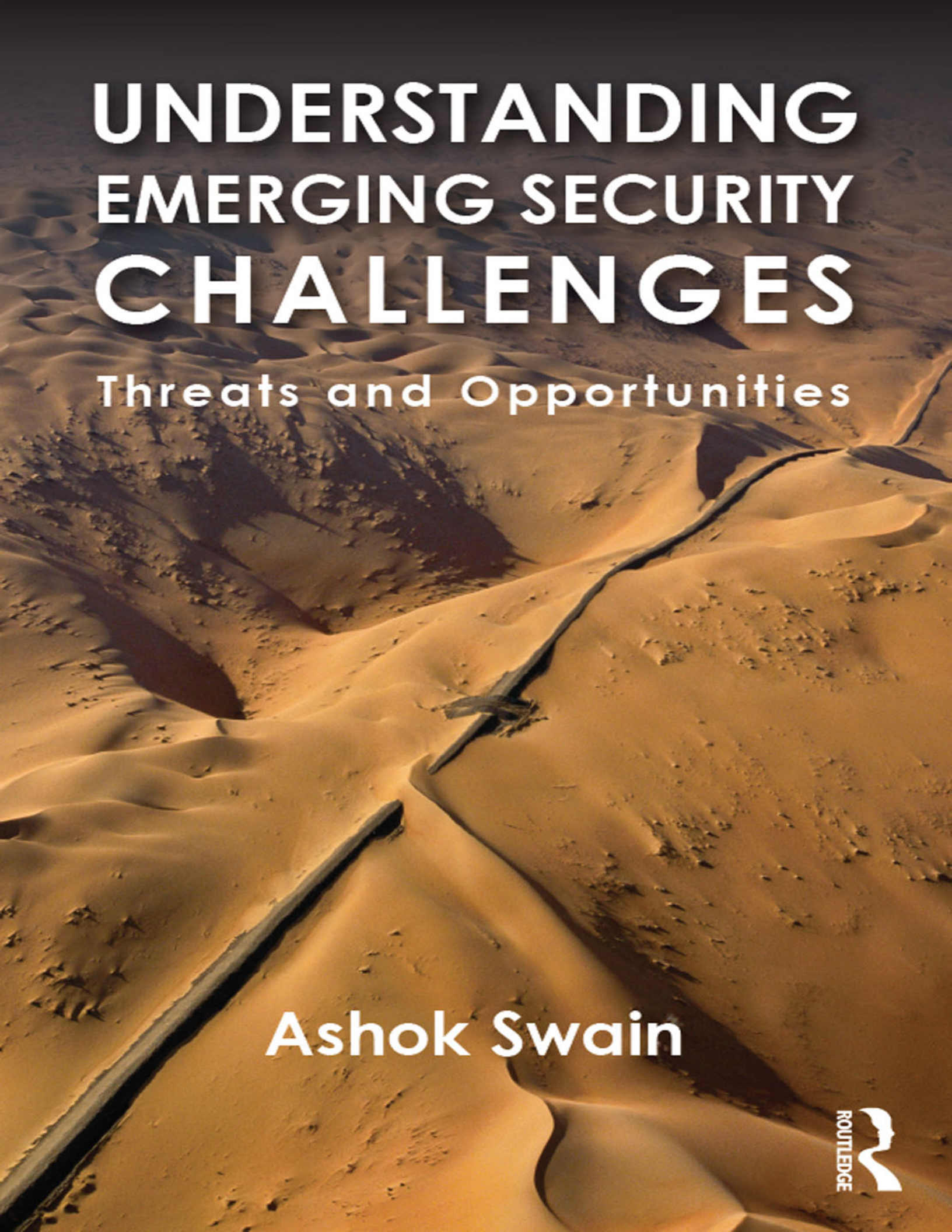
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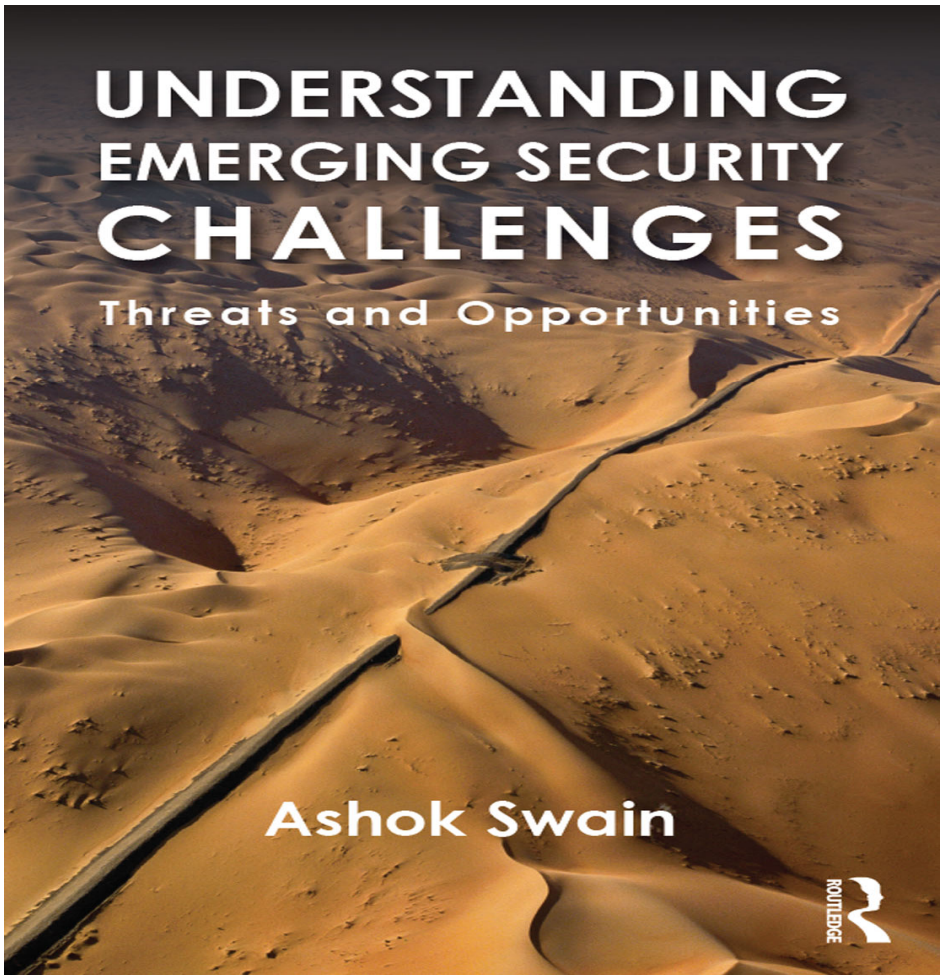
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Understanding Emerging Security Challenges

This book offers an overview of emerging security challenges in the global environment in the post-Cold War era.

After the fall of the Berlin Wall and the subsequent shifting of the international political environment, a new, broader concept of security began to gain acceptance. This concept encompassed socio-economic environmental challenges, such as resource scarcity and climate change, water sharing issues, deforestation and forest protection measures, food and health security, and large population migration.

The book examines the causes and consequences of these emerging security threats, and retains a critical focus on evolving approaches to address these issues. The author attempts to develop a framework for sustainable security in a rapidly changing global political landscape, which seeks to bring states and societies together in a way that addresses weaknesses of the evolving international system. Moreover, through a detailed analysis of the emerging security issues and their pathways, the book further argues that the evolving processes not only pose critical challenges, but also provide a remarkable opportunity for cooperation and collaboration among and within various stakeholders.

This book will be of much interest to students of global security, war and conflict studies, peace studies, and international relations in general.

Ashok Swain is Professor of Peace and Conflict Research at Uppsala University, Sweden. He also serves as the Director of the Uppsala Centre for Sustainable Development. He has written extensively on emerging security challenges, international water sharing and migration issues, and democratic development.

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Preface

Protection of the border, consolidation of sovereignty, shielding against armed attacks and violent crimes, and political stability are still the priority agenda for most countries but in many ways other security challenges are rapidly emerging. Resource scarcity in the face of increasing population growth is a serious concern. Environmental stress, water shortages, deforestation and desertification have already become the preoccupation of many developing states and societies. Already more than a billion people live without direct access to sustainable water supplies. Food productivity is decreasing as many key countries have almost reached their peak food production capacity. Health crisis, rapid deforestation, and population displacement have become big issues for most parts of the world. The onset of unprecedented global climate change is contributing further as a " threat multiplier" by exacerbating an already deteriorating situation and forcing large migration from degrading environmental areas.

Poverty, hunger, lack of basic resources, and infectious diseases threaten many people directly, but they also provide a fertile breeding-ground for violence in society. The new security issues demand a new approach. The growing uncertainty over the access to necessary elements for human survival demands the comprehensive attention of all. The newly emerging security challenges of a globalized world cannot be handled by twentieth-century policies of military alliances or containment strategies. To successfully address the security challenges of the twenty-first century, there is a need for a new security architecture, which is an open, balanced, inclusive, and integrated one. The principal aim of it should be to create a collaborative framework to be better prepared to respond to and/or prevent these threats.

As the new century progresses rapidly, it is apparent that world has never faced as many compelling challenges. However, these challenges provide mankind with new opportunities as well. The nature of these threats demands increased coordination and collaboration between and among nations and societies, which can possibly have further constructive spin-off effects leading to a peaceful and secure world. The new situation provides ideal conditions for those which are smart and creative enough to avail themselves of the opportunities and take on the pressing challenges by adopting a positive and collaborative approach.

The aim of this book is to familiarize its readers with the rapidly developing but grossly underestimated future security challenges, which are not overtly militarized in character. There have been many academic efforts to redefine the concept of "security" since the post-Cold War era. Broadly two main views have emerged, one continues to argue to stay within the old traditional model that focuses on the military aspect only and is state-centric, and the other is a "new" model that requires a wider range of issues and/or involving actors at various levels. But there is a dearth of existing works that have made any serious attempt towards a simultaneous broader and deeper analysis by focusing specifically on economic, societal, environmental, and ecological security issues. This book focuses on these "not so obviously militarized" issues affecting human security, national security, and international security and attempts to develop a framework for sustainable security in a rapidly changing global political landscape. The security structure argued in this book seeks to bring states and societies together in ways that address weaknesses of the evolving international system to provide enduring security for one and all. It also approaches security as something all human beings are entitled to and that can only be gained by mutual and collective efforts. Moreover, with the help of the careful analysis of these emerging security issues and their pathways, the book further argues that the evolving processes not only pose critical challenges but also provide remarkable opportunities for cooperation and collaboration among and within various stakeholders.

Various chapters of the book critically examine the new security issues that have appeared since the end of the Cold War. The book specifically chooses to scrutinize the renewable resource scarcity and the impact of climate change, scarcity of water supply, deforestation and controversial forest protection measures, food and health security, and large population

migration. The book examines the causes and consequences of these emerging security threats, with a critical focus on existing and evolving approaches to address them.

The book begins by introducing the emerging security challenges in the twenty-first globalized century. Apart from offering a general introduction, the discussion on the broadening of the security concept, the so-called “wideners” versus “ traditionalists, “ is incorporated within the analytical framework. Globalization has brought further complications to the global security structure when it faces unusual transnational threats that increasingly require mutual trust and cooperation. Thus the challenge is to forge a new sustainable security structure that is both effective and energetic in dealing with the challenges confronting the world in the twenty-first century. The following chapters provide a more thematic analysis of various transnational threats.

Chapter 2 focuses on the dangers arising from the world's environmental problems that often impact across state borders, with devastating consequences. Here, the evolution of the concept of environmental security is outlined and the potential challenges that it poses to the people, state, and international community. The serious threat of climate change makes a strong case for increasing international cooperation on environment and development matters.

In Chapter 3 increasing water scarcity, management of shared water resources, and trans-boundary water cooperation are discussed. External intervention and assistance can sometimes facilitate the negotiation of water sharing agreements but mutual suspicion and uncertainties about reciprocal action obstruct constructive engagement in water cooperation. Shared water resources have been fueling tensions between states and groups and it is undeniable that severe water scarcity is likely to escalate the degree of global conflict and cannot be separated from matters of what is now called “global security.” Shared water is not only expected to increase competition and conflict, it can also contribute to building engagement and cooperation among riparian states.

In Chapter 4 the focus turns to deforestation as a prominent component of the global environmental agenda. In spite of the serious adverse effects being generated due to unsustainable assault on forest resources, very little is being done to arrest it. Neither inter-governmental cooperation nor numerous non-governmental initiatives seem to have made any substantial

difference in reducing forest destruction, particularly in the tropics. Without proper financial and technological support, it will not possible for the South to be successful in protecting their forests. Careful efforts to protect trans-boundary forest areas may help to bridge the divide between neighboring countries and pave the way for regional cooperation.

Chapter 5 discusses challenges of increased global food insecurity. The extraordinary rise in global food prices victimizes millions more people with hunger and poverty and contributes to political instability and civil unrest in various parts of the world. The situation is deteriorating at an ever-increasing rate, as a result of complex driving forces, such as: massive urbanization, climate change, increasing food demand coupled with declining agriculture investment, and global economic downturn. Despite some recent progress in reducing global hunger, the task is a challenging one that could be derailed by increases in global food prices, and surges in the world's population.

Chapter 6 analyzes the prevalence of epidemics as a global security issue. Infectious diseases such as the Avian Influenza, SARS, Swine Flu, and *E. coli* are the central concern of recent decades, in which the imminent threat is evident in term of ease of spread and high mortality around the globe. With the increase of such threats, the unknown source, and the lack of adequate medication, infectious diseases cross national borders and become global threats. The most commonly recognized infectious disease is HIV/AIDS, which affects society in various ways; the socio-economic implications by the loss of productivity, affecting demography; eliminating the middle-aged and most productive portion of the society; and having also serious political implications. The battle against communicable diseases like HIV/AIDS demands innovative, multisectoral, and interdisciplinary responses.

Chapter 7 discusses migration in the light of an era of increasing globalization. The massive movement of people across national boundaries has become an important inter-state issue. The impact of climate change influences various dimensions of livelihood and severely affects human security by inducing forced migration of vulnerable population. The challenge of ever-increasing numbers of displaced people can be addressed only in terms of setting up a comprehensive agenda to achieve human security. Moreover, migrant groups can contribute to peace or continuation of conflict in their homelands. The chapter explores the role they play as

spoilers of peace processes and their capacity to positively affect conflict resolution processes in their homelands.

In the concluding chapter, the book argues that in the post-Cold War era the international community, in its attempt at conflict management, has usually neglected sustainable economic development and favored short-term situational development. The negative outcome of this approach has been the unsustainable destruction of natural resources, in some instances creating further conflicts and insecurity in society as well. The emergence of China as a rising superpower has also started to pose challenges to getting an agreed international consensus. In the face of emerging security challenges, to achieve sustainable peace in this interconnected and complex world, there is a real need to get the right formula for an effective and comprehensive security-development approach at various levels.

1Introduction

Emerging Security Challenges in a Changing World

Security in a Globalized World

The world has gone through a major transformation in the last two decades. The end of the Cold War in Europe has led to a massive increase in the private capital flow and indirectly to an information and telecommunications revolution. In this new interdependent and interconnected world, international trade and investment has overtaken the importance of national economies. Globalization enthusiasts point to a range of benefits including: a new idealism of economic openness, political transparency, global culture, economic prosperity, the advancement of human rights, equality and peace –all of which are promises of a globalized world. This global proximity is thought to foster cooperation and increase security (Kay 2004: 10). It is true globalization has created new opportunities, but it has created many risks and challenges as well.

