. This partly stems from the general fall in production; partly from a shift towards domestic markets in order to sustain domestic consumption in the face of falling production; and partly from disruptions in international markets. Contrary to expectations, import capacity usually holds up - often growing despite falling export revenues. For example, in Ethiopia during the war years, 1974-92, imports rose on average in US\$ value by 10.2 per cent a year, while exports rose by less than 0.5 percent a year. A similar divergence was recorded in Afghanistan, Mozambique, and Somalia (Stewart and Fitzgerald, 2001). This is due to the availability of aid and increased foreign debt. Foreign debt rose as a percentage of GDP in every war affected country, leading to an often huge post-conflict debt burden. Nonetheless, foreign exchange tends to be diverted towards military expenditure and essential consumption goods leading to a shortage of foreign exchange for economic inputs. In some cases - notably Nicaragua - this import compression was one of the main causes of a collapse in production.¹⁵

iii) There is a sectoral shift from tradable to non-tradable sectors, as a consequence of market disruptions, including undermining of formal organisations, such as banks, reduced trust and failures of the transport system.¹⁶ In most of the conflict-affected countries there was a decline in the output of the industrial activities. In Uganda, Mozambique, Somalia and Liberia industry recorded a strong decline, while in Ethiopia it remained unchanged and rose in the Sudan. In parallel, the proportion of GDP accounted for by agriculture rose while that accounted for by industry fell in most conflict affected countries. In Mozambique, for example, industry fell from 24 to 18.5 percent of GDP and agriculture rose from 47 to 55 percent. These sectoral changes contrast with developments at the regional level: in Sub-Saharan Africa and Latin America there was a large rise in the share of industry from 1965-1990, and a fall in the share of agriculture.

iv) Another major consequence of conflict is a switch to subsistence and informal activities, including simple production (even arms) and trading (barter), smuggling, etc. Mozambique and Uganda have both developed very strong grass-roots war economies. Grass-root economic

¹⁵ In fact a considerable portion of the imports often take the form of food aid.

¹⁶ The expansion of subsistence, illegal and informal activities in wartime in developing countries means that official statistics can greatly understate production, so that the aggregate costs of conflict may not be as great as they appear from official data. In addition, of course, statistical services themselves deteriorate.

activities are those taking place outside the official system and exist alongside official ones in most countries of the world. During conflicts they appear in response to a number of war-related factors that create new constraints while simultaneously open up opportunities. Key factors include: the collapse of the formal economy; social displacement and dispossession; loss of state control over law and the economy; restricted urban-rural movement; and new channels of distribution of goods

v) Consumption per head inevitably falls with per capita GDP, even though domestic savings decline due both to attempts to maintain consumption levels and to uncertainty with respect to asset values. Attempts by households to maintain consumption and by the government to protect current expenditure leads to foreign borrowing and increased aid dependence - in other words “foreign savings” replace “domestic savings”.

vi) Government capital formation and large scale foreign and private investment generally falls quite sharply, due to budgetary restrictions and increased uncertainty respectively. In the case of Sri Lanka, the reduction in foreign and private investment due to the war induced uncertainty appeared to be the main cost of the war at the macro level. Nonetheless, in general aggregate investment does not appear to fall by as much as domestic savings, possibly due to small-scale investments as the informal sector expands and aid-funded projects - as was the case in Mozambique and Nicaragua.

vii) Government revenue as a share of GDP does not invariably fall among countries in conflict. In many cases, such as Nicaragua and Mozambique, it rose quite sharply, while in some others the ability of governments to raise revenue was totally undermined, as for example in Uganda and in Sierra Leone. This difference was important in determining whether the government could sustain public entitlements. In all cases government expenditure rose more than revenue and budget deficits widened, financed by a combination of foreign and domestic borrowing and increased money supply. But despite the rising budget deficit, inflation was quite moderate in the majority of cases, and hyperinflation was rare.

viii) It is difficult to make an accurate assessment how conflicts affect government expenditure patterns. Data are limited and countries follow different paths. Increases in military expenditure are not always financed by reducing social and economic expenditures. By contrast the share of military expenditure in GDP and in government expenditure increased in all conflict-afflicted countries. In Angola, Iran, and Nicaragua official military expenditure rose to well over 30 percent of GDP in the peak war years (SIPRI, various years). In Ethiopia and Uganda, for example, military expenditure increased sharply at the expense of the share of health and education in GDP, while on the contrary, in Mozambique and Nicaragua, government expenditure on health and education also increased as a percentage of GDP.

ix) In some places civic entitlements help compensate for lost public entitlements. For example, NGOs provided services in parts of Afghanistan and delivered food and other services in Mozambique. NGOs, community organizations and the rebel administration provided services in the north of Sri Lanka. Nonetheless, in the worst affected areas of Uganda, Southern Sudan and Sierra Leone, communities disintegrated as people fled, and NGOs were able to do little.