Globalization has generated new wealth and encouraged technological innovations but, at the same, it has failed to support and promote sustainable development and instead generated greater anguish and deprivation in the developing world (Swain 2007a). So far, it has had a largely negative impact on the poor and under-privileged parts of society. The gap between per capita income in the developed and developing countries has increased. There is no doubt that the benefits of globalization have failed to reach the majority. This has already resulted in growing civil unrest and, in some cases, contributed to armed conflict in the developing world. In recent years, security effects of globalization have been the subject of intense debates, with many attempts to explore how the processes

of globalization have fundamentally changed the way we think about security.

As Keohane and Nye (2000) argue, globalization emerged as a buzzword in the 1990s, just as "interdependence" did in the 1970s, but the phenomenon it refers to is not entirely new. Globalization has become a buzzword to refer to some imprecise event or trend in the world, which is understood by hardly anyone (Cha 2000: 391–92). The best way to understand globalization is as a spatial occurrence, in which the separation between domestic and international affairs is collapsing, where local interests cannot be isolated from global concerns (Guehenno 2001). Globalization is a multidimensional occurrence, in which trade is expanding globally, as is the flow of private capital and investment; information technologies, along with a variety of other technologies, are developing rapidly and spreading widely (Davis 2003). Communication among nations and cultures has become easier, faster, and deeper; and, hence, an evolutionary political process has emerged to associate with the spread of democracy and human rights (Isiksal 2003). These developments create real possibilities to achieve economic prosperity, spread political freedom, and promote peace.

Interestingly, most of the literature on globalization initially focused on its economic rather than security implications (Cha 2000: 393). It is easy to measure the result of economic globalization by observing various flows of economic transactions; however, measuring the relationship between globalization and security is a much more challenging task. It is by and large difficult to define globalization, but it is even more difficult to make precise conclusions about how globalization increases or decreases the degree of security (Clark 1999). The study of globalization also tends to overlook a proven fact that the conflicts in the South have been invariably influenced by the global powers and their strategic politics. Globalization has reached such depths that it cuts deep into national affairs, causing structural changes that help to precipitate new or latent conflicts. Such conflicts may be civil wars, revolutions, inter-communal violence, genocides, or general state breakdowns, including possible consequences such as massive humanitarian crises. Defining security in terms of how nation-states defend their territories renders globalization both a benefit and a challenge (Kay 2004: 10).

Globalization has emerged as a double-edged sword, creating numerous benefits in certain spheres but also generating serious challenges to the security of many nations, particularly developing countries. It has been implicated in social fragmentation, creating critical vulnerabilities, as well as sowing the seeds of violence and conflict. Moreover, a variety of threats have become global in scope and more serious in their effects as a result of the spread of knowledge, dispersion of advanced technologies, and the movement of people (Davis 2003: 1). As states no longer dominate either as the exclusive referent objects or the principle embodiment of threats, security threats become inherently more difficult to measure, locate, monitor, and contain (Cha 2000: 393–94). Simultaneously, different aspects of globalization widen the scope of security to a variety of transnational militarized threats, encompassing violent ethnic conflicts, religious terrorism, dangerous weapons proliferation, cyber-attacks, and trafficking and global crime.

New Security Challenges in the New Global Era: Transnational Threats

In the last two decades, violent ethnic conflict has replaced ideological competition as the main source of strife within and between nation-states. After the collapse of the Soviet Union, a number of ethnic struggles turned violent, and this trend has, for the most part, continued since then. These ethnically motivated conflicts are commonly labeled as “new wars,” or “civil wars.” Ethnic conflicts usually take place between two or more ethnic groups, of which one typically possesses the actual state power. The state's legitimate monopoly of violence in society becomes the major point of contention that emerges between antagonistic ethnic groups. However, ethnic wars are not only confined to the territory of a single state, but their impact also affects neighboring states, manifesting themselves in the form of interstate violence and threats. Apart from inflicting great human suffering on those within the immediate vicinity of the conflict, violent ethnic conflicts often disrupt economic activity, stable governance, development, and prosperity within the neighboring region where they occur, undermining security by escalating armed conflict, refugee flows, and increases in organized crime.

Nation-building often is a contentious process, fought out in a political, cultural, social, economic, or military setting. As soon as a society is

divided in ethnic or religious terms besides the economic, social, and other lines of conflict, a further dimension is added to the existing potential for conflict (Hippler & Frieden 2005: 3 –14). Confrontation policy may vary from assimilation to cultural domination, forced migration, ethnic cleansing, and, the most violent one, genocide. On the other hand, the accommodation strategy of the state includes following the policy of power-sharing among different ethnic groups, creating autonomous areas and also federal forms of governance.[1] Depending on the state's strategy, the way in which ethnic groups are challenged usually determines their response. Usually violence invites violence, and accommodation can often, but not always, provide greater opportunity for lasting peace and viable order given the right circumstances. Thus, it is not always the case that where there is greater ethnic diversity, there is greater inter-ethnic conflict.

Besides the challenges of managing ethnic conflicts, the international concern about global terrorism has also gone through a major evolution in the last decade. In the second half of the twentieth century, if there was any global security agenda against terrorism, it was extremely ambivalent and very half-hearted. There was a monumental disagreement over the definition of terrorism itself. In most cases, one nation's terrorists were another nation's freedom fighters. Western industrial coun-tries, which were used to making a distinction between international and domestic terrorism changed track in the latter part of the 1990s after experiencing attacks at the hand of terrorists. The 9/11 twin tower terrorist strikes on the United States brought a defining change to the attitude of the international community in dealing with terrorism, at both the domestic and international level. Islam has taken on a stronger political salience in the many parts of the world. Many acts of violence, including bombings and hostage-taking by Islamic radical groups, have been committed in many countries in recent years. There is an increasing realization that many problems such as terrorism are truly global in nature, and can only be addressed effectively through international and regional cooperation.

The potential use of weapons of mass destruction (WMD) by terrorist groups and rogue states clearly poses a serious threat internationally.[2] The global spread of ideas and technologies is unquestionably making it easier for states, and even disaffected groups, to develop the most dangerous weapons. In term of states, North Korea and Iran's potential for developing weapons of mass destruction and long-range missiles has been a concern for

the United States and the international community for more than a decade (Gross 2002). Iraq used chemical weapons during its wars against Iran and Kurdistan in the 1980s, as well as in the Persian Gulf War in 1991. Like states, disaffected groups have taken advantage of WMD as a means of committing terror attacks. In the aftermath of 9/11, the fear of another attack by Islamic terror groups still casts a shadow over international insecurity; most experts on terrorism are particularly concerned about the magnitude of the destruction that would arise from a terrorist attack using WMD.

Information and communication technologies are the central features of globalization and have become increasingly intertwined in our daily activities. Some of these technological infrastructures form a vital function of many critical civilian systems, such as communication, energy, transportation, government security, or banking, etc. However, they are now vulnerable to threats from cyber terrorists. The so-called Love Bug virus in 2000, by almost any measure was the most damaging virus ever, infecting 40 million computers and costing billions of US dollars in damages (Grossman 2000). Furthermore, computer networking technology has also blurred the boundaries between cyber-warfare, cyber-crime, and cyber-terrorism, which are becoming more organized and established as transitional business. Several terrorist operations in Europe in recent years provide evidence that groups of terrorists are already secretly active within countries with large communication networks and computerized infrastructures, plus a large, highly skilled information technology (IT) workforce (Nagre & Warade 2008). This is the reason why the Commission of the European Communities (CEC) claims that "cyber-attacks have risen to an unprecedented level of sophistication," and it is the high dependence on communication technologies, their cross-border interconnectedness and interdependence, as well as the vulnerabilities and threats they face, that raise the need to address their security and resilience (CEC 2009).

Drug production and trafficking have begun to be considered a serious security problem with social, political, and economic implications at local, national, and transnational levels as well (Swanstrom 2007: 1–6). At the societal and national level, drug revenues can increase corruption and undermine the political stability of the legitimate government, particularly in weak and poor countries in the South. The danger emerges from the negative spiral of economic and political instability generated in states that

are vulnerable to drug trafficking. On the other hand, social and political chaos are conditions that allow the narcotics industry to thrive (Swanstrom 2007: 3–4, 11). In Mexico alone, since 2006 more than 34,000 people have died as result of drug-related violence. The various drug-trafficking cartels fight to dominate the illicit drug market in the United States. Drugs are often not responsible for the commencement of a conflict; however, there is a positive correlation between drug trafficking and conflict duration, in which drug trafficking lengthens the life cycle of conflicts (Cornell 2007: 207–08).

Drugs additionally pose a threat to human health security. Production and transit regions have experienced a dramatic increase in HIV/AIDS and Hepatitis C infections. A recently recognized trend is the evolving relationship between the narcotics trade and terrorism. While traditionally treated as two separate and distinct threats in security discourse, the association began to build momentum in the 1990s as a more salient field (Björnehed 2004: 305). Particularly since the 9/11 attacks, the international community has increasingly considered the illicit drug trade and terrorism as two interconnected phenomena. The major concern is the possibility that terrorist organizations can make use of the drug trafficking network to generate funds for their arms and equipment (Björnehed 2004: 305). According to the US Department of State, 14 out of 36 foreign terrorist organizations are now involved in trafficking narcotics (Sanderson 2004: 50).

Globalization has also created lucrative opportunities for traffickers of drugs, dirty money, blood diamonds, weapons, and other contraband (Jojarth 2009). These are examples of transnational crime, which have spread exponentially with the development of globalization in recent years. The United Nations Office on Drugs and Crime (UNODC) currently considers transnational organized crime one of the major threats to security, impeding the social, economic, political, and cultural development of societies worldwide.

Transnational organized crime is a multifaceted issue, in which drugs, arms, and human trafficking are considered the main activities by which global organized groups generate enormous profits. In fact, drug trafficking is believed to rank only behind the global trade in petroleum as a source of wealth, with 200 million users of illicit drugs and a revenue worth roughly US$ 400 billion per year (Caldwell & Williams 2006: 108); meanwhile,

with more than 2.4 million people held captive across the world and global annual profits exceeding US$ 2 billion, human trafficking is generally ranked third (UNODC 2010). As the main factor behind most of the trafficking, transnational criminal organizations have generated enormous wealth and become much more powerful, for example the Sicilian Mafia, the Chinese triads, the Colombian cartels, the Japanese yakuza, or the Russian syndicates. Their threats are no longer limited to a few states, but have become transformed in a variety of ways. They violate national sovereignty, undermine democratic institutions, threaten the process of democratization, and more seriously are armed with sophisticated weaponry and other technologies, which can involve nuclear proliferation and terrorism (Williams 1995).

Although the massive spread of technology, finance and information has facilitated global humanitarianism, it has also created an environment that fosters new security concerns. In this new global era, security threats are no longer limited to violent actions by armed groups and states. Instead, new types of unconventional transnational threats like environmental and climate concerns, large scale human migration, food and water scarcity, loss of biodiversity, and an increasing number of pandemics have been posing serious security challenges, shaping a more vulnerable and insecure world. These newly emerging threats are interrelated and a threat to one country or region has often become a threat to all. These new threats have made the world, irrespective of strong or weak, rich or poor, East or West, North or South, mutually vulnerable (UN 2004a).

Threats from Environmental Degradation and Water Scarcity

Increasing population coupled with globalization and industrialization has left an indelible mark on the earth's ecosystems, producing extensive environmental damage. Dangers arising from the world's environmental problems often impact across state borders, with devastating consequences. Global climate change has been a product and, at the same time, a multiplier of the environmental crisis. Many regions in Asia and Africa already suffer from devastating droughts; 1 billion people around the world lack access to safe drinking water; serious temperature fluctuations as well as the melting of ice and rapid evaporation might lead to more frequent and serious floods or storms all over the globe (Balaban 2002: 2).

Moreover, devastating droughts, floods, or storms arising from climate change may also disrupt agricultural production and create a scarcity of natural resources, desperately needed as a source of energy, food, or water. These types of circum-stances are likely to trigger military confrontation, armed conflicts, and clashes. For instance, shared water resources have been fueling tensions between states and groups. An estimated 250 people were killed and many more injured in clashes over water wells and pastoral lands in Somalia and Ethiopia between 2004 and 2006 due to a three-year drought that led to extensive violence over limited water resources (Gleick 2008: 31). Water scarcity and increasing demand in the Middle East has led to regional tension over decades. Hence, it is undeniable that severe environmental problems are likely to escalate the degree of global conflict and cannot be separated from matters of what is now called "global security."

Threats from environmental degradation include trans-boundary air pollution, water scarcity, decreasing forest cover, chlorofluorocarbons (CFCs)[3] and ozone depletion, biological-diversity reduction, coastal marine pollution, and global fish-catch reduction. It is argued that these environmental problems have intensified to become transnational security concerns, precisely because of increased human mobility and interaction (Cha 2000: 394) in the context of rapidly growing global economy and large-scale urbanization (Dalby 2002). Currently, many salient environmental threats are widespread and poorly managed. According to the International Peace Institute, global environmental issues have an impact across state or regional borders and should be addressed in combination with climate change using comprehensive and collaborative global solutions (International Peace Institute 2009: 15). The complexity of these issues renders them amenable to multilateral efforts as the most viable option to maintain international security.

Lack of Food Security

According to the Food and Agriculture Organization (FAO), "food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life" (FAO 2003: 29). However, since 2008 there has been an extraordinary rise in global food

prices that has victimized millions of people with hunger and poverty. This situation has provided a glimpse of what future global food crises would resemble and has prompted serious concerns about threats to global food security. For the first time in 2009, the total number of hungry people in the world exceeded 1 billion (see UN Progress Report 2009). Yet, the situation is deteriorating at an ever increasing rate, as a result of complex driving forces, such as: massive urbanization, climate change, long-term trends of increasing food demand coupled with declining agriculture investment, worldwide contraction of market economies, and other industrial factors.

Rising food prices are a threat to global food and nutrition security. They have a significant impact on the health, environmental, and socio-economic development of the entire global community (Comprehensive Framework for Action 2008). Most seriously, the food and nutrition situation of developing countries suffers the most from spikes in global food prices, particularly the poor and most vulnerable groups in developing countries, such as women and children. Moreover, other serious concerns such as currency inflation and civil unrest are also associated with high food prices. As such, it is essential that national governments and international actors take various steps to minimize the effects of higher international prices by implementing effective and coherent measures to help the most vulnerable populations cope with drastic spikes, and farmers meet the rising demand for agricultural products (Von Braun 2008).

Population Migration – An Increasing Threat

In an era of increasing globalization, the massive movement of people across national boundaries has become an important inter-state issue. The total number of international migrants in the world was expected to reach 214 million in 2010, of which the United States was the largest recipient with 42.8 million economic migrants in 2010 (UN Population Division 2009). Although migration has been considered beneficial to both source countries (i.e. remittances, the return of a highly qualified workforce from abroad) and destination countries (i.e. the supply of human capital for jobs shunned by nationals or positions that the national workforce is inadequate for, a cheap source of labor) (Tamas & Palme 2006: 3); cross-border migration has recently become increasingly politicized. Migration is increasingly being negatively framed as an intrusion on the collective

national identity of destination countries, or "a threat to the 'cultural identity' of a society" (Abiri 2000: 53). Depressed economic times have given way to strong fears of greater competition in the labor market and worries about downside pressures on wages and social welfare benefits, thereby further politicizing migration in ways that may produce negative repercussions not only for new migrants, but also settled immigrants, their children, and their grandchildren (Tamas & Palme 2006: 3).

Furthermore, the events of 9/11 led to an era of growing security concerns in which migration and security became intertwined issues of high sensitivity, especially with respect to the transnational challenges posed by illegal immigration. Destination states consider irregular migration or asylum seekers as threats to state sovereignty and security, because they may provide channels for potential terrorists. Under increasingly heightened security threats, and pressures to intensify the management of inflows, many favored destination countries have resorted to harsher and more restrictive immigration control policies. Developed countries are spending billions on protecting their borders, while a growing number of migrants take risks by using ruthless traffickers, who may be part of international organized crime syndicates (Tamas & Palme 2006). Consequently, migrants are being victimized; their lives, welfare, and security have been put at risk. The rights of states to exercise territorial sovereignty by seeking more effective border controls to limit access to irregular migrants is in conflict with the human rights discourse of those asylum seekers or refugees who move in an irregular manner (Koser 2005: 4).

Growing Threats from Pandemics

In recent decades, worldwide more deaths have been attributed to emerging infectious diseases than all other security threats combined, which accounts for the growing concern of infectious diseases as a security threat. The "deadly seven" infectious diseases that remain a serious threat in the twenty-first century are, HIV/AIDS, tuberculosis, malaria, lower respiratory infection, diarrheal diseases, hepatitis B and C, and measles. Based on estimates, HIV/AIDS is likely to become responsible for more deaths than any other single infectious disease worldwide by 2020 (Gannon 2000). Infectious diseases spread globally and quickly, which is a consequence of human behavior and global mobility. Dramatic changes in population

dislocations, poor patterns of land and water use, environmental degradation, the rise of mega-cities with severe health-care deficiencies, ease of global mobility, and a growing number of refugees coupled with the increasingly drug-resistant microbes and the lag in development of new antibiotics help to hasten the spread of infectious diseases (Davis 2003). Globalization has always encouraged a robust exchange of microbes along with goods and services, as Caldwell and Williams put it, "the greater the degree of globalization, the greater will be the possibility that deadly pathogens also will travel … Globalization collapses time when it comes to the spread of infectious diseases" (Caldwell & Williams 2006: 126). Emerging infectious diseases pose considerable socio-economic and political risks to society, especially as affected countries or regions lose present and future generations. Addressing the threat of emerging infectious diseases therefore requires a comprehensive and integrated approach involving the cooperation of states, various international organizations, and non-governmental organizations.

Emergence of New Powers

Not only has there been diffusion of non-traditional security threats in recent years, the world has also witnessed a greater diffusion of authority and power. It is not any more the bipolar world of the Cold War era nor the unipolar one of the 1990s. The world has observed the emergence of a new power constellation that includes China, India, and Russia, which are economic and political actors with increasingly significant and far-reaching influence on the structure of the international system.

The economic surge of a non-democratic China in the post-1978 period posed a stark contrast to the near financial bankruptcy of Indian democracy in the early 1990s. However, India's extraordinary economic growth since the second half of the 1990s has resulted in a transformation of the Indian economy. China and India are spoken in the same breath, as two fast-growing giants, who are increasingly playing a larger role in global markets and trying to acquire a greater share of the global market. India and China are among the fastest growing economies in the world, at the same time, they are the two most populous countries. India's current population is almost 1.2 billion, while China hosts about 200 million more people. India is poised to overtake China by 2025. According to the World Bank their

current combined populations represent approximately 27 percent of the world population (World Bank 2010a). While not as spectacular as China's, India's economic growth surpasses all other countries, hovering between 5 and 9 percent since 1993. In the service and technology sectors, India's growth rate has also been extraordinary.

Placing its emerging role in perspective, China is the world's most populous nation, a nuclear power, a permanent member of the UN Security Council, and also a leading military power (National Intelligence Council 2008). Moreover, it is one of the world's fastest growing economies, predicted to become the world's largest economy by the early 2020s, and already the world's largest emitter of carbon dioxide (Korb, Duggan, & Conley 2009: 20). Obviously, China's situation lends itself to hyperbole, since it is poised to have more impact on the world over the next 20 years than any other country (Callahan 2005: 30). Unlike China, India's growth is considered to be a complicated rise in a multipolar international system (National Intelligence Council 2008). India is growing rapidly, albeit unevenly, with an estimated 8 percent annual growth in per capita gross domestic product before the onset of the global economic crisis in 2007 (Korb, Duggan, & Conley 2009: 21), and is predicted to become the third largest economy by 2050 (Desker 2008: 108). Given its impressive overall economic growth, successful democratic record, and increasing military power, India is becoming another significant rising power.

As Humphrey and Messner predict, the growing prominence of China and India as new powerful actors in the global order will transform the current " quasiunilateral world order" into a *de facto* multipolar power constellation, comprising of the two new actors, along with the United States and, possibly, Europe to make four substantial poles of power in the architecture of global governance by 2025–30 (Humphrey & Messner 2006: 108). Moreover, China and India –"the Asian Drivers"–with incredibly increasing momentum over recent decades are forcefully altering the relationship between industrialized and developing countries. Both are well on their way to integrating into the existing international order, as their power increases they will play an indispensable role alongside the United States and the EU in confronting global challenges, gaining economic prosperity, defense assistance, and reducing endemic poverty (Korb et al. 2009: 19). Despite their new found opportunities, the rising Asian Drivers' remarkable size, phenomenal growth rates, and demand for natural

resources and increasing political clout will pose new challenges for the future of global governance to both developed and developing countries in the world.

China and India are non-Western countries with different institutional structures and values, and are not following the standard Western liberal model for self-development (National Intelligence Council 2008: vi). Particularly, the rise of China means " the rise of an undemocratic, non-liberal state in both the world economy and in the hierarchy of global governance" (National Intelligence Council 2008: 37); meanwhile India does not follow the standard Western model, as it regulates in a centrally planned top-down manner (Schmitz & Messner 2008: 34). These operations pose big challenges for the legitimacy of the global governance processes, which for years was based on a consensus of Western nations. This point is illustrated in the context of China's close cooperation and investment in countries with poor human rights records in Africa, as well as its close energy partnership with Iran and Venezuela. Recently, China has also increased its influence in Latin America and Pacific-Asia; thereby challenging development projects and regional influence previously enjoyed by Western nations, which are preoccupied with global issues like human rights, poverty reduction, and social and environmental standards.

The emergence of China and India on the world stage means that they will seek and wield more influence on the issues of greatest importance to them. In recent years, and in order to sustain its economic development, China has geared up, sought energy security, and strengthened its spheres of strategic regional influence. The founding of the Shanghai Cooperation Organization in 2001 has shown its ambitions in procuring more reliable clients in Asia, Africa, and Latin America. Meanwhile, India has been playing an increasingly proactive role in the fields of climate policy and world trade. In fact, both of their activities are generating adjustment pressures and challenges to the current architecture of global governance producing tensions between them and the principle actors of the multipolar system (Humphrey & Messner 2006: 109–10). Furthermore, the rise of China and India in recent decades can be compared to the rise of Japan and Germany in the late nineteenth and early twentieth centuries, which presented stiff challenges to the existing international system by creating a free for all multipolar system (Kupchan 1998: 29). Greater diversity and the growing power of more countries implies that established consensuses will

be changed and the range of influences will be broadened, which portends less cohesiveness and effectiveness for the international system (National Intelligence Council 2008: 29).

The emergence and integration of the two Asian giants into the world economy has significantly changed the nature of global macroeconomic and financial interdependence. Most notably, their demand for raw materials has been rising since the late 1990s, which exerts an increasingly upward pressure on prices, and turns them into global players that determine the price of raw materials (for more see Goldstein 2006). This has affected developing economies by creating both winners (net exporting countries of energy and raw materials) as well as losers (net importers of raw materials and energy, facing rising prices, and countries facing competition from cheap manufactured goods in both their domestic and export markets) (Humphrey & Messner 2006: 111). Moreover, the rising Chinese and Indian interventions in developing countries may act as a counterweight to liberalization and democratization agendas pursued by the developed countries. In order to sustain their rapid economic development, China and India are searching for new sources of oil, gas, and other raw materials around the globe, especially in African countries. There are serious concerns that the way particularly China operates compromises transparency and accountability in Sub-Saharan Africa (Bamou & Adenikinju 2006: 24). However, when China and India emerge as powerful actors in global governance institutions, they will portray themselves as voicing the interests of poor countries, which will change the dynamics of the North–South relationship.

Although the rise of no other state recently rivals the rise of China and India, other countries with potentially high-performing economies like Russia, Brazil, and South Africa are increasingly considered likely to become more important players on the world stage. Among this group, Russia is expected to have the potential to become number one, on condition that it invests in human capital, expands and diversifies its economy, and integrates with the global market (National Intelligence Council 2008: 13). Russia is well-positioned and eager to reassume a large role on the world stage, as a member of the G8, a nuclear power, and a permanent member of the UN Security Council (Korb et al. 2009: 22). Russia's foreign policy in recent years can be seen as increasingly more assertive and sometimes confrontational (Lo 2009: 2). This challenges the

inept notion of the European security architecture, weakens traditional alliances such as the North Atlantic Treaty Organization (NATO), and threatens the US security agenda as currently the most powerful nation in the world, thereby challenging the stability of the international order. Yet, Russia's strong dependence on gas and oil makes it vulnerable to sudden economic shifts and global economic recessions (Korb et al. 2009: 22).

Undoubtedly, the global landscape of the new era has shifted into a global multipolar system, with significant and new members rising to power. This means power will be more dispersed with the newer players creating new rules. Emerging powers might contribute to a more effective international network as indispensable players in confronting new global challenges. At the same time, the new rising countries also create a trend towards a more complex international system, which increases the likelihood of fragmentation and renders global humanitarian and peacekeeping missions cumbersome. The shift in the distribution of power internationally, according to various growing geopolitical interests and economic clouts, will limit ability to resolve global issues expeditiously, complicate regional influences, and create a wider scope of transitional challenges. Meanwhile, tensions between the principal actors in the multipolar world are high, as states seek economic security and feel the need to strengthen their spheres of influence.

Locating Security in a Rapidly Changing World

The world has witnessed massive power transformations in recent years. This has evoked the need to evaluate the meaning of security itself. As such, in recent years, security has become a notably vital topic and, hence, the subject of numerous debates. Two main views of security emerge from these debates, one is the old traditional model that focuses on the military and is state-centric, and the other is a “new” model that encompasses a broader range of issues and actors. Those who subscribe to the former view are often referred to as “traditionalists,” in contrast to the latter who are known as “wideners,” people who became dissatisfied with the intense narrowing of the field imposed by the military and nuclear obsession of the Cold War power structure.

Historically, the term “security” was used in reference to a condition of being protected, safe, or free from the threat of harm. Now, the traditional conceptualization of security is commonly traced back to the onset of the

Cold War, in the context of the mutual nuclear hostage relationship between the United States and the Soviet Union, accompanied by the massive military expansion of both NATO and the Warsaw Pact. Hence, the definition of security attracted most of its public interest during the Cold War era, with military power as the central focus and theories of deterrence interwoven as the dominant security discourse. During this era of the almost unchallenged dominance of Realism, national security (synonymous with security) was interpreted in the context of states as the referent objects of security, whose aim was to maintain their political independence and freedom of decision-making (Sheehan 2005; Smith 1986). Accordingly, the main focus of security studies was considered easy to identify, as the phenomenon of war (Walt 1991) or the study of threats, use, and control of military force (Nye & Lynn-Jones 1988).

However, the winding down of the Cold War led to a massive reduction in military rivalries amongst the great powers and paved the way for globalization trends all over the world, eventually accelerating a barrage of criticism of the traditional approach to security, as something narrow and limited. The case for a wider security concept has become stronger, since the old traditional security concept is no longer adequate. As such, ongoing debates have focused on the need to deepen and widen the concept of security, so that it does not only reflect military issues at the state level, but also encompasses non-military issues at the societal and individual levels. It is argued that with the end of the Cold War, interstate wars will become isolated events whereas threats from civil wars, transnational crimes, terrorism, and infectious diseases will be on the rise (Krahmann 2003: 9–10). For instance, in 2008, nearly 27,000 deaths were attributed to civil conflicts (UCDP 2011) but at least 2.3 million people died from AIDS (UNAIDS 2009).[4]

The first breakthrough ideas to challenge the traditional definition of security and introduce new wider concepts came from Barry Buzan, with his book *People, States and Fear* (1983) and Richard Ullman with the article “Redefining Security” (1983). Both favored a broadening of the concept of security. Buzan raised questions about the appropriate level at which security should be assessed – on individual, national, or international. Meanwhile, Ullman argued against defining security in traditional military terms, because it would lead to the underestimation of other security threats and contribute to the militarization of international relations.

In fact, the contributions of Buzan, Ullman, and those that followed in later decades would suggest that the concept of security needed to be opened up in two directions. First, the notion of security should no longer be limited to the military domain. Nowadays, security concerns are more about the consequences of how the open international system operates; a set of issues that affects the strong states as much as it does the weaker ones. As Åsberg and Wallensteen argue, "ecological, economic, political and socio-cultural factors are gaining importance at the expense of purely military aspects of security" (1998: 168). Second, the referent object of "security," that which needed to be secured, should not be conceptualized solely in terms of the state, but should also embrace the individual below the state, and the international system above it (Sheehan 2005).

It is apparent that security has had contested meanings from the outset. The tension of definitions is inherent in the elusiveness of the phenomenon it seeks to describe, as well as in the effort of various users to frame its meanings for their own ends. Despite a number of efforts by analysts and policymakers, so far security is a term without a generally agreed definition, because, according to Buzan (1983), at its core, there are moral, ideological, and normative elements that render empirical data irrelevant and prevent reasonable people from agreeing with one another on a fixed definition. Our perception of security changes with the circumstances we face (Caldwell & Williams 2006). For instance, with the end of the Cold War, a clearer and expanded definition of security has become necessary to address the more complex, evolving, and multifarious scheme of "new" security threats that cannot be explained by the "older" model of the Cold War and early post-Cold War period.

Security has typically been pursued by states with the aim of guaranteeing the state's survival, based on the idea of sovereignty and territory, assigning one's neighbor the status of a potential enemy, and applying military means to achieve these ends (Waltz 1979). Neo-Realism – holding these ideas – has also been the dominant approach to the study of security and international relations since the Second World War. In recent years, the global power structure has undergone a great deal of fundamental changes. All of these changes have led to a world that is much more complex and interconnected than ever before. These changes have also affected the way we look upon security. New threats have forced us to change our conceptions and have led policymakers and academic scholars

to reassess existing security agendas. Thus, in recent years, the security concept has been subject to revision to reflect modern-day realties.

Security, *per se*, is not as easy as was the case at the height of the Cold War. Its ambiguities and contested nature are now unmistakable and unavoidable. The world and its problems have become too complex and too divisive, thus demanding a more exhaustive approach to deal with its security issues. For security analysts, finding an inclusive approach has become a necessity as security through nuclear deterrence has lost some of its significance. This is also evidenced by what peace researchers have been questioning for some time, a limited concept of security that has focused almost exclusively on the military (Åsberg & Wallensteen 1998). Now, there is a majority view which adopts a more complex and comprehensive approach to analyzing security beyond the traditional boundaries of its military aspects.

In the 1970s, the concept of security came under pressure to expand itself to include international economics, as many states, particularly the United States, realized that their economy was not independently driven anymore. The post-Cold War global development in the 1990s also called for the further broadening of the definition of security to include resource, development, environmental, and demographic issues. As Helga Haftendorn says, "there is no one-concept of security; national security, international security and global security refer to different sets of issues and have their origins in different historical and philosophical contexts" (1991: 3). Therefore, the question of how security is defined and framed is a vital one. Both politicians and researchers have entered the debate with new, more or less promising views of security concepts, policies, and outlines of a new world order. Despite vigorous debates, a clear new definition of what constitutes security remains elusive.