Box 4

A look at the work of an NGO: KULIMA in Mozambique

KULIMA is one of the most important national NGOs in Mozambique. Its active engagement started in 1970s and focused on improving the often precarious water supply situation in the villages as well as organizing literacy courses for the rural population. In 1989 KULIMA started to promote integrated development among the rural poor of Mozambique. Its work centers on communities and includes building and rehabilitation of social infrastructure, help with the legalization of land titles, income promotion, education and training of farmers and supporting farm cooperatives.

KULIMA provides guidelines for the planning, implementation and assessment of training and employment programs for war-affected communities, with special attention to youth, women and disabled persons. It provides training courses and materials to build institutional capacity at national and community levels. It also supports vocational skills training and employment to war-affected youth as part of the reintegration process. KULIMA participates in a number of programs, both governmental and non-governmental, to assist street children and other youth, mainly in Maputo, Beira and Quelimane, by providing shelter, health care, basic education and basic skills.

KULIMA is in partnership with EU, FAO, GTZ , UNICEF, UNDP, WFP, WHO, World Vision, Food for the Hungry International, Christian Council of Mozambique, The Salvation Army, Forests, Trees & People Programme (FTPP), and many other Organizations.

Some of KULIMA's Projects ongoing in 2002

Catembe

Across the bay from Maputo is a stretch of coastline known as Catembe, once the colonial Portuguese weekend resort. During the civil war the town saw severe fighting and huge tracts of land were land-mined. This and a devastating drought resulted out-migration leaving the town deserted since about 1986 and various bands occupied part of the territory. Catembe witnessed a dramatic deforestation which caused soil erosion. There was no drinking water. And people had to travel far to get their supply of water. The area was also badly affected by the year 2000 flood.

In 1998, KULIMA, in cooperation with the Italian NGO MANI TESE and the participation of the local population constructed 20 water wells, and is providing for its maintenance. This activity was part of the priority integrated rural development project. The wells had to be constructed in the higher altitude of Catembe to avoid the strong infiltration of sea water in the coastal area. This new, clean, source of drinking water helps fight diseases and save time and effort for women who are able to dedicate more time to their farms and trade, thus increasing the household food security.

Presently projects in Catembe include: Distributing seed for planting in the coming crop season the "food for work" scheme. Distributing rice supplied by WFP under the "food for work" programme to alleviate hunger. The work supplied in return for food is used for the enlargement of the existing plant nursery, cassava development, road construction and other vital new infrastructure projects which will increase the food security of households or communities.

Micro credit (for example a cow is given to a family - using the community leader's guaranty - and the beneficiary is committed to give back a female baby calf to creditors. Animals for traction for ploughing and transport. Schooling, medical care, etc, for 254 children, adopted through the "distant adoption" scheme through the NGO. Assisting the community in the land registration and titling process, under the new land law.

Ntwanano project (Polana Caniço)

The Ntwanano (meaning "mutual support" in Shangana, the local language) project is a small community-based initiative established by KULIMA. In the centre of a small village on the outskirts of Maputo a few dozen children are learning carpentry, sewing, English, practicing their theatrical skills, and playing football. The objective of the project is to offer kids an alternative to the street by providing not only education but also health care, sports facilities and support to the orphans in the project to integrate into parts of their extended or foster family. KULIMA had selected three priority groups: children who had lost one or both parents; children from poor families; and those children who demonstrated particular dedication to the project. The project is also working with the parents of the children, teaching them civic education and helping them to organize meetings to mobilize the community. A shop run by the community has opened recently to sell small household items to passers-by. The project, which is clearly replicable elsewhere, is sponsored by a small number of Italian families.

Congolote - Maputo Province

In Congolote KULIMA is coordinating the relief and recovery programs in response to the emergency situation offered by the EU and 32 NGOs. This work includes the repair of roads and bridges giving access to the neighborhood, in collaboration with the Housing Development Fund. KULIMA is also using food provided by WFP to implement "food-for-work" projects in Congolote. The projects include public awareness and community mobilization, opening ditches for drainage, road leveling and repair and reconstruction of bridges.

ix) In most countries, over and above the deaths and injuries from the war itself, infant mortality rates are much higher than they were during peacetime. In Cambodia, extra infant deaths during the period 1970-94 amounted to over 3 percent of the 1995 population, a quarter of the estimated total death during the conflict. The Ethiopian civil-conflict caused nearly 800 thousand infant deaths, which exceed the deaths directly attributed to the conflict. (Steward and Fitzgerald, 2001). Nutrition, health and educational standards also deteriorate dramatically. In the worst affected areas communities disintegrated, and there was massive out-migration with as much as one third of the population leaving Afghanistan in the 1980s and 1990s.

Complementary to the question of the impact of war on GDP is the question of a peace dividend. The impact of armed conflicts on post-war economic growth is found to be differentiated: short wars cause continued post-war decline, while the end of long wars is followed by a phase of rapid growth (Collier, 1999). In particular Collier finds that during the five years following a war which only lasted one year, the growth rate would be 2.1 percentage points lower than had the war not happened. By contrast, after a 15-year war, the post war growth rate is enhanced by 5.9 percent per annum (Steward and Fitzgerald, 2001). Also important is the

question of the inter-sectoral impact of armed conflicts. According to the same author the sectors intensive in capital and transactions (manufacturing) and the sectors that supply capital (construction) and transactions (transport, distribution and finance) contract more rapidly than GDP as a whole (Stewart and Fitzgerald, 2001).

III. EFFECTS OF WAR ON FOOD SECURITY AND HUNGER

1. The use of hunger as a weapon

a. Food war in the 1980s and 1990s

The extent to which present-day wars cause hunger is largely due to the abuses which take place during civil conflicts. The use of hunger as a weapon is one of these abuses (Tomasevski, 1994). As Table 2 illustrates, the use of hunger (“food war” (Messer, 1998)) as a weapon is widespread in present-day conflicts. This includes repressive measures and government policy set to deny or restrict access to productive resources and income, as in the case of forced relocation of people in several African and Asian countries, and the discriminatory practices associated with legal frameworks or social practices of discrimination, such as apartheid in South Africa (Heggenhougen, 1995).

Table 2

Countries where hunger has been used to weaken opponents

<i>Africa</i>				<i>Asia</i>		
<i>West</i>	<i>East</i>	<i>South</i>	<i>North</i>	<i>West</i>	<i>South</i>	<i>South East</i>
Liberia*	Burundi*	Angola*	Algeria*	Iraq*	Afghanistan*	Myanmar/Burma*
Nigeria*	Rwanda*	Mozambique	Morocco	Turkey*	India-Kashmir*	Cambodia*
Sierra L.*	Eritrea	Zimbabwe		Iran	Sri-Lanka*	Indonesia*
DR Congo*	Ethiopia*			Yemen	Pakistan	Philippines
Chad	Somalia*			Lebanon		Vietnam
Guinea-Bissau	Sudan*			Jordan		Laos
	Uganda					
<i>America</i>			<i>Europe</i>			
<i>Caribbean and Central</i>		<i>Southern</i>	<i>Central</i>	<i>Former USSR</i>		
Nicaragua		Colombia*	Bosnia*	Azerbaijan*		
Guatemala*		Peru	Romania	Georgia*		
El Salvador			Croatia*	Tajikistan		
Dominican Republic			Serbia*			

Note: * indicates countries affected by food war.

Sources: Collier and Hoeffler (2000) for the list of countries; countries with asterisk refer to Messer (1998).

Non-government forces may help cause famine by attacking relief convoys. Typically, adversaries starve opponents by seizing or destroying food stocks, livestock, or other assets in rural areas and by cutting off or destroying sources of food or livelihood. Land and water resources are mined or contaminated, to force people to leave and to discourage their return (Messer, 1998). In Angola and Somalia, for example, it is both sides of the conflicts that used food and hunger as political tools. Until the recent intervention of western countries in

Afghanistan, siege warfare and armed struggle for control of relief food continued to characterize the armed conflicts between the different warlords. Siege and starvation are also used in Sri Lanka and in the newly independent states of former the Soviet Union.

b. A typology of attacks on food security during war

The attacks on food security and the deliberate use of hunger as a weapon are most evident in the siege warfare and “scorched earth“ tactics, but it is also evident where combatants divert relief food from intended beneficiaries, keeping emergency rations from affected civilians and displaced populations. The attacks by omission include government non-cooperation in delivering relief assistance aid to the needy populations in rebel-held areas. In the Sudan, the government sold grain reserves in 1990 to help pay for war, but refused to declare a food emergency or allow relief into starving opposition areas. Both government and opposition forces created famine as a tool to control territories and populations, and restricted access to food aid as an instrument of ethnic and religious oppression (Keen and Wilson, 1994). Ethnic peoples such as the Dinka and the Nubians suffered food poverty as they were systematically stripped of their livestock and other assets, rendered destitute, and displaced, by rival groups armed by the government (Keen, 1994).

The deliberate diverting of existing resources is also a form of an attack by omission. Governments have exploited the structural vulnerability of regions like Eritrea and Tigray (Ethiopia), which have traditionally depended on imports of grain from other areas by hampering commercial and relief grain flows to these areas (Macrae and Zwi, 1994).

The devastation of the means of producing and procuring food, to undermine agricultural production and hinder coping strategies occurs primarily in countries whose economy depends on agriculture but which lack the means to make their land productive (de Soysa et al, 1999). These are developing countries such as Sudan, Congo, Liberia, Peru, Sierra Leone and Sri Lanka, places with poor rural areas where malnutrition and hunger are widespread. Poorly functioning agriculture in these countries heightens poverty, which in turn sparks conflict. Disruption of coping mechanisms such as markets, the destruction of wild sources of food, restrictions on movement by military activity, roadblocks, sieges of key towns and cities and forced population relocation are some of the attacks on the means of production. According to FAO “in 2001, despite favorable weather conditions for food production, civil conflicts continue to disrupt agricultural production in [Angola](#), [Burundi](#), [DR Congo](#), [Guinea](#), [Liberia](#) and [Sierra Leone](#)” (FAO, 2001).