"Wideners" versus "Traditionalists"

The traditional definition of security, during the long domination of academic international relations by Realism (late 1930s–70s), was a strictly limited one, which saw its nature as being concerned with military power, and the subject of these concerns being the state, so that the concept was routinely referred to as " national security." Security has no meaning in itself; it is given a particular meaning by people through the emergence of

an intersubjective consensus (Krause & Williams 1996: ix). Interestingly, even during the Cold War the focus of security specialists was on military statecraft and what they saw as security issues, only those for which military statecraft was relevant (Baldwin 1997: 9). One of the most famous traditionalists is Stephan M. Walt, who claims that security studies are about the phenomenon of war. Accordingly, it may be defined as "the study of threat, use and control of military force"–in an environment where the use of force is probable and its use impacts individuals, states, and societies (Walt 1991: 212). Furthermore, he strongly emphasizes the risk of expanding the definition of security excessively, on non-military issues (namely pollution, disease, child abuse, or economic recessions), which would destroy its intellectual coherence (Walt 1991: 212–13).

An increasingly complex international relations agenda involving the rise of economic and environmental challenges during the 1970s and 1980s, as well as concerns with ethnic identity issues and transnational crime during the 1990s, provided an opportunity for sustained attacks on the traditional concept of security. Critics argued that it was inadequate, since it ignored important aspects of an emerging international policy agenda. A great number of debates during this period opened up the concept of security to a processes of exploration of its meaning and application to a broader range of areas, with initial representatives such as: Ullman (1983); Jahn, Lemaitre, and Wæver (1987); Nye and Lynn-Jones (1988); Haftendorn (1991); and Wæver et al. (1993). Barry Buzan and the Copenhagen school are credited with pioneering the widening aspect, to include economic and environmental realms; whereas Ken Booth (1997), Richard Wyn Jones (1999), and others in turn explored the epistemological and ontological implications of an extended security concept.

Obviously, the definition of security is viewed differently even within the group of non-traditionalists. Scholars such as Mohamed Ayoob (1997), Ole Wæver (1996), Michael Klare and Daniel Thomas (1994), define concepts of security to include a broader range of threats than the traditionalists and are still largely state-centric. Ayoob defines security with a stress on political-institutional underdevelopment as the predominant source of conflict, specifically that "security or insecurity is defined in relation to vulnerabilities, both internal and external, that threaten to, or have the potential to, bring down or significantly weaken state structures, both territorial and institutional, and regimes" (1997: 130). In contrast, Ken

Booth (1991) and Spike Peterson (1992) seek to deepen the definition of security, i.e. determine whose security is being threatened, and favor a definition that allows for individual or structural referent objects, as opposed to the state (Tarry 2009). Booth's emancipation definition (1991) promotes alleviating constraints that hinder personal freedom or liberty. Peterson's revision of security (1992), in which security would address global problems such as nuclear proliferation, ecological concerns, human rights abuse, widespread poverty, and the systematic oppression of women, also illustrates the latter views.

However, all the "widener" scholars attempt to alter the traditional views of security by including a broader range of threats, addressing global issues, and focusing on the individual as the referent object. They argue that a predominately military definition does not acknowledge that the greater threats to state survival may not be military, but actually environmental, social, and economic. However, they differ upon the selection of the type of referent object. While some are still strongly state-centric, others ask the question of whose security is being threatened and support the construction of a definition that allows for individual or structural referent objects, as opposed to the state only (Buzan, Wæver, & De Wilde 1998; Krause & Williams 1996). The Copenhagen school took a significant shift on the centrality of the state to security definition.

As Sheehan (2005) points out, in 1991 Buzan vigorously argued in favor of the state-centric approach and proposed that threats to other referents, such as the individual, are only meaningful in the context of state security; however, later he and his colleagues shifted the focus to non-state actors and allowed them to be dominant. In such instances, they do not assume that the state must be dominant, but neither do they insist that it is not. In a recent piece, Buzan and Wæver argue as before that securitization occurs along three levels; the individual level where the referent object is the individual; the middle level where security communities are central and; the system level which encompasses all human kind. However they primarily focus on investigating "the space between the 'middle level', in which individual collectives mainly engage in interdependent securitization with other collectives, and the universal one, where the absence of an Other makes it difficult to securitize the total collective Self of human kind" (Buzan & Wæver 2009: 256). Similarly, R. B. J. Walker (2009) keeping a distance from both "cosmopolitanism" and "political realism," emphasizes

the analysis of the relationship between politics within states and politics between states to address new forms of insecurity.

Security for a New Era: An Analytical Framework

As discussed above, the post-Cold War era opened up numerous debates about a broader analysis of security, so that its meaning would be relevant to future challenges. In order to properly capture the essence of security, a broader security framework that can incorporate phenomena such as non-military threats, the protection of human rights, the environment, or civilian resources is crucial. Such a framework generally addresses three basic questions: *Security for what? Security by whom? Security achieved through which means?* Core values are related to the aspect of *whom* or *what* we want to be secured. They can be seen as the fundamental values on which states, societies, and international systems are built. If these core values are not protected, states and societies cease to exist (Åsberg & Wallensteen 1998: 169–70). In many cases, states and individuals have different core values. For instance, the core values of states usually encompass one or several of the following principles: sovereignty, territorial integrity, national unity, democracy, etc. Costa Rica, which has no regular military forces and spends 0.6 percent of GDP on defense, operates in a security environment that is different from Israel (which spends 7.3 percent), or its Middle Eastern neighbor, Jordan (which spends 8.6 percent) (CIA 2011). Individuals, however, have a long and infinite list of core values, normally illustrated on a fixed scale with the values depicted by the United Nations Development Program's (UNDP) definition of human security, which emphasizes economic, food, health, personal, environmental, cultural, and political factors. The emergence of human security concept is considered much more than the absence of military threat, since at a minimum, it requires that basic needs are met, acknowledging that sustained economic development, human rights and fundamental freedoms, the rule of law, good governance, and social equity are as important to global peace as arms control and disarmament (Axworthy 1997: 184).

Åsberg & Wallensteen (1998: 172) suggest that *threats* are an indicator of which challenges and dangers are directed against these core values and, consequently, they cannot exist without the linkage to core values. Besides, the difference between normal dangers and threats to security is determined

based on the level of their respective impacts. Security, which generally means a state or condition of being free from the threat of harm, is subjected to numerous potential threats in a wider context. For instance, military forces of neighboring states, terrorists, indigenous revolutionary movements, collapse of commodity prices, natural disasters, and overpopulation all constitute a long list of possible threats. However, how would we distinguish the weight of importance of these and other different threats to security? Should natural disasters which have caused Bangladesh and Pakistan more death and destruction during recent decades than their respective military conflicts be ranked as more important to national security? How should one evaluate the priority of threats of tsunamis in Japan or terrorism in the United States?

The key question is which security threats should be given priority and to what degree? During the long domination of Realist security (from the Cold War until late 1970s), "newer" threats of security were largely ignored in favor of military issues (Sheehan 2005: 7). The new security agenda is driven by the realization that most of the world's population is threatened by problems that are unrelated to weapons of mass destruction or civil wars or terrorists networks. Some examples which illustrate the scope and gravity of threats to the new security agenda are: each year, over 11 million children under the age of 5 die mostly from starvation and malnutrition (Caldwell & Williams 2006: 2) and 1.8 million people die from waterborne diseases. Interestingly, during the transition from a "traditional" to a "wider" notion of security after the end of the Cold War, academics have remained divided over the utility of a more inclusive notion of security, whereas politicians, the military, and the security industry have gradually adapted to the new security threats. As Krahmann describes, NATO and the Conference for Security and Cooperation in Europe (CSCE) have successfully expanded the scope of their security threats to areas such as international peacekeeping, refugee resettlement, and the promotion of civil society; meanwhile the EU and its member states also defined an increasing array of their concerns towards security, including immigration and development aid (2003: 10). However, a few critical threats are still of considerable concern in the debates about security of the new era – global climate change, environmental destruction or degradation, food and water shortages, population growth, pandemics, and large-scale migration remain of great concern.

As Åsberg & Wallensteen (1998: 168) argue, in the security debates the discussion about new actors as providers of security has not kept pace with the amount of new core values and threats. Essentially, security providers may be classified as either the state or the international community. As a provider of security, the state itself needs resources (human, economic, organizational) to effectively protect core values from threats and maintain active security. Meanwhile, the international system is a complex security provider involving multilevel cooperation between states, which may include bilateral agreements, regional organizations, or a global security system such as the United Nations (UN). Moreover, non-governmental organizations (NGOs) and various societal groups can be considered actors that provide security both between and within states.

The Copenhagen school expanded its interest from state to other actors, with an aim to precisely answer the questions of *who securitizes*, on *what* issues (threats), for *whom* (referent objects), *why*, with what results and under what conditions. They consider referent objects as things that "are seen to be existentially threatened and that have a legitimate claim to survival," while securitizing actors are those who " securitize issues by declaring something – a referent object – existentially threatened" (Buzan et al. 1998: 32–36). Focusing on the process of labeling a threat to a designated referent object, the group distinguishes between referent objects (states, nation, societal groups, individuals, humankind, and ecosystems) on the basis of security concerns where the values at risk are sovereignty, national unity, survival, and sustainability (Friis 2000: 3; Oswald Spring 2008).

However, seeking security in the twenty-first century still requires considerable attention to national security, because inter-state threats still exist. For instance, recent concerns raised about the emerging power of China and India, or the nuclear program in North Korea, Pakistan, and Iran, pose different kinds of state-induced problems, with varying degrees of seriousness. However, when traditional security fails to adequately address emerging threats of the new era, particularly the ones which are not militarized in nature like environmental destruction and climate change, water and food scarcity, health crisis and large population migration, it is important and necessary to go beyond the realm of national security. The introduction of human security by the UNDP in 1994 illustrated a shift from security through armament to security through sustainable human

development as well as one that transcends the usual emphasis on territory (Renner 2006).

In other words, the search for a security model of the new era is a quest for sustainable security, in which international, national, and human security are intertwined parts of any comprehensive approach to security in the future. The new era of globalization presents benefits and challenges which necessitate states and societies collaborating with others in order to manage global survival challenges, hence, sustainable security seeks to bring states and societies together in ways that address weaknesses of the international system as it is currently evolving. It also approaches security as something all human beings are entitled to and that can only be gained by mutual and collective efforts. Thus the emerging security issues not only provide challenges but also provide opportunities for cooperation among and within various actors.

The redefinition of security since the post-Cold War era has become fundamentally normative in recent debates, which reflects the changing reality of the contemporary world. International and regional organizations now operate with a definition of security that is multilevel, and which embraces the broader agenda. The inadequacy of the traditional view of security begs the need for an analytical framework of security amenable to the twenty-first century, i.e. one that moves beyond *national security* towards a broader and deeper analysis that also includes economic, societal, environmental, and ecological security issues. This integrated security structure, which brings together national security, human security, and international security, can be better equipped to provide sustainable security to this changing world and its emerging challenges.

Concluding Reflections

In the new era of globalization, the creation of a "global village" makes it possible for the growth of non-state actors and forces that impact beyond state boundaries of a given country (Wang & Wang 2009). The new reality presents numerous challenges. Perhaps, one of the most dramatic challenges to the current security environment is the newly emerging threats, which are not conventionally armed in nature but have global reach with very serious consequences. However, peace and security research has till now somehow overlooked the influence of increasing globalization on the formation and management of newly emerging conflict types. Now that the world has new

sets of complex and interrelated risks it demands a hard look at the existing analytical framework for understanding the relationship between globalization and security.

Globalization is generating new wealth and encouraging technological innovations, but, at the same time, it has failed to support and promote sustainable human development. Many regions and societies have been left behind and they face a real challenge for basic survival, which creates huge uncertainties about future peace and security in various parts of the world. While the key to the healthier sustainable growth lies in the countries' own efforts to pursue sound policies and strengthen institutions, these efforts need to be complemented by financial and technological support and knowledge sharing from the international community. Unfortunately, that is not taking place the way it needs to be. In 2009, the Official Development Assistance (ODA) was only 0.32 percent of the gross national income of Development Assistance Committee (DAC) countries; far below the 0.7 percent target developed countries had promised to meet. According to the World Bank estimate, due to this failed promise, developing countries are losing US$ 100 billion every year.

The new global era has also witnessed a significant shift of the world's power structure, with the emergence of a new multipolar power system. Despite their efforts in coordinating the process with the West to solve serious global issues, there are fears about various challenges and threats that the new rising powers will pose to both the developed and developing countries. After acquiring considerable economic and military power, "they want to be at the high table, they want to alter the rules of the game, and they want more say in global governance structures" (James 2008: 41). It has brought further complications to the global security structure when it faces unusual transnational threats that increasingly require mutual trust and cooperation. Thus the challenge is to forge a new sustainable security structure that is both effective and energetic in dealing with the challenges confronting the world in the twenty-first century.

2Resource Scarcity, Climate Change, and Environmental Security

Sustainable Development: Focus on Environment

The increasing knowledge which the world has acquired since the 1970s about the limited nature of natural resources, persuaded the former Norwegian Prime Minister, Mrs Gro Harlem Brundtland, to claim: "[N]ever before in human history had we had the capacity to destroy the environment and to reduce the options of future generations. Our generation was the first which had to be cognizant of its responsibility for the environment also on behalf of generations yet unborn" (Brundtland 1993). The dimensions and urgency of these environmentally related threats to human civilization warrant them to be considered important security challenges for both the present and future. The basic notion of security is not only to protect core values against the present threat but also to protect them from potential threats.

The new threats to security have brought a new dimension to the concept of development. The idea behind achieving sustainable development is that it should exist not only for a group of people or a particular nation-state, but for the entire world population and subsequent generations. Global challenges have for several years shown that environmental issues need to be given higher priority. This was one of the reasons for the establishment of the World Commission on Environment and Development (WCED) in 1983 under the chairpersonship of Mrs Brundtland, and for the publication of its report (1987) which outlines an agenda that seeks a sustainable pattern of living (also known as the Brundtland Commission). The Brundtland Commission linked the concepts of environment and development, stating that the two were inseparable issues in achieving sustainable development. This encouraged the United Nations to actually

talk about environment and development as one single issue instead of two separate entities.

The Commission defines sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland 1987). To achieve sustainable development, the world needs to redefine strategies that will enable nation-states to move from the present often destructive process of growth and development, to a more integrative process that incorporates economic and environmental considerations into its decision-making. The integration of economic and environmental factors in the legal and policy sectors of countries has to be backed at the international level. The report of the Commission prescribed a more responsible use of environmental resources, a significant reduction in arms expenditure, the abolition of poverty, and multilateral efforts to address environmental issues. As many commentators agree, the Commission's report has been able to move environmental concerns from the periphery to the center of the international policy agenda. In recent years, the question of how to determine a “man-environment equation” with the right equilibrium to secure sustainable development has become a major concern of nation-states and international organizations.

As early as the 1970s, the Club of Rome's Project on the Predicament of Mankind emphasized the need for a controlled and systematic transition from growth to a sustainable state of global equilibrium in order to address the *world problématique*. The project visualized many trade-offs in the process of growth, driven by the availability or unavailability of global natural resources. The conclusions of the project were:

1. If the present growth trends in world population, industrialization, pollution, food production, and resource depletion continue unchanged, the limits to growth on this planet will be reached sometime within the next 100 years. The most probable result will be a rather sudden and uncontrollable decline in both population and industrial capacity.
2. It is possible to alter these growth trends and to establish a condition of ecological and economic stability that is sustainable far into the future. The state of global equilibrium could be designed so that the basic material needs of each person on Earth are satisfied and

each person has an equal opportunity to realize their individual human potential.

3. If the world's people decide to strive for this second outcome rather than the first, the sooner they begin to work to attain it, the greater their chances of success.

(Meadows 1972: 23)

Not surprisingly, among the developing countries, the idea of limited growth aroused not only intellectual skepticism but also political suspicion. The gap between developed and developing countries of the world is enormous and continues to widen. The huge disparity in development between the North and the South is reflected by their needs and agenda. While the North focuses its attention on environmental issues that threaten ecological stability, the South places emphasis on immediate needs for economic growth to raise the standard of living.

The concept of sustainable development was expanded by the Brundtland Commission to meet these concerns. The Commission was notable for recognizing that poverty and underdevelopment were important causes of environmental degradation. It implicitly rejected the 1970s idea of environmental limits to growth. By accepting the desirability of growth, it focused on how development should be achieved. The report spearheaded the idea that the developing countries have to get richer, because poverty is a major cause of environmental destruction. Environmental degradation was seen to be inimical to continued development. Moreover, economic growth could assist by providing more resources for environmental protection. The Brundtland Commission emphasized that the concept of "sustainable development" itself contains within it two key concepts:

1. The concept of "needs," in particular the essential needs of the world's poor, to which overriding priority should be given; and
2. The idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.

(Brundtland 1987: 43)

The concept of "sustainable development" advocated by the Brundtland Commission, which has near universal acceptance, is plagued by a number

of conceptual weaknesses and ambiguities (Hopwood, Mellor, & O'Brien 2005). Interpreted liberally, any present human action can be justified if equivalent means and resources are set aside for the future. A rigorous interpretation of the concept can subject almost all present human activities to the possible scrutiny of an environmental test. The vagueness of the concept probably has made it acceptable in a wide range of political settings and to a wide range of people. Undoubtedly, the concept of sustainable development has placed the linkage between environment and development at the top of the global agenda. In spite of some definitional drawbacks, it is one of the most fundamental concepts against which the success of future global transformation can be measured.

Environmental Changes and New Security Threats

As Conca and Dabelko argue that the the post-Cold War global environment debate in period has focused on issues beyond economic welfare, production, and livelihood, as it has paid significant attention to political questions of international conflict, violence, and geopolitics. In recent years, many researchers have started probing the conflictual dimension of environmental changes.

Every year, the world population is increasing by 78 million, roughly the equivalent of another Germany (UNFPA 2009). Some describe world demographic trends as “revolutionary,” considering that while the human species emerged approximately 150,000 years ago, most of its growth has been in the last 40 years. The world population took tens of thousands of years to reach a billion around 1800, over a century to achieve the second billion mark somewhere at the beginning of the twentieth century, about 33 years to the third billion, circa 1960, another 14 years to the fourth, 13 years to the fifth, and 12 years to the sixth in the year 1999. The world population is projected to reach 9 billion around the year 2050 (UN 2004b). While population growth has stagnated in the industrialized world, it is still extremely high in the developing countries of the South. More than 90 percent of population growth is taking place in the South.

Research has found population growth pressure to have a significant impact on the likelihood of a state becoming involved in interstate military conflicts (Tir & Diehl 1998). It is debatable whether the population growth directly affects a state's decision to go to war or not, but it undoubtedly generates scarcity of resources in a technologically underdeveloped country.

Feeding a rapidly expanding world population may be technologically feasible but, at the same time, it is most likely to lead to widespread devastation of renewable resources. In spite of the tremendous claims of the agricultural scientists, it is true that nearly 1 billion people on Earth do not get the 2,200 calories per day generally accepted as the minimum human nutritional requirement.

Availability of renewable natural resources is increasingly falling short of meeting human needs. The future predictions on population growth and economic activities bring a distinct possibility of severely crippling the natural resource base on which human beings are dependent for survival. The decline in agriculture, desertification, decreasing green cover, freshwater scarcity, and extinction of species threaten the life and survival of present and future generations.

Violent Conflict and Environmental Stress

Destruction of the environment is commonly seen as a repercussion of violent conflict or conflict induced migration. Many studies from the post-Second World War period have focused on the environmental consequences of warfare. Refugee movement is the direct product of political conflicts and its consequences extend beyond the actors involved in the conflict. The pressure created by the settlement of refugees in receiving countries can be considerable. Not only because of their potential threat to the social, economic, and political fabric of the host state and society, but also because they can be a major source of environmental destruction in the areas of their resettlement.

Over the last decades, the extensive development of international law regarding the protection of the environment in military operations vouches for the recognition of the dangerous degradation of the natural environment chased by mankind (ICRC 2005). Meanwhile (since the Second World War), conflicts have become universally gripping, affecting whole civilian populations and also the natural resource supply of the warring countries. The huge casualty and devastation in both world wars of the twentieth century brought to public notice the large-scale environmentally destructive acts of modern war machinery. The devastated landscapes aroused pain and anger, which became clearly reflected in the works of artists, writers, and painters in the aftermath of the war.

The preponderance of research done in the post-World War period analyzed the relationship between conflict and the environment, with particular focus on the environmental consequences of warfare. According to Holdgate et al., the areas covered by this research are:

1. The environmental consequence of current and past wars (hazards from unexploded weapons, physical and biological effects of damage to soil and landscape, human suffering resulting from the disruption of social systems);
2. The environmental impacts of preparation for war (indirectly, through diversion of resources from environmental development, through the impacts of the armaments industry and, directly, through weapons testing and military operations, through the proliferation of nuclear technology);
3. The hazards of possible future warfare (the possible impacts of conventional warfare, nuclear war, chemical and biological warfare, and environmental modification).

In addition to the direct adverse effects of conflict on the environment, it is also true that, in some cases, environmental change is carried out as the deliberate objective in conflict rather than an unwanted by-product. Even in the time of "peace," military preparedness heavily contributes to resource depletion and environmental destruction. The production, testing, and maintenance of conventional, chemical, biological, and nuclear weapons procreate vast amounts of toxic and radioactive substances, which contaminate soil, air, and water (Renner 1991). Military toxins contaminate drinking and irrigable water, deplete fish resources, pollute the air, and destroy the productivity of land. To keep the military in a state of readiness imposes a heavy toll on large expanses of fragile land, marine resources, and air space. Land used for war games is prone to suffer severe degradation. War maneuvers destroy natural vegetation and disturb the wildlife habitat. Bombing ranges transform land into wasteland. The flying of supersonic jet fighters at low levels is detrimental to human health. War preparations can also make large tracts of land extremely dangerous for human use by littering it with unexploded bombs.

Possession of nuclear weapons by the big powers spurred other nations, locked in intense rivalries with their neighbors, to seek their own nuclear

armory. In the view of many strategists, a crude nuclear weapons capability is insurance against defeat in a conventional battle. That idea precipitated the quest for nuclear weapons in the regions of South Asia, the Middle East, Latin America, the Korean Peninsula, and Southern Africa. Of all the various forms of environmental destruction due to military preparedness, the adverse effects of nuclear weapon production and testing are the most severe and enduring. While the direct effects of military toxins on the environment are comparatively localized in nature, radiation from nuclear waste is global in character. Though more than half a century has passed since the Second World War, scientists have yet to find a permanent and safe way to dispose of radioactive waste.

Besides major wars and their preparations, civil wars are also a major contributing factor to global environmental destruction. Large-scale environmental destruction has taken place in most parts of Africa, South Asia, and Central America, due to the presence of civil wars in those regions. This is not only a direct consequence of warfare but also a result of more complicated connections. For instance, internal violence makes it impossible to develop sustainable agriculture; it leads to massive deforestation and the destruction of wildlife. Various multilateral treaties are already in force to constrain military disruption of the environment. However, a large number of countries are not yet party to these treaties. Moreover, new areas requiring regulations are constantly opening up. Current legal instruments do not have control over peacetime military policies and activities, which are actually producing widespread, long-term, and severe damage to the environment.

Conflict Induced Refugees and Environmental Damage

The massive population displacement of the Second World War and its aftermath led to a need for international norms, laws, and institutions in order to protect those “refugees” who had crossed an international border because of fear of persecution or generalized violence in their own countries. There are currently nearly 20 million people recognized as refugees in the world. Mentioning the most familiar cases, they originate from Afghanistan, Iraq, Palestine, Somalia, Burundi, Sri Lanka, Sudan, Western Sahara, Vietnam, Burma, and the former Yugoslavia (UNCHR 2010). In most cases, they have moved to their poor neighboring countries.

The pressure created by the presence of refugees in receiving countries can be considerable. Aside from being a potential threat to the social, economic, and political fabric of the host state and society, they can also be a major source of environmental destruction in the areas of their resettlement.

The poorest people in society are relatively more dependent for their livelihood on renewable resources and are less capable of following conservation procedures. Refugees, generally belonging to this category of society, are more likely to cause environmental destruction than others. Their uncertain residential status, lack of land ownership, and desire to return to their native region reduce their incentive to protect the environment in which they unwillingly find themselves. The refugee's consumption of resources coupled with their unfamiliarity with the local ecosystem often multiplies the harm to the local environment. Three types of environmental destruction are associated with the refugees: deforestation, land degradation, and water pollution (Jacobsen 1994). While the number of international conflicts has been reduced in the past few years, the world is now witnessing an increase in internal conflicts, e.g., civil wars, ethnic conflicts, etc. As a result, the number of conflict induced migrations has increased and simultaneously amplified the threat to the environment in the regions of migrants' settlement.

Environmental Stress and Violent Conflict

Environmental destruction, while not immediately intuitive, can also be the cause and not merely the consequence, or premeditated consequence, of violent conflicts. In the last decade, findings of several major research projects have proved that environmental scarcities are contributing to violent conflicts, particularly in the developing world. Applying different methodologies and studying disparate cases, all these research efforts have tried to establish the conflict inducing potential of environmental scarcity.

As discussed earlier, environmental changes have drastically reduced the availability of cultivable land, green forests, fresh water, clean air, and fish resources. While environmental changes reduce the availability of these resources, population growth and changing consumption behavior exacerbate the stress on these resources. Conflicts over renewable natural resources have grown more potent as demand for essential commodities increase day by day and as the supply side looks more and more insecure.

Most states depend greatly on renewable resources – soil, water, fish, and forests – that sustain much of their economic activity. When one state strives for "development" by acquiring or exploiting more than its share of these resources, it often affects the interests of the other states. Conflicts over renewable resources have already raised their heads in most parts of the world.

The "Cod War" between Iceland and the UK at the beginning of the 1970s over coastal fishing rights nearly put the future of NATO in question (Storey 1992). A similar dispute arose between Spain and Canada in 1995 over turbot fishing, escalating to the use of their naval forces in the middle of the Atlantic. As the demand for fish grows in developing countries, and acknowledging the fact that most developing countries catch their fish from their own exclusive economic zones (EEZ), while developed countries use their distant-water fleets to intrude upon others EEZs, it becomes entirely plausible that conflicts between coastal states and states with distant-water fleets could emerge over the right to harvest.

Besides fisheries, river water resources have the massive potential of bringing various state actors into a conflictual situation. Almost all the major river systems, which are the paramount supplier of water to mankind, are shared by more than one state. When multiple countries are jointly dependent on the same river systems; upstream withdrawal, damming, and pollution may lead to conflict with downstream countries (Swain 2004). There are many interstate conflicts active among the users of international river basins in different parts of the world. Climate change has raised the specter of further flow variation in these rivers, raising the possibility of further hostility between the disputing riparian countries.

Threats to basic food supplies of a country have become cause for friction and tensions between countries in the past. Trade embargoes and other forms of political manipulation have been used to get access to food supplies. Due to the increasing loss of arable land in some countries, food production may substantially decline. Under conditions of a changing climate and growing population, the situation may become even more severe. Many developing countries spend more than half of their income on food, which makes them more vulnerable to increased food prices due to production shortfalls. Thus, changes in productivity of major grain importers and exporters may provoke international tensions and conflict.

Not only scarcity of environmental resources, but also environmentally induced population migration is becoming a source of international conflicts. The loss of living space and source of livelihood due to environmental change could force the affected people to migrate. Environmental changes have already forced a large number of people to move across international borders. This phenomenon has been one of the growing concerns of the international community for some time. Arguably the mass movement of populations may create security concerns for a nation-state. Trans-border environmental migration has several conflict inducing characteristics. Migrants form a threat to the local population by competing for the scarce resources, which in turn becomes a political issue, and creates the problem of the sender and receiver state (Swain 1996b).

As discussed above, several studies show that environmental stress is one of the main catalysts for creating societal insecurity that may result in conflict (Gleditsch 1998; Lee 2009; Machlis & Hanson 2008; Nordås & Gleditsch 2007; Salehyan 2008; Swain 1993b; Wallensteen & Swain 1997a). Meanwhile, the relationship between climate change and armed conflict receives more and more attention. It is often assumed that climate change will intensify environmental stress and might even create new conflicts (Barnett & Adger 2007; Brown, Hammill, & McLeman 2007; Detraz & Betsill 2009; Lee 2009; Nordås & Gleditsch 2007; Raleigh & Urdal 2007; Trombetta 2008). Distinguished researchers working on the regular assessment reports of the Intergovernmental Panel on Climate Change (IPCC) emphasize that "increasing scarcity and variability of renewable resources, sea-level rise, and intensification of natural disasters" are relevant in relation to armed conflict (Buhaug, Gleditsch, & Theisen 2008; Raleigh, Jordan & Salehyan 2008).

Global Climate Change and New Challenges

Climate change is a global environmental problem caused by the build-up of greenhouse gases, particularly carbon dioxide and methane, in the Earth's atmosphere. The world is warming up faster than at any time in the last 10,000 years. The predicted dramatic sea-level rise caused by this climatic change may deprive millions of people of their living space and source of livelihood in the near future. The IPCC has predicted that sea levels could rise at an average rate of 6 cm per decade over the next century. A rise of this magnitude will no doubt threaten the densely populated low-lying

countries and coastal zones of China, India, Egypt, Mozambique, Bangladesh, and certain island states, such as the Maldives. Not only developing countries, but rich countries like the Netherlands and the south-eastern part of the United States will also be affected by the rise in sea level. In an emotional speech to the UN General Assembly in October 1987, Maumoon Abdool Gayoom, President of the Maldives, pronounced that a sea-level rise of only 1 meter would threaten the life and survival of all his countrymen (Gayoom 1987). Among other foreseeable impacts are increases in tropical cyclones. Increased cyclones would also increase the risk of coastal flooding. Climate change can also potentially alter the typical rainfall pattern, which may lead to increased flooding, drought, and soil erosion in tropical and arid regions of the world.

The issue of climate change is high on the world's policy agenda at present. The controversy over the science of global warming and the procedures adopted by the IPCC in collecting data fail to undermine decades of climate research confirming the overall global climate change. Doubts and denial give way to debates about the likely impact of climate change, particularly on developing countries (Barnett & Adger 2007; Salehyan 2008). Agricultural production may become highly vulnerable to climate change, given the other multiple stresses that affect food systems in the South. Response to climate change can also affect particular societies' cultural norms and social practices related to food production (such as farming, hunting, and trading). Moreover, some countries and societies are better than others at formulating adaptation strategies for all aspects of land use practices to safeguard them against the negative consequences of climate change. To address the adverse effects of climate change, the effectiveness and coping abilities of existing institutions matter as well. Within this context, there is general recognition that the poor in the South will be the hardest hit by the impacts of climate change, as they tend to depend more on the natural environment for their livelihood and have limited coping mechanisms and adaptive capacity (Barnett & Adger 2007; Brown et al. 2007; Detraz & Betsill 2009; Raleigh & Urdal 2007; Trombetta 2008). Climate change can also potentially increase the number of poor people by reducing the existing resource base, thereby pulling more people into poverty. It has also been argued that climate change will compound the propensity for violent conflict, particularly in states with poor governance, weak institutions, and low social capital.