Ethiopian government forces destroyed 142,000 hectares of land in Tigray in only two months in 1980 to prevent the local population from producing food allegedly destined in part for rebels (Hendrie, 1994). Moreover, the threat of aerial attack forced farmers in rebel-held areas to cultivate at night, thus reducing their productivity. In Angola, the threat to peasants working in their fields was so acute as to prompt the government army to escort them to the fields. When this escort was not available, peasants did not work on farms. In Somalia, government troops attacked herders at wells and watering points. Wells were frequently poisoned and water tankers destroyed to force pastoralists to move their herds to areas nearer to towns and so to leave areas where they could help rebels.

The use of hunger as a weapon by acts of provision includes the selective distribution of food to favor the populations in government-held areas. This form of attack on food security led to only 12 and 10 percent of the food aid actually reaching the civilian population for whom it was destined in Sudan and Ethiopia, respectively (Duffield, 1994). In Liberia, food was used as part

of propaganda campaigns, as Charles Taylor sought to regain the support of Mandingo Muslims by distributing sheep and extra rations of grain.

Apart from these cases in which hunger is unambiguously used as a political or military tool, governments may disguise hunger as collateral to avoid to be blacklisted by the international community. For example, after the Gulf war, Iraq faced inadequate internal food production after years of reliance on external food supplies exchanged for oil revenues. War-related destruction of infrastructure and economic trade sanctions meant to forestall or prevent military actions and bring about political change prevented any return to greater food self-sufficiency, while the Iraqi government refused to trade oil for essential food under the United Nations mandate.

Another potential source of conflict-related hunger are the economic sanctions that are meant to forestall or replace military action and bring about political change. Although essential food and medicines are excluded from embargo, the poor have less access to nutrition and medicines because the disruption of transport systems, and higher prices for now-scarce foods are magnified by their reduced earning power. Significant increases in child mortality in Haiti and Iraq have been attributed to the sanctions.

2. Food security and hunger in war-prone countries: A long-run perspective

a. Factors jeopardizing food production in the long run

The long term impact of armed conflicts on agriculture is the disruption of farming systems operated by households. Household members provide three types of physical inputs (land, labor and capital), allocated to different processes (crop production, livestock production and off-farm activities) for different goals, including income maximizing, food security for the family and risk avoidance. The extent to which a farming family achieves its goals depends on its ability to make the right decision about the allocation of inputs within an uncertain environment consisting of natural, technical and human elements. While the farmers are the main actors in the farming systems, extension and development agencies provide services, agriculture inputs and product marketing, while researchers and planners propose and provide policies and design support systems and programs for farmers (Schelhas, 1998).

Wars have a negative impact on most of the elements above. The human damage includes severe disruption of communities with the collapse of authority and administration, non-functional institutions and disturbed markets. Negative impacts on the endogenous human element also include changes to the goal system of the farming family and reduced future expectations. Damage to the natural and on the technical components includes the destruction of irrigation schemes, livestock killed, deforestation and the land-mining of agricultural land. Economic damage includes demographic changes and population movements which affects labor supply; creating pressures on local resources and the degrading or destruction of rural infrastructure.

The experiences of Sudan and Afghanistan help illustrate the damaging impact of war. In the 1983-1993 episode of the Sudanese war large population displacements led to deforestation on a large scale which increased soil erosion in southern and western Sudan. None of the 9 new irrigation schemes were operating in 1993. Until 1990, about 6.6 million heads of cattle, 2 million sheep and 1.5 million goats were lost. Digging of Jonglie canal ceased in 1983, while work on 22 irrigation schemes stopped (Mohammed, 1999).

In Afghanistan, from 1975 to 1977, that is, prior to the invasion of this country by the Soviet army, an estimated 10 percent of all irrigation systems were directly affected by civil war.

Another 40 percent of all irrigation systems, particularly large-scale schemes, were damaged due to a lack of maintenance as technicians and extension agents fled, leaving the schemes unattended (Schelhas, 1998).

In Angola, the collapse of extension services was also severe. In the 1980s, the government met less than half the estimated requirements for hoes, less than one third the requirements for ploughs, and about 10 to 15 percent of the requirements for maize seed (Sogge, 1994). With the destruction of lines of transport, communication and electricity as a major aim of UNITA guerrillas Angola saw much of its distribution and transport network destroyed or rendered inoperative (Mohammed, 1999 and Sogge, 1994).

b. Systemic effects of war on food security

In war-prone countries, many factors often combine and result in complex and systemic damages. Food shortages ripple into the larger economy and extend over multiple years when farmers, herders and others flee the fights, terror and destruction or suffer reductions in their capacities to produce food because of the depletion of assets and forced recruitment and conscription. Ancillary attacks of disease linked to the destruction of health facilities, hardship and hunger also reduce the capacity for food production (FAO, 2001 and Cuny and Hill, 1999). These factors set the stage for many years of food shortage, especially where conflicts interact with natural disasters such as droughts. The Ethiopian war against Eritrean independence is a case in point (Cliffe, 1994).