Climate change can be linked to conflict in various ways. These include: increased competition over reduced/uncertain water supply, increased competition over agricultural land in the face of reduced crop yields, desertification and rising food prices, large-scale migration as a result of sea-level and weather changes, and diminished capacity of governments to provide services to their people in the face of increasing poverty (Brownet al. 2007; Buhaug et al. 2008; Lee 2009; Nordås & Gleditsch 2007). While the exact impact of climate change is not known, it is clear that it will not only affect access to shared resources but also overall availability of resources.

While climate change may not be the sole cause of conflict or large-scale population migration, it is considered a threat multiplier (Raleigh et al. 2008). Social, economic, and political factors will also affect the vulnerability or resilience of communities. In most of the developing countries, the ability to cope with climate change decreases, and the likelihood of conflict increases, as a result of factors that include: poverty, low levels of education/literacy, lack of skills, weak institutions, limited infrastructure, lack of technology and information, limited access to health care, poor access to resources, over-exploitation of resources, etc. Climate change is likely to exacerbate many of these problems.

Environmental stress exacerbated by global climate change may reduce the availability of natural renewable resources for human consumption. This resource scarcity can potentially cause competition among various groups in society, which may lead to conflict. Moreover, environmentally induced resource scarcity might also lead to the loss of land or other basic needs that are requisite for survival, which may force the affected population to migrate. The report of the UN Commission on Global Governance, which came out eight years after the report of the Brundtland Commission, has made some effort to warn of the looming global environmental crisis. Citing increasing population and economic growth as a source of additional pressure on natural resources and the environment, the Commission on Global Governance pleads for the better management of demographic and economic change to protect the interests of future generations. As the report describes:

> Evidence has accumulated of widespread ecological degradation resulting from human activity: soils loosing fertility or being eroded,

> overgrazed grasslands, desertification, dwindling fisheries, disappearing species, shrinking forests, polluted air and water. These have been joined by the newer problems of climate change and ozone depletion. Together they threaten to make the Earth less habitable and life more hazardous.
>
> (Carlsson et al. 1995: 29)

Since the 1997 Convention on Climate Change at Kyoto, controversy has grown over the possible means of abatement of global emissions of greenhouse gases. Being a major contributor to the present global greenhouse phenomenon, a gloomy tomorrow has forced the European countries to agree to commit themselves to binding targets to reduce emissions of six greenhouse gases within a specific time period (European Parliament 2010). Now the pressure is on their developing counterparts like China, India, Brazil, and South Africa to minimize the use of coal and fossil fuel. Considering the needs and demands of the developing world, the pressure has been quite fruitless. Many big developing countries are refusing to bind themselves to a legally enforceable commitment.

In spite of many meetings and years of negotiations, a great divide still exists among the participating countries. Major issues of contention have unfolded over how much and how fast countries are going to reduce their greenhouse gas emissions, and if they agree, they still need to determine who will monitor it. These contentious issues sound very simple and straightforward, however they deal with two extremely critical questions: life style and sovereignty. On the “life style” front: the North does want to give up and the South wants to catch up. Lack of basic trust between the North and the South is the primary hurdle that has led to disagreement over the sovereignty question. The growing concern about future survival might push uneasy industrialized states into a serious conflict situation with their developing counterparts.

Environment and Conflict: Understanding The Complex Causality

Modern models used to understand the relationship between environmental stress and social conflicts have a complex and circuitous anatomy. As discussed in the above section, the relationship can be investigated in two divergent dimensions. According to the traditional analysis, destruction of

the environment can be seen as a consequence of conflict or conflict induced migration. The earlier approaches looking at this relationship in the post-Second World War period were largely descriptive and could point to the remnants of war in a concrete way. The cause and effect relationships were unproblematic, in most cases quite evident.

But, identifying the causal pathway, which follows from environmental destruction to the formation of actors, issues, and actions that may then escalate hostility into violence is cumbersome and not necessarily very direct. This, as a matter of fact, is a relatively new field of inquiry, and few projects have taken up the issue. Some research works have found causal links in a few cases, but this is insufficient to establish the kind of knowledge that would result in a firm prediction. As Gleditsch argues, "there has been much controversy and little relevant systematic study of this phenomenon" (Gleditsch 1998: 381).

Besides methodological criticisms, some skeptics argue that environmental degradation is not very likely to cause interstate wars. It is true that no instances of inter-state armed conflict have emerged over the issue of environmental degradation or scarcity.[1] However, there are many recent cases of inter-state disputes over natural renewable resources, particularly over commercial fishing, sharing of international rivers, and also trans-boundary air pollution. But all of these disputes among states have fallen short of escalating into armed conflict.

There have been several instances of intra-state armed conflict over scarce natural resources. But, armed conflict is not the only logical outcome of environmental scarcity. Obviously many different forms of action may follow from the moment environmental destruction occurs: debate, demonstrations, out-migration, action to remedy the damage, halting or eliminating the sources of destruction, as well as serious conflicts (Wallensteen & Swain 1997a). It might be argued, however, that a government's response is more determining than many other factors. If governments, for instance, behave repressively, the issues might more often result in armed conflict. This, in fact, is in line with a consistent finding on the relationship between democracy and the absence of war among states (see Russett et al. 1995). Whether it also applies to environmental induced conflicts remains to be investigated.

Conca argues that studies warning of environmentally induced conflict typically end with highly generalized recommendations for environmental

cooperation, but primarily lack a careful analysis of the specific mechanisms or pathways by which cooperation could be expected to forestall or mitigate conflict. Divorced from any serious analysis of cooperative opportunities, the literature on environmentally induced conflict often reinforces a counterproductive zero-sum logic of national security (Conca 1998).

Environmental Scarcity and Cooperation

To date studies that have been published in this field have typically emphasized the emergence of conflict. However, scarcity could also provide valid explanations for cooperation. As resources dwindle parties and groups may come to appreciate the necessity of pooling resources, rather than risking their destruction in a serious conflict. Thus, it has been argued that a number of the greatest civilizations all arose because of their ability to master water for irrigation, drinking, transportation, and production. Dynamic cultures like the Indus, Nile, and Euphrates were all situated along large river valleys (Grey & Sadoff 2007). Thus natural resource management also brings people together. Better use of water, as well as the need to control water, is an important input in joint human construction. Presently, there have been a number of individual cases where there are cooperative arrangements for the better use of available water resources (Wallensteen & Swain 1997b). Thus it is logically compelling to ask why such aspects have been absent from research. A shift of focus is needed from environmentally induced conflict to environmentally induced peace.

Human survival has always depended on the ability to handle challenges and find solutions, more than simply fighting wars, defeating peoples, and conquering territory. In fact, such behavior can help to address problems presently confronting humankind on a global scale. Thus it is pertinent to ask, not only whether humans can cooperate, but also, under what conditions cooperative human behavior might appear.

If environmental stress can lead to conflict, it can also bring cooperation. By realizing the dangers and threats of environmental scarcity, groups and countries may come together and collaborate in pursuit of a common goal. As Katrina Rogers sees, cooperation is an interactive process, which turns a situation from being a potentially destructive conflict into a productive one. Cooperation does not only mean that there is an absence of conflict, but it

also implies that there is a mutual will to address the conflict through communicative and peaceful means. In other words, cooperation generates willingness among the parties to think creatively about their problems, consider mutual problem-solving mechanisms, and negotiate commitments (Rogers 1999).

As Conca (1998) argues, “environmental peace making” can take place on the basis of environmentally induced cooperation. Environmental cooperation may transform mistrust and suspicion among groups to bring opportunities for shared gains and establish a pattern of reciprocity. It can also pave the way for greater interaction, interdependence, and societal linkages. Does environmental cooperation always provide peace-enhancing effects? It is possible that national sovereignty and self-interest maximizing actors may act as obstacles to the appropriate evolution of environmental cooperation. However, if the stakes are sufficiently high, which is the case with many environmental problems, then the logic of cooperation might alter the existing relationship. The diffusion of bilateral cooperation from land and water resources to other areas is being regularly cited in the literature, which supports the environmentally induced peace approach. Establishing a bilateral commitment to share or protect the environment can help to overcome the existing mistrust or suspicion between two disputing countries, and create a milieu of reciprocal gains and estimation of national interests on a long-term basis. Cooperation on environmental issues may also bring people together resulting in trans-border civil society linkages and the building of norms of joint responsibility and bilateral cooperation.

Cooperation to establish protected areas or share international rivers may help to bridge the divide between neighboring countries and pave the way for bilateral and regional cooperation. However, this type of environmental cooperation may not translate into a peace-enhancing relationship. Case in point, despite India and Pakistan's more than 40 years of standing cooperation over the Indus River it has failed to contribute to peace making in that region. In a similar vein, Israel and the Palestinian authority have continued for many years to cooperate on their common water resource, however this has not improved their relations. Similarly, cooperation over the Inguri River has failed to amend the relationship between Georgia and the *de facto* independent territory, Abkhazia. As Brock (1991) has pointed out, environmental cooperation might still require a dependent variable that reflects the state of overall relations more than it influences these relations.

Evolution of The Concept of Environmental Security

The environmental issue has already become one of the most important items on the global political agenda. Threats, real as well as perceptual, caused by environmental changes, have already posed serious challenges to peace and security in most parts of the world. A synthesis of population growth, resource depletion, and anthropogenic changes to the global environment can result in catastrophe. Environmental stress is already affecting global security by degrading habitability in affected areas and forcing people to migrate, which can provoke conflict. Thus, the threat potentials of environmental changes strongly favor the inclusion of environmental issues in modern security discourse.

Environmental security as a concept emphasizes the unit of analysis, suggests that an environmental component be included in the concept of security: national, global, or societal (Tennberg 1995). The concept was officially introduced only at the 42nd session of the UN General Assembly in 1987 (Schrijver 1989). However, international concern to develop this framework can be found as early as the first UN Conference on the Human Environment held in Stockholm in 1972.

In 1977, the famous environmentalist of the American Worldwatch Institute, Lester R. Brown put forward arguments to redefine the concept of national security. In the 1980s, some researchers supported this initiative and suggested the inclusion of environmental aspects in the concept of security (Buzan 1983; Mathews 1989; Ullman 1983). However, the environmental security concept received its due attention only after the end of the Cold War. With the improvement of US–Soviet relations in the mid-1980s, the environment gained a foothold in the public international discourse and media alongside other issues like ideological and military confrontations. In the 1990s, environmental issues became headlines in the global media, particularly in the West, rising to become part of the agendas of political deliberations in both the domestic and international scene, as well as attracting the attention of the research community.

The growing debates and discussions on environmental issues at the different levels of society are welcome developments in spite of their shortcomings. At present, undoubtedly the environmental issues have entered into the international political arena in a forceful way (Dokken & Græger 1995). In spite of initial attempts by a few researchers, environmental issues only came to prominence in public and international

forums after being taken up by activists and politicians. Beginning with the UN Conference on the Environment (also known as the Stockholm Conference), held in Stockholm in 1972, the political leaders were those who brought these issues to the agenda of world politics. Building on the legacy of Stockholm, the past four decades have witnessed a number of political initiatives in this vein. Various multilateral conventions or regimes have been held to directly address these issues. Environmental security remains a very attractive political slogan and is used frequently in political forums. Due to the ongoing politicization, the concept has assumed a normative character.

The concept has also taken on a normative property primarily because developing countries are being severely affected by environmental problems. This brings a North–South dimension to the debate, which raises a lot of other relevant issues like world trade, debt, aid, socio-political conditions, etc. Political involvement has also produced a socio-cognitive linkage between the environment and security; placing the issue at the table of "high politics" in many countries, particularly in the Western world. This has helped to put the concept in people's minds as well as in the decision-making mechanisms at various levels.

An overwhelming interest in environmental issues in the West has generated suspicion among some researchers. With the end of the Cold War, the critics claim that the search is on for the new fault lines which will become the source of friction in international relations. Samuel Huntington has already identified them along cultural lines and argues that there will be clashes among civilizations – " classical liberal" values of the West, versus the "religious" values of the rest (Huntington 1993). But Huntington seems to have overlooked the growing environmental radicalism in the West, which can bring these countries into dispute with the South. To some, the environmental activism in the West is a ploy to impose constraints upon developing countries' economic development in the name of environmental protection (Lal 1995). Whether or not the use and meaning of the "environmental security" concept is liked, it has undoubtedly received wider acceptance.

The notion of environmental security refers to a comprehensive, multilevel approach to security, both conceptually and operationally (Dokken & Græger 1995). The focus of the discussion and unit of analysis is not only the state but also global, regional, or local actors in a universal

framework. The environmental security concept supports a transboundary approach because, by definition, an environmentally induced security threat can threaten those who live within a geographically proximate area that may cover more than one state (Westing 1989). Air pollution, like acid rain and water pollution or scarcity of international rivers, is a trans-boundary environmental problem that demands a higher level approach, be it regional or global. Many environmental issues also require attention at the immediate local level. Sub-state units or individual initiatives also have important roles in this approach. The focus of the environmental security concept is thus the security of individuals. To attain that security, the whole human environment is being taken into consideration in the new approach.

Environmental Challenges and the State of the International Community

A nation-state is not capable of solving alone many of the environmental problems that it faces. It cannot prevent the destruction of the ozone layer, arrest the adverse effects of greenhouse gases, save endangered species, or even deal with some of its local environmental scarcities on its own. Air pollution, declining ocean fisheries, water pollution and scarcity in international rivers are trans-boundary environmental problems that require a higher-level approach to resolve them, be it regional or global. Thus, a wide range of environmental issues require nothing short of global action.

Environmental problems have persuaded the international community to take collective action at the global level. The past few decades have seen an explosion of international environmental agreements, ranging from narrow bilateral accords to ambitious attempts at global governance. There is an increasing effort taking place to negotiate international conventions that will handle many of the environmental challenges: for example, the Earth Summit in 1992, the Convention to Combat Desertification in 1994, a protocol on Climate Change and convention on international fresh water sharing in 1997. Some of these conferences have resulted in the building of new international institutions.

The 1972 Stockholm Conference, placed the environment as a whole on the UN agenda (Baylis & Smith 2005). The same year, the UN General Assembly decided to establish the United Nations Environment Program (UNEP) in Nairobi, Kenya to encourage and coordinate environmental initiatives among member states and international organizations. UNEP is

the only global UN agency headquartered in a developing country. Since its inception, it has always worked to promote environment and development issues. UNEP acts as a coordinator and catalyst for environmental initiatives within the UN system. However, UNEP is peculiar among UN agencies in having no statute, charter, or convention to define its functions.

UNEP analyzes the state of the global environment and assesses global and regional environmental trends; providing policy advice and early warning information on environmental threats, and promoting international cooperation and action based on the best scientific and technical information available. UNEP works towards the improvement of international environmental law with a focus on sustainable development; including the development of coherent inter-linkages among existing international environmental conventions. Other objectives of UNEP are to advance the implementation of agreed international norms and policies, to monitor and foster compliance with environmental principles and international agreements, and to stimulate cooperative action to respond to emerging environmental challenges. It aims to promote greater awareness and facilitate effective cooperation among all sectors of society and actors involved in the implementation of the international environmental agenda, and to serve as an effective link between the scientific community and policy-makers at the national and international levels. It also works to provide policy and advisory services in key areas of institution-building to governments and other relevant institutions (Gray 1990).