In 1982, the government of Ethiopia decided to formalize national military service for the “entire working people”. This resulted in annual conscription campaigns across the country. By 1984 almost 10 percent of the 5.8 million strong population aged between 18 and 40 were serving in the army. Between 1975 and 1990, the death toll was estimated to be about 650,000 people, of which 500,000 were civilians. In 1984, a census recorded 40,000 amputees. About one third of the 300,000 demobilized soldiers returning home at the end of the conflict in 1991 were thought to be wounded or disabled. Between 1986 and 1989, 23,000 hectares of land were rendered unfit for cultivation, while 44,000 animals were lost to their owners (Webb and von Braun, 1995). In terms of food production, it was estimated that the cost of the Ethiopian conflict amounted to between 65,000 and 95,000 tonnes of lost annual production. In this context, the drought of the mid-1980s resulted in one of the most disastrous famines ever encountered by an African country during the past century.

The case of Mozambique also confirms this aggravation of hunger when bad weather combines with war-induced weaknesses. The prolonged drought of 1991-93 in southern and eastern Africa caused famine in war-torn Mozambique, but not in its more politically stable neighbors Botswana and Zimbabwe.

IV. SURVIVAL STRATEGIES AND HUNGER MITIGATING POLICIES

Coping strategies differ depending on the nature of the war, the location and the options available to affected populations. Also specific coping mechanisms and policy interventions are often adopted at particular moments in the process of hunger. In general, in economies with a large subsistence sector people are often able to meet their basic nutritional requirements by retreating into subsistence farming, but only where the war was not too extensive. For example, many people retreated into subsistence farming in Uganda during the Amin era, but in the war of

the mid-1980s, this was impossible for many farming areas because their territory became engulfed in conflict. Countries and people heavily dependent on exchange for their food, as in Southern Sudan and Iraq, were more vulnerable to trade disruptions. The formal sector was especially vulnerable to a shortage of foreign exchange, and where this was relatively large and inflexible the loss in output and employment was greatest, as in Nicaragua.

1. Survival strategies during war and famine

a. Urban versus rural coping strategies during war

Coping strategies tend to differ depending on the area people live in. Sogge reports (Sogge, 1994) that in urban areas in Angola, for example, petty activities multiplied as a consequence of war. These ranged from car washing to hair plaiting and to traditional healing. Prostitution and soft drug dealing also became common activities during war. Petty theft and armed robbery also increased, as did the active trading of firearms and explosive devices, while old crafts, notably blacksmithing, tinkering and ceramics were revived.

In rural zones, people used accessible land more intensively, while farmers spread risks over wider crop varieties and other sources of food. Reliance on small grains, namely sorghum and millet moved northward. Cassava advanced southward, and sweet potatoes, groundnuts, bananas and other fruit gained ground, while storing food in secret caches developed. Mutual aid labor practices increased, while displaced persons became casual workers for local residents, becoming a major source of cheap labor. Where they could, rural people took up hunting of wild game and fishing with greater intensity. In peri-urban zones tiny gardens were allocated to growing vegetables and many families started keeping small livestock (Stewart et al, 2001).

In many cases migration is a survival strategy. In Mozambique the rural population looked for refuge in major cities, or along the “corridors”.¹⁷ During the war, the Beira corridor was considered to be safest one so many people settled along the corridor. The high demographic pressure created and is still creating many problems. The wood depletion (used for charcoal), has created serious environmental damages. Furthermore, many of the 30,000 people that remained in the area come from different tribes and have not integrated with the local population, due to different cultures and language.

b. Austerity and reduced consumption during famine

During war-induced famine, austerity and reduced consumption are the two main survival strategies attempted prior to migration. During this stage, the peasant household’s management system is put to its severest test to make food resources last as long as possible. The mix of food items normally consumed in the family is sharply altered in its variety and quality. In the case of Wollo (Ethiopia), as the food stocks of households were exhausted, many families were treated to a monotonous diet of one or two simple and poorly processed items, often served only once a day (Rahmato, 1991). Each family member would be given only a handful (about 50 grams) of one or the other of these foods at a specific hour in the day. However, at this first stage of famine

¹⁷ Mozambique is divided in several “corridors” (Nampula, Zambezi, Beira, Maputo and Nacala) connecting east (sea) side of the country with the west side. During the colonial period, the corridors were used by neighboring countries to reach the ports and export their goods. A corridor is not only a road or railway linking a harbor to one point at the border of a neighboring country, but also an area along the communications route and beyond them into the interior of the countries concerned where a great variety of economic activities takes place.

survival peasants attempt to supplement their diet with a variety of edible plants, roots, berries, wild vegetables and fruits (Bushra et al 1994).

While women are entrusted with the management of all immediately consumable food resources, men are responsible for managing other assets of the family and for entering into arrangements with other families for purposes of mutual support and exchange. However, even in such critical moments, community moral values prescribe a minimal standard of behavior. Special attention is normally given to pregnant women, children, women with infants, and the elderly. Such members of the family may thus receive relatively more or better food than the rest, while customary and religious observances that involve the provision of food and drinks often temporarily abandoned.

The composition of the family may change during this phase of crisis survival, as older families, especially single, elderly, parents and those without an able-bodied work force, abandon their homesteads and join their married children. Male household heads may also travel to a distant community that is less affected by food shortage to borrow food from a relative, a friend, or someone with whom such an arrangement can be made. Transactions are typically made on the basis of credit or with proceeds from the sale of assets, often livestock. Typically, these exchanges or deals are inter-family affairs and not open and routine business transactions (Bushra et al, 1994).

c. Divestment survival strategies during famine

The process of divestment adopted by peasants at the middle phase of famine is selective and graduated. At a certain point in the distress cycle peasants sell smaller livestock first, which include goats, sheep and even young calves. The divestment plans followed by a peasant household are determined by many factors including the asset wealth the household has at its disposal, the family's specific needs, the special contractual arrangements a household manages to make with another household for the common use of assets, especially after the famine, the connections of affected families in less affected areas and how much assistance it can receive, the demands of the market and the behavior of the prices, etc.

Thus, for instance, Rahmato (1991) reports that families with members depending on milk and milk products for their food (e. g. young children) were more reluctant to dispose of their milk-producing animals, unless as a last resort. In Ambassel (Ethiopia), far more oxen and bulls were offered for sale than cows and heifer. At the same time, many markets were flooded with jewelry and women's personal effects sold at very low prices, as well as men's personal effects, including a large supply of weapons of all kinds.

2. Food aid through external interventions

One common intervention to alleviate the negative impact on food security is food aid, not only during war, but also after the end of hostilities. Besides its obvious benefits food aid is found to be harmful in some aspects.

a. The role of food aid during conflict

Food aid has become the most common intervention to alleviate war-related hunger. It contributes to save numerous lives during armed conflicts. Food relief interventions are criticized

for reacting with nutritional interventions to the final stage of famine and for the little concern with tackling the underlying process of famine (Keen and Wilson, 1994). Critics also emphasize that food relief operations are occasions for governments to get extra-revenue as they impose an over-evaluated exchange rate that includes a large unofficial tax every time food aid administrators want to exchange foreign currency for local currency. Moreover, until the late 1970s, food aid followed the Cold War logic, as regimes inclined to the West received help while those pursuing socialist polity were treated less favorably (Duffield, 1994).

Food relief has also been criticized for largely failing to reach those in need (Vayrynen, 2000). The literature on the distribution of food aid in war-affected zones includes many illustrations suggesting that humanitarians have still not found a good way to reach those most disadvantaged. It is estimated that the share of food aid that effectively reaches the targeted groups amounts from 10 percent to 12 percent of the total. This failure is largely due to the strategies of belligerents, who consider hunger as a weapon to weaken each other, and thus target food aid to attack food security.

However, in general, not all social groups are affected by these attacks. Certain members of households and communities have less access to regular food sources or emergency rations because they are relatively powerless as a result of their age or gender status. Women, children and elderly are the most frequent victims of hunger in food wars (Cuny and Hill, 1999). And children are usually the most immediate and dramatic victims of hunger and war and they often die in great numbers from malnutrition-related illnesses. It is estimated that in Somalia in 1992, up to 90 percent of children under the age of five died.

In recent years, efforts to circumvent the problem of food aid being diverted by armed groups have increasingly resulted in the association of food aid distribution operations with military interventions (Slim and Penrose, 1994). However, the use of military force in support of humanitarian action such as the movement of food into zones of armed conflict have been criticized for its war-prolonging potential by providing food, employment, income and opportunities for future pilferage.

b. Food aid during reconstruction

The use of food aid during reconstruction is more controversial than its use during war. One of the main questions raised about food aid is that of whether food aid replaces, or adds to, other forms of aid. On the other hand, food aid is suspected to undermine the incentives for food production.

Though a number of studies suggest that it is slow food growth that leads to hunger and food aid rather than vice versa (Nafziger and Auvinen, 2000), situations seem rather to be differentiated. In fact, a clear distinction that should be made between on the one hand, the advantages and disadvantages of projects supported by food aid and, on the other hand, the advantages and disadvantages of food aid itself. Food aid in the case of Rwandan reconstruction might be a disincentive to production. It is part of the surpluses that allow this poor and tiny country to maintain one of the largest armies in Africa, at the expense of social expenditures and productive investment (Ndikumana, 2001). By contrast, in countries where food aid is used to finance “food for work” operations aimed to the reconstruction of collective agricultural infrastructure, it contributes to production.

The impact of food aid during reconstruction is complex. Schneider (1978) emphasizes that what can be achieved with food aid supplies depends on the development strategies pursued by the recipient countries. Output and distribution objectives may also be conflicting. If donors wish

to reach the poorest classes of population they should accept lower efficiency, and/or to supply complementary non-food aid in terms of technical assistance and finance. Increased flexibility to adapt to the recipients' situation and innovation in the use of food aid (e.g. input aid and stock building) are among the requirements for a more effective use of food aid for development.