Following the 1972 Stockholm Conference, a number of international conferences were held in the 1970s under the auspices of the UN to address population, food, water, and housing problems. During and after the Conference, developed countries displayed a markedly increased interest in environmental issues. This made many developing countries suspicious as they thought the environmental concern may hamper their quest for economic development. The views of developing countries on global environmental issues are dominated by their desire for economic growth and fear of environmental protection costs. International initiatives to build global regimes on ozone depletion, climate change, loss of biodiversity, and conservation of endangered species are regarded by many developing countries as the Northern agenda. The environmental priorities of the developed countries are different: air pollution, scarcity of clean water, desertification of agricultural land, and toxic contamination. However, for

most developing countries, economic growth, employment, and overcoming poverty have been the dominant concerns. To address the doubts of developing countries regarding the UN's environmental initiatives, the UN established the WCED under the guardianship of Mrs Brundtland.

The report of the Brundtland Commission, as noted earlier, became an intellectual guide for the proceedings at the 1992 UN Conference on Environment and Development, held in Rio de Janeiro, 20 years after the Stockholm Conference. The Rio Conference, popularly called the Earth Summit, was attended by representatives from 178 nations. This 12-day conference extensively debated the causes of environmental problems and the relationship between the environment and development. It also discussed the necessary policy responses and produced the “Agenda 21,” an ambitious set of guidelines for action and goals that carry over into the twenty-first century. The Earth Summit and Agenda 21 stressed that achieving the global agenda of environmental sustainability requires the participation of developing countries as well as industrial nations, and that the North must play a major role in funding investments in sustainable development. Agenda 21 also entrusted particular responsibility to the UN system to pursue the idea of sustainable development. As a follow-up, the UN General Assembly, in a resolution in December of 1992, created the Commission on Sustainable Development (CSD) to implement Agenda 21 (Swain 2007a).

The CSD is composed of 53 members elected for terms of office of three years. The Commission meets annually for a period of two to three weeks. Members of the CSD are elected by the Economic and Social Council (ECOSOC) from amongst the member states of the UN and its specialized agencies. Africa provides 13 members, whereas 11 are from Asia, 10 from Latin America and the Caribbean, 6 from Eastern Europe, and 13 from the Western world. One third of the members are elected annually and outgoing members are eligible for re-election. Non-member states, UN organizations, accredited inter-governmental and non-governmental organizations also attend sessions of the CSD as observers.

The CSD's primary objective is to act as an independent institution to monitor the progress of nation-states in implementing Agenda 21. Besides the task of follow-up and national reporting, the CSD is also entrusted with some aspects of coordinating the UN system. One of its objectives is to promote dialogue and build partnerships for sustainable development with

governments, the international community, and the major groups identified in Agenda 21 (Lafferty 2004). CSD is not a decision-making body in itself. It can only provide advice and recommendations to the UN General Assembly through the ECOSOC. However, the presence of the CSD has made it possible for the discussion on issues involving environment and development to take place at the highest level. It has provided a platform to bring together different sectors like NGOs, pressure groups, politicians, diplomats, and experts who are concerned with sustainable development matters.

In April 1994, the first global conference on sustainable development and the implementation of Agenda 21, the "Global Conference on the Sustainable Development of Small Island Developing States," was held in Barbados. The conference highlighted the economic and ecological vulnerabilities of small island developing states, and set forth specific policies, actions, and measures to be taken at the national, regional, and international levels in support of the sustainable development of these states. The CSD was entrusted to consider matters related to the implementation of the outcome of the Global Conference on the Sustainable Development of Small Island Developing States.

Since the Earth Summit, the Global Environment Facility (GEF) has become the primary institution through which financial support is provided to developing countries to undertake sustainable development projects. GEF was created in 1990 to provide funds to developing countries to support their environmental projects, which would bring an overall benefit to the globe. It did not provide any support to address localized environmental problems in developing countries. This tri-agency fund brought together the UNEP, United Nations Development Program (UNDP), and the World Bank and it was operated by a combination of grant-aid and low interest loans.

At the Earth Summit, the South managed to get some concessions and GEF went through a major restructuring. Sixteen developing countries, fourteen developed countries and two members from the former Soviet Union are members of the GEF's new council. Decisions of the Council require simultaneous double majority: support of 60 percent of the member states and that must include the votes from countries that make up at least 60 percent of the GEF. Developed countries have agreed to share some

power, but they can still veto the projects, which are not to their liking. This limited concession given by the North does not satisfy the South.

Under a common global environmental platform, GEF brings together 182 member governments in partnership with leading development institutions, the scientific community, and a wide range of private sector and NGOs. In 1994, 34 nations pledged US$ 2 billion in support of GEF's mission to protect the global environment and promote sustainable development. At present GEF manages most of its grants through four key funds: Global Environment Facility Trust Fund, Least Developed Countries Fund, Special Climate Change Fund, and Adaptation Fund (GEF 2010).

GEF focuses its attention upon political barriers that otherwise restrict international environmental cooperation. The South, along with a number of NGOs, has a major input in its decision-making compared to its role in other Bretton Woods Institutions. However, GEF's location within the World Bank premises in Washington DC has raised concerns and suspicion among developing countries regarding its accountability and transparency. The World Bank is the world's single major source of development assistance by far. In spite of the Bank's significant contribution in facilitating economic development, it has drawn heavy criticism for funding numerous, ill-conceived, environmentally unsustainable projects. Since 1992, the World Bank has tried to improve its environmental image and has continued to adjust its policies and organizations as the sustainable development paradigm has gained greater legitimacy internationally, however, serious doubts still persist over its funding procedures and priorities.

In June 1997, the UN General Assembly's Special Session reviewed the progress since the Rio Summit. This Session was attended by 65 heads of state, but its conclusion was very alarming. Very little progress was found to have been made towards the implementation of goals outlined at the first Earth Summit. In pursuance of UN General Assembly Resolution 53/242 of July 28, 1999, the First Global Ministerial Environment Forum was held in Malmö, Sweden from May 29–31, 2000. In 2002, the World Summit on Sustainable Development (WSSD) took place in Johannesburg, South Africa, 10 years after the first Earth Summit in Rio de Janeiro. In its report, WSSD, while acknowledging “the deep fault line that divides human society between the rich and the poor and the ever-increasing gap between the developed and developing world pose a major threat to global

prosperity, security and stability," asked for "more effective, democratic and accountable international and multilateral institutions" to achieve goals for sustainable development (Johannesburg Summit 2002). It is perhaps appropriate that the UN Earth Summit returns to Rio de Janeiro in 2012 with sustainable development governance and green economy as the key topics, while the world is going through both a serious financial crisis and a food crisis. Most of these international conferences accept the vast discrepancy between commitments and action; they set and stress goals and targets agreed by the international community in relation to environment and sustainable development.

Continuing efforts of the international community since the Stockholm Conference have facilitated some cooperation among countries to address global environmental concerns. However, the international community has been largely ineffective in brokering an effective international response. Even the international community has failed to achieve an effective framework to manage climate change and global warming, which is undoubtedly the worst environmental problem confronting humanity at the present time. Moreover, the environment and development situation in the world continues to deteriorate further. The increasing decline in the volume of aid due to the recent global financial crisis and the absence of any progress in technology transfer has brought dissatisfaction and concern among developing countries. The outcome of international effort through a series of recent UN sponsored conferences to manage climate change at the global level has been both effective and ineffective. These conferences have put the issue of environmentally sustainable development on the agenda and made solid statements while raising global awareness about climate change. However, they have yet to establish effective international institutions to undertake concrete actions to address global environmental concerns.

A global partnership which strives for the division of responsibility between developing and developed countries within the strategic framework for sustainable development has not yet taken proper shape. Global climatic change is an environmental problem of potentially devastating proportions. Evidence of global warming is coming in thick and fast from all over the world. At the same time, a cloud is gathering over the debate on the means to abate the emissions of greenhouse gases. Many developing countries and some developed ones consider limiting emission of greenhouse gases as stipulated by the Kyoto Protocol not to be to their

advantage. Climate change is a major threat to humankind, which needs to be confronted by global cooperative efforts not by confrontational behavior.

The international community needs to move fast to translate concern for the environment into greater global cooperation. To transform concern to action, there is a need to strengthen international institutions, which possess the capacity to make binding decisions in a democratic manner. It is also true that most developing countries are sensitive about compromising their sovereignty for global environmental issues, fearing that they will restrict their freedom to determine their own development strategies. To get the support of the South, the developed world should show real concern and undertake several concrete actions to build mutual trust and confidence.

Despite rapid growth in some developing countries, particularly in Asia, the income gap between the industrialized world and developing world continues to grow. Existing patterns of North–South economic relations have been a crucial element in the political context of global environmental politics. Countries in the South are, in general, more concerned with their economic growth and are suspicious of the environmental agenda of the developed world. Though poor developing countries face different challenges for sustainable development than industrialized countries, it does not relieve them of responsibility for their own consumption and production patterns. There is an urgent need to move fast to translate concern for the environment into greater global cooperation.

International organizations and institutions have been promoting global regimes to better manage climate change and achieve sustainable development. However, they don't provide sufficiently coherent policy-making and they lack the authority and power to implement the principles of these regimes. An Environmental Security Council is needed to effectively coordinate among the various agencies that address environment and development issues and forcefully monitor the compliance of the accepted regimes. The worldwide civil society movement is continuing to increase its influence on global actions on environment and development. With their increasing number, political sophistication, and effective trans-boundary cooperation, civil society groups are expected to play a significant role in mobilizing stronger international policies and programs to achieve sustainable development. Active encouragement and facilitation should be provided to the South based civil society organizations to further contribute

to this process. These organizations should also be included in the institutional decision-making mechanism of bodies like GEF.

Increasingly, international aid agencies have begun to realize the fundamental environmental consequences of growth. The environment is now accepted as a significant factor with potentially serious constraints on long-term growth. Thus, both the substance and strategy of foreign aid should be shaped by a concern for identifying and supporting development strategies that don't threaten environmental balance in developing countries. Global security is an integrated concept, which includes potential sources of concern for the peace and development of all participants. The industrialized world, in particular, must strive to see beyond national security and towards global security. Because of the economic and technological capabilities industrialized countries possess, their cooperative effort to address the environmental threats around the world will have greater effect on threat reduction than the efforts undertaken by developing countries. The new strategy must be not only to reduce the threats but to also emphasize capacity building initiatives that can confront them.

The serious threat of climate change makes a strong case for increasing international cooperation on environmental and developmental matters. International relations have become significantly more global and interwoven since the beginning of the twenty-first century. The crude power of a state is no longer enough to meet the present environmental and climate change challenges. Security defined in military terms is no longer a formula for prosperity and peace. Nation–states' efforts to address environmental threats will not succeed without being supported by cooperative action at the international level. The multidimensional nature of climate change and global environmental stress demands that an integrated security approach be adopted.

3Water Wars

Conflicts of the Twenty-first Century?

Increasing Scarcity of a Critical Resource

Water is critical for human survival, economic development, and the environment. Certainly, few other resources affect so many areas of the economy or human and environmental health (Feder & Le Moigne 1994). We require water to grow grain, to get energy, and to run industries. Water can mean the difference between life and death. It can be the cause of cooperation or conflict and it can bring prosperity or poverty. Much of human history is caught up in the struggle for water. Despite its importance, water is rarely seen as a resource in the same manner as many other natural resources. In most parts of the world, its availability is simply taken for granted.

Seventy-five percent of the Earth's surface is covered in water, with the total water available to our planet put at some 1.41 billion km^3. However, most of it is saltwater, and much of the remaining quantity is stored in ice caps, glaciers, underground, within soil, in the atmosphere, and in living beings. Excluding lakes, only about 2,000 km^3 of fresh water, found principally in rivers, is available for human consumption. The hydrological cycle regulates the temporal and spatial distribution of renewable fresh water. Nevertheless, there is a serious imbalance in the regional distribution of water resources. Annual run-off in North America is 17,000 km^3 while Africa has only 6,000 km^3.

More than 80 percent of the total global run-off is concentrated in the northern temperate zone, which hosts a small portion of the world's population. In the tropical and arid areas, where most of the population

lives, the remaining water run-off resources are also distributed unevenly. Almost all of the developing countries are in the arid, semi-arid, and tropical regions; many of them are facing severe water shortages. The world's population is now increasing by about 78 million people every year. As the World Bank Report states, 95 percent of future growth will take place in developing countries in Africa, Asia, and Latin America (Bongaarts 1997). This high population growth in the developing countries has multiplied pressure on fresh water resources. This problem is further exacerbated in these regions by their drive to achieve rapid industrialization, massive urbanization, and agricultural intensification.

Developing countries are increasingly meeting growing water demand by building reservoirs for water storage, using a canal to divert water from one area to another, or extracting ground water. The requirement for hydro-energy and commercial fishing has also contributed towards human intervention in the management of water. The first recorded human-built dam was constructed in Egypt some 5,000 years ago. However, in the twentieth century the construction of dams increased tremendously to meet the growing water demand. In 1997, there were more than 36,000 dams in the world. Dam-building, which has become obsolete in North America and Western Europe, is still considered the panacea for water shortage problems in many developing countries. Moreover, these dams and reservoirs are becoming larger and they have brought a series of environmental consequences to their sites. Besides triggering earthquakes, they build up soil salinity, change groundwater levels, and create water logging. The problem does not end there. Dam building bears a high human toll as well. Dam projects submerge vast areas of land and forest and displace their inhabitants. There are millions of people who have lost their homes and livelihoods due to these projects (Swain 2010a).

The developing countries are primarily agricultural economies. To provide food for their growing population and also to achieve food security, these countries use proportionately more water in the agricultural sector than the industrial sector. Water requirements differ considerably from agricultural production to industrial production. Much of the water withdrawn for industrial purposes returns to the natural water systems for the use of other consumers. But, the same is not true for water withdrawn to support the agricultural sector. If we take purely consumptive use of water into account, then agriculture consumes 86.9 percent of the world's water

withdrawal, while the industrial share accounts for only 3.8 percent. In the case of the industrial sector, the withdrawn water returns to its original source after cooling the plant, so the cause for concern is not about the increasing volume of water withdrawn, but the discharge of heated and polluted water back into the system. In the industrialized world, where the per capita water availability is relatively abundant, the water supply is polluted by various human activities. In the developed countries, the water quality not the quantity is the major issue (Swain 2001). However, the developing countries are also increasingly diverting larger portions of their fresh water from the agricultural sector to urban and industrial sectors.

Hundreds of urban centers in arid regions of Africa, Asia, and Latin America have grown beyond the point where adequate water supplies can be drawn from local sources. Poor management and distribution systems also contribute to the problems of water scarcity in these urban centers, requiring that water be diverted from distant rivers and lakes to supply these cities (Satterthwaite 1993). Urban and rural areas have significant differences in how much and in what way they use water, both having different priorities of water use. For political and economic reasons, urban and industrial water demands usually take precedence over rural and agricultural needs. These forms of water transfer lead to water scarcity in the rural areas and economic hardship for the rural population. The diversion of water to cities and industrial centers endangers fish habitats, creates loss of wetlands, erodes river banks, and pollutes the water supply. Most importantly, it adversely affects agricultural production, which represents the primary source of sustenance for the population.

Many developing countries already face serious problems in meeting the rapidly increasing water demands of their population. With greater pressure being placed on these water resources, over-exploitation has resulted in acute shortages. Faced with such scarcity, water has increasingly become a source of social tension, causing further competition and creating conflict within and between nations.