3. Reducing war-induced hunger through policy

Beyond the strategies aimed at mitigating the effects of war, the most effective policy to avoid war-induced hunger is that which might help prevent armed conflicts from occurring.

a. When does internal policy matter for war-related hunger mitigation?

In the long run, nutrition during and after war depends on the society's system of entitlement. An entitlement helps people acquire capabilities, as a function of the set of alternative commodity bundles that a person can command in a society using the totality of rights and opportunities that he or she possesses (Sen, 1995). In non-democratic political settings, the public authorities may weaken citizens' capabilities through policies aimed at transferring resources and food entitlements from a politically marginal group to the benefit of the politically favored one (Nafziger and Auvinen, 2000).

In such political environments reducing war-induced hunger through policy is unlikely to be effective (Uvin, 2000). Indeed, hunger is often a result of deliberate policies. In several countries¹⁸ the international community has responded to the proliferation of localized wars and movements of people exercising the right of humanitarian intervention to help the victims. The "right to intervene" ("Droit d'Ingérence")¹⁹ with humanitarian assistance is not clearly defined and a very controversial issue.

In sounder political environments, internal policies intended to mitigate hunger are more conceivable. The policies include government co-operation in the management of food aid and its distribution to the neediest regardless of their ethnic group and the zone they are located in. They also include the banning of attacks on the means of producing and procuring food, especially those actions that undermine agricultural production, hinder coping strategies, disrupt markets, destruct wild sources of food, and restrict the movement of affected populations by roadblocks, sieges of towns and the forced relocation of populations.

b. Mitigating the risk of war occurrence through policy

As regards policies aimed to reduce the risk of war, their rationale follows from the analysis of the determinants of war occurrence and duration. As the second section pointed out, development factors might contribute to prevent armed conflicts. Yet, there may be some limit

¹⁸Iraq 1991, (to protect the Kurds oppressed by the Iraqi authorities), Operation Restore Hope in Somalia from late 1992, to put an end to anarchy there and restore conditions in which people could survive. In 1994, Operation Turquoise in Rwanda, carried out by France to protect its inhabitants from a genocidal war, Military interventions in Bosnia and Herzegovina (1994-95), Liberia, Sierra Leone, Albania (1997) and in Kosovo (1999). (Corten, 1999).

¹⁹ The term "right" or "duty" of "intervention"—to which the word "humanitarian" was soon added—was coined in the late 1980s by Mario Bettati, Professor of International Public Law at the University of Paris II, and by the French politician Bernard Kouchner, one of the founders of the aid organization Médecins sans frontières. See: Bettati, M. (1996) and Bettati M. and Kouchner B. (1987)

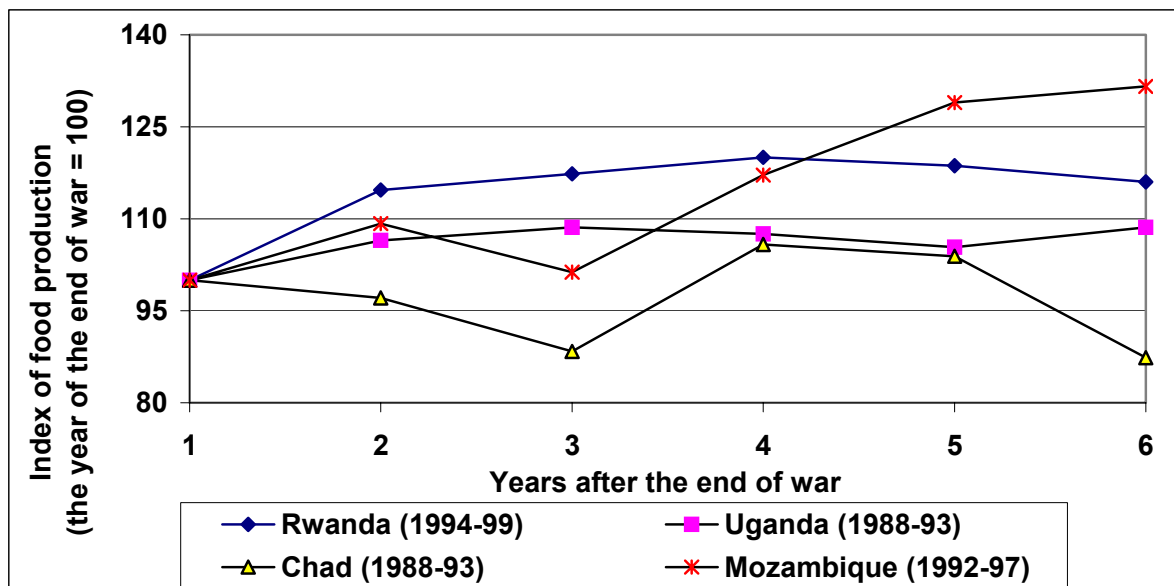
for economic development to serve as a reliable strategy, in that the relationship between underdevelopment and armed conflicts reflects a two-way causality, with low-income predisposing to conflict, and itself being largely a result of conflict. Political liberalization may be a relatively more effective lever.

Political liberalization - that is, the promotion of civil and political liberties, especially through participatory decentralization - might reduce war-induced hunger in many perspectives. First, as was highlighted earlier, political liberalization seems to be an effective lever to reduce the risk of war occurrence. Available evidence suggests that it might be even more effective than economic development. Second, once armed conflict has broken out, political liberalization is likely to dissuade politicians to use hunger as a weapon against citizen communities.

c. The recovery of agriculture and the question of the peace dividend

As argued in the previous section, the catastrophic effects of war mentioned earlier can hardly be reversed in the short run. Even in the case of smallholder farming that relies on less sophisticated infrastructure, recovery is constrained by incompressible delays (Cliffe, 1994). In fact, post-war recoveries are only partial, and the peace dividend may be long to come. Azam et al. (1994) argue, for example, that by 1994, the Ugandan economy still remained far below its pre-war peak after eight years of peace. Thus, the peace dividend is unequal and depends on the policies put in place for reconstruction in the first place. Figure 1 illustrates how divergent can be the trajectories of food production per capita in the aftermath of war.

Figure 1 Food production recovery in the aftermath of war



Source: FAO.

As regards the factors that affect the process of reconstruction in agriculture, three options are of great importance. The first is the process of demobilization. While Mozambique has been relatively successful in the demobilization and the reintegration of former combatants, Chad has had serious problems with these operations (World Bank, 1993). A successful demobilization recycles large numbers of healthy people to agricultural activity, but it also contributes to the

stabilization of the rural areas, this stability being crucial for the consolidation of peace and the reconstruction of the agricultural sector.

The second factor is the replacement of illicit crops that are increasingly grown in place of licit ones as the war deepens. This condition is especially important in Asia where different combatant groups cultivate high-value drug plants to finance their war effort. To rapidly normalize agriculture in the post-war period the substitution of illicit crops with other high-value crops is of great importance.

Third, the reinsertion of displaced persons and the restoration of agricultural infrastructures are central to reconstruction efforts. As Schelhas (1998) illustrates in the case of Rwanda, ill-advised relief operations in the aftermath of war can impede reinsertion of refugees and displaced people, thus hindering the process of reconstruction of the agricultural sector. By contrast, Anderson (1999) argues that in Tajikistan, by 1994, appropriate policies, namely “food for work” operations aimed at restoring economic infrastructure encouraged families to return to their home villages, thus setting the conditions for rapid reconstruction in agriculture.

V. CONCLUSION

The Cold War has not seen a reduction in the number of conflicts, but their nature has changed. Conflicts appear to be more violent and a majority of the fatalities are civilians. Conflict may be caused by complex inter-linkages between economic, environmental, social, political, cultural and religious factors. Particularly at risk from experiencing conflict are countries which heavily depend on primary commodity exports. Often the contributing factors are allowed to fester for long-periods. Consequently conflict prevention must take a multi-dimensional approach which is implemented as a long-term strategy. Hunger has not been identified as a common factor in causing war. However, long-term food security may be one of the strategic objectives of a conflict.

The direct and indirect human, social and economic costs of war are appalling. Per-capita GDP growth is estimated to decline by about 2.2 percent during civil wars. The impact of war is more severe in sectors with relatively high transaction costs, such as transportation and industry. Indeed, the formal sector typically declines, giving rise to an informal, ‘grass-root’, sector. Agriculture is less affected, in relative terms. On average, per-capita agricultural production falls by about 1.5 percent during conflict. Although food aid generally increases substantially during conflict, the calorie availability per-capita per day falls by an average 7 percent because of conflict. In many years average per-capita DES falls to very low levels in conflict affected countries. At the same time the rural sector often plays an important role in the survival strategies of affected individuals and households.

Food-security worsens dramatically when food is used as a weapon in times of conflict. Natural disasters sometimes add to the destruction of conflicts, often leading to hunger and famine. Droughts and floods, as well as the destruction to rural infrastructure, land-mining, deforestation, divestment of assets by households and large scale migration impact negatively on long-term impact on food-production and hence food-security. The many factors involved in conflict and food insecurity often combine to result in complex and systemic damages. Their effects ripple into the larger economy and extend over the years when farmers, herders and others fell the fighting and the terror and destruction. Depletion of assets, destruction of physical and social infrastructure and forced recruitment destroy the ability of communities to engage in productive activities, including food production. Reconstruction is a very long and costly process.

Coping strategies differ depending on the nature of the war, the location and the options available to affected populations. In general, in economies with large a subsistence sector people are often able to meet their basic nutritional requirements by retreating into subsistence farming, but only where the conflict is not too extensive. Often NGOs and community organizations are vital in maintaining some essential services, including food aid.

The costs associated with conflict and reconstruction strongly suggest that conflict prevention should be viewed as an investment by as well as a high priority from a humanitarian point of view.

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