Water Scarcity and Conflict

In investigating the link between water resources and conflicts, different scenarios offer an explanation. First, in a conflict, the deliberate targeting of water storage facilities may be directly responsible for inducing water scarcity or reducing the water quality of the opponent. Thus, water scarcity

becomes part of a military strategy and military behavior. Dams and dykes were destroyed during the Second World War, the Korean War, and the Vietnam War. Iran claimed to have hit a hydroelectric station in Iraq in July 1981, as part of the Iran–Iraq War. Dams, water storage, and water conveyance systems were targeted by the warring sides during the 1991 Gulf War. Armies in Yemen (in the 1994 War) and former Yugoslavia (1991–95) targeted water storage facilities to create problems for their adversaries. In January 1993, the Serbian militia seriously damaged the Peruca dam in Croatia (Gleick 1993). It is not only the water supply that is affected by conflicts, fresh water resources also have the potential to cause or contribute to the emergence and/or escalation of conflicts between states or human groups.

Dispute over river water sharing usually comes up among the riparian states on three grounds: quantity, quality, and control. The incompatibilities of the last two issues (quality and control) are relatively easier to address with some financial and technical support. The quality issue, which has been the cause of disagreement among the riparian states of Europe's Rhine and Danube and North America's Colorado River in the past, resulted in peaceful and cooperative arrangements. The disagreement over control of the Columbia River and Parana River in the water abundant Americas has been settled for some time.

Water is not easily replaced – so, the problem of its reduced quantity is more difficult to address. The quantity factor in many cases threatens to destroy existing cooperative arrangements, and forces the parties to take conflicting positions. Global water consumption is rising steeply, and the lack of adequate supplies of water is a problem in many parts of the world. Water tables are falling increasingly on every continent. Several countries, most of them in the South, already face serious problems in meeting rapidly increasing water demand. Rivers are one of the most important sources of fresh water for human consumption. Many countries around the world are already facing serious problems to meet rapidly increasing water demands. In this scarcity situation, river water has increasingly become a source of tension as users are worried about the present or future availability of water supplies.

There are several examples of violent internal conflicts that have emerged over the issue of water. One clear case is the Cauvery River water dispute which resulted in a violent riot between Tamils and Kannadigas in

the southern part of India in late 1991, resulting in several deaths and massive population displacement (Swain 1998a). Asia is presently witnessing a number of violent internal conflicts over river water sharing. For example, a dispute over the sharing of river water has contributed to the ongoing violent separatist movement in the Punjab province of India. The Indus River water also plays a critical role in the Sind separatist movement in Pakistan (Swain 2009). Many developing countries suffering from a growing water shortage as well as a weak state apparatus and strong ethnic divisions will be further predisposed to similar conflicts in the near future. As the statistics suggest, countries with a low supply of fresh water are likelier candidates for civil war than countries with a high supply of fresh water (Hauge & Ellingsen 1998).

Conflicts over water can be observed at different levels of society. Water issues can create new conflicting groups within a state, and in other cases, trigger incompatibility among states. Even though water disputes are omnipresent they tend to become more complex and difficult when they concern international rivers.

Managing Shared Water Systems

The Centre for Natural Resources, Energy and Transport (CNRET), now a defunct UN unit, made a pioneering effort in 1958 to identify international river basins. In its report, *Integrated River Basin Development*, it listed 166 international river basins in the world. A panel of experts on the legal and institutional aspects of international water resources development identified 200 shared river basins in the world in 1975. Three years later, CNRET published a register of international rivers, which also included information about international lake basins, compiling a total figure of 214 internationally shared rivers: 148 flowing through two countries, 31 through three countries, and the remaining 62 flowing through four or more countries. Also, according to this study, 47 percent of the land area of the world (excluding Antarctica) is within these international river and lake basins. On the continents of Asia, Africa, and South America, the shared basins make up at least 60 percent of the land area (Biswas 1994: 189). The CNRET study has become dated because of significant changes in international geopolitical borders and names of countries and rivers in the last three decades. For example, the disintegration of the Soviet Union, Yugoslavia, Ethiopia, and Czechoslovakia has increased the number of

internationally shared rivers and countries in each basin, whereas the reunification of Germany and Yemen has probably led to a decrease in numbers. The CNRET study in 1978 was entirely a desk study, which drew its figures from the then available maps in the UN Map Library. The study is criticized for suffering from many methodological errors, for example, it is nearly impossible to locate all the international surface water systems from the small maps alone (Swain 2004).

The global water crisis is of such magnitude that it is growing into an issue of common global concern. According to the Trans-boundary Freshwater Dispute Database of Oregon State University, approximately half of the global fresh water is available through its calculated 263 international basins in the world: of these 59 are in Africa, 57 in Asia, 69 in Europe, 38 in South America, and 40 in North America (UNEP 2002; Yoffe & Wolf 1999). Overall, 145 countries have territories that include at least one shared river basin. Water has been frequently called the oil of the twenty-first century. Many believe that the dependence of these poor countries on an external water supply may force them to re-orientate their national security concerns in order to protect or preserve such availability. Such potential for conflict has brought global water issues into the arena of "high politics." UN officials and World Bank analysts regularly proclaim that "the previous war was about oil, the next war will be about water" (Morrissette & Borer 2004). Table 3.1 shows the countries that are dependent on upstream water contribution. Turkmenistan (98 percent) and Egypt (97 percent) are almost entirely dependent on water from upstream countries.

Several countries are currently in dispute over the sharing of their common rivers. Some international rivers inducing conflict are: the Jordan, Nile,Euphrates-Tigris, Danube, and Ganges. With the exception of the Jordan basin (Cooley 1984: 3–4), most international water conflicts have not led to physical violence, although the threat of the use of arms in these cases is not uncommon. As early as the mid-1980s, US intelligence services estimated there were at least 10 places in the world where war could break out over the shortage of fresh water supplies, with the majority located in the Middle East (Starr 1991: 17).

Table 3.1 Countries Highly Dependent on Upstream Water Contribution

Country	*Import Component of Renewable Water*

	Resources (%)
Turkmenistan	98
Egypt	97
Hungary	95
Mauritania	95
Botswana	94
Bulgaria	91
Uzbekistan	91
Netherlands	89
Gambia	86
Cambodia	82
Romania	82
Luxembourg	80
Syria	80
Congo	77
Sudan	77
Paraguay	70
Niger	68
Iraq	66
Albania	53
Uruguay	52
Germany	51
Portugal	48
Bangladesh	42

Sources: (Gleick, 1993; Smith, 1995)

Most developing countries require financial and technical assistance to undertake large water projects. Very few countries can undertake expensive water projects on their own, coming at a heavy economic and political price (e.g. GAP project in Turkey, Three Gorges Project in China, and Narmada Project in India). In the post-Cold War period, it has become increasingly difficult to receive external support for a disputed project in an international basin. The end of the Cold War also stopped the alternative source of borrowing from the Eastern Bloc (Swain & Stålgren 2000). Water scarcity has caused a few minor skirmishes but no war has yet been fought. However, wars are very rarely fought over one issue. So, establishing water as the sole incompatible factor that caused violent armed conflict between two nation-states is not that easy. Water might have played an indirect role in a war through its contribution to food scarcity, population displacement,

or ethnic alignment, which can lead to internal disturbances and political instability in the region that result in war. So, the real contribution of water scarcity to a war may not be properly examined through a conflict mapping data set. In-depth studies of individual wars might reveal the real contribution water scarcity has in instigating wars.

Shared water is not only expected to increase competition and conflict, it can also contribute to building engagement and cooperation among riparian states. Due to mutual dependence, the withdrawal or pollution of river water by one riparian state can potentially not only lead to disputes, but also bring cooperation in the basin. Particularly in the last two decades, several competing riparian countries have moved towards establishing regimes and institutions for cooperation. Shira B. Yoffe and Aaron T. Wolf (1999) count the signing of 145 water-related treaties in the last century. There have been a number of very successful cases of cooperation among riparian countries that address pollution and management issues of their shared waters. The agreements among the riparian countries of the Rhine, Colorado, and Parana Rivers are some examples.

The Colorado River water is shared between two riparian states, the United States and Mexico. Both countries signed a treaty in 1944, in which Mexico was guaranteed to receive 1.85 billion cubic meters (bcm) of water annually from upstream United States. Increasing salinity as found in the Colorado water in the early 1960s due to drainage from Arizona's Wellton-Mohawk Irrigation Project. The quality of the water delivered to Mexico fell dramatically. This led to huge crop losses in Mexicali Valley, the region which grows 7 percent of total irrigated crops in Mexico.

In the 1960s, Mexico protested to the United States about the quality of the water. The treaty of 1944 had no specifications on the quality aspect of the allotted water, but Mexico's argument was that the deterioration of water quality on the Mexican side violated the spirit of the treaty. The US position was that their own legal standing was strong, but rather than fight it out legally, the United States began as early as 1961 to look for a solution to the issue. This “soft attitude” of the US administration brought it into disagreement with local politicians of the South-Western United States. There was a fear that any water concession to Mexico might decrease their respective states’ allocation. Following intense negotiations within the country and also with Mexico, President Nixon appointed Herbert Brownell, Jr. as his special representative in August 1972 to find a

“permanent solution” to the salinity problem of the Colorado River water delivery. This led to the signing of Minute 242 of the International Water and Boundary Commission, in which the United States pledged to deliver water to Mexico that would be no more salinated than 300 parts per million measured at the site of the Imperial Dam. To achieve this objective, the United States started building at its own cost a desalinization plant in Yuma, Arizona and a canal to divert some saline water from the Wellton-Mohawk irrigation district to the Gulf of California. As a result of all these measures, the salinity level of the Colorado River in Mexico has now fallen 10 times below its 1960s level (Brownell & Eaton 1975; Mumme 2000).

The Rhine basin comprises nine countries, but the main stream of the river passes through four: Switzerland, France, Germany, and the Netherlands. The river is the major supplier of fresh water to one of the most industrially developed regions on Earth and its water is also used for drinking purposes in the basin-dependent areas. The navigation of this river is governed by one of the oldest agreements in Europe, and since 1918, the river has been open for navigation to all countries, not just the riparians. However, the pollution of the river water became a matter of contention among the riparian states in the 1970s.

Besides other forms of pollution, the Rhine River is affected badly by the emission of waste salt from potassium mines in the Alsace region of France. One mine, in France known as Les Mines de Potasse d'Alsace, was contributing 40 percent of all salt entering the Rhine. This salt pollution was making the river water unusable for agricultural purposes and it posed a serious threat to the river's fish populations. In the early 1970s, salt content exceeded 300 mg/l of Rhine water while it was flowing in Dutch–German border areas.

In 1950, Switzerland, France, Germany, the Netherlands, and Luxembourg formed the International Commission for the Protection of the Rhine against Pollution. This commission coordinates the collection of water quality data and provides recommendations. For the implementation of the commission's advice unanimous agreement is needed among the member countries. Due to this limitation, the Commission has not been able to handle the discontent of the Netherlands and Germany over the salt emission issue. Instead, the political authorities of the basin-states took up this problem.

As French mines were the major culprits of pollution, the negotiation aimed to reduce the salt emissions from them. A conference of the ministers on the pollution of the Rhine agreed to limit the concentration of chloride ions to 200 mg/l within the Dutch boundary of the Rhine River. To achieve this objective, it was decided to reduce emissions by 60 kg/sec from French mines from 1975. The estimated cost of the underground storage, about FF 100 million (approximately € 15 million or US$ 20 million), was divided among the four states of which the Netherlands would pay 34 percent, France and Germany 30 percent each, and Switzerland 6 percent. Before the agreement came into force, France objected to the cost-sharing and this led to a temporary deadlock. Finally the agreement, known as the Convention on the Protection of the Rhine against Pollution by Chlorides, was concluded in 1976. It stipulated that the set objective was to be achieved gradually, but the cost sharing remained as previously agreed. The agreement did not become operative until 1985 due to delays from the French side. There was considerable opposition in France to the plan for the underground storage of the emissions. It was feared that it would affect the aquifers from which the local water supply is drawn (Bernauer & Moser 1996).

The implementation of the agreement resulted in significant improvements in the entire riparian ecosystem, and contributed to the high level of cooperation among the major basin states. Domestic political stability, sound economic conditions, and cooperation in many other matters have played a role in creating such fruitful river cooperation. The cost-sharing arrangement is interesting. Unlike the Colorado River case, the major victim of the salt pollution in the Rhine, the Netherlands, pays the largest share towards the pollution control measures. The country agreed to this, as it is the major beneficiary of the agreement, though it does not contribute to the pollution. The major polluter, France also pays a substantial amount of the expenditure. Germany agreed to pay the same amount as France. It is not as affected by the pollution as much as the Netherlands, so its benefits are less. It is not a major contributor to the pollution either. Most interestingly, the country farthest upstream, Switzerland that has no role in the salt pollution of the river or nothing to gain from the agreement has been a party to the cost-sharing arrangement. This gesture of solidarity by Switzerland might be explained by a wish to

project an international image or it may expect to gain on other subsequent issues.

The Rio de la Plata basin covers 3.2 million km^2 and drains all of Paraguay, most of Uruguay, the northern part of Argentina, the south side of Brazil, and eastern Bolivia in South America. The Parana River is one of the major streams of this basin. It flows from Brazil to Argentina, crossing the heart of Paraguay and after its confluence with River Uruguay, reaches Rio de la Plata. Since 1853, there have been various agreements which have led to free navigation in the Plata and also in the River Parana. In the 1970s, a major disagreement surfaced among Brazil, Paraguay, and Argentina over the construction of a dam on the Parana River.

Brazil and Paraguay decided in the early 1970s to construct one of the largest dams in the world across the Parana River at Itaipu, where the river forms the border between the two countries. This dam project was funded mainly by Brazil who put up almost 90 percent of the capital required, while Paraguay was to receive 50 percent of the hydropower produced. It was the largest planned hydroelectric facility in the world with an estimated 12.6 million kW capacity and the project was scheduled to begin operations in 1983. The Itaipu Dam started operating in 1984 and has a generating capacity of over 12,000 MW, providing 25 percent of Brazil's and 78 percent of Paraguay's energy supply. In 2008, it generated 94,684 MW, the largest amount of power ever produced by a single dam. This project was conceived by the Brazilian authorities to meet their need to supplement the electric power availability of the industrial center-south. However, the project led Argentinean authorities to become concerned, because of possible environmental repercussions in the downstream areas. Moreover, Argentina was planning its own dam further downstream. The Brazil–Paraguay Project would also place regulatory control in the hands of Brazil for the Argentinian project, something which was not easy for Argentina to accept. For these reasons, Argentina demanded prior consultation in the project planning and construction, by referring to international norms. Brazil refused to accept this demand (Hochstetler 2002).

After intensive negotiations, an agreement between Argentina, Brazil, and Paraguay was reached on October 19, 1979 on the Parana River projects. This agreement permitted Argentina to construct the Yacyreta Dam downstream of the Parana River. The agreement of 1979 stipulated the maximum normal level of the water of Argentina's dam and also minimum

flow variations of the Brazilian project. According to this agreement, it was decided that prior notification and technical information regarding the filling of the reservoirs would be available to the parties. It further asked the authorities of the two projects to "establish adequate procedures of operational coordination for the attainment of reciprocal benefits, including the exchange of information" (UN 2005: 70).

A dispute between Argentina and Brazil erupted in the early 1970s over the issue of prior notification and consultation. The incorporation of these principles into the 1979 Agreement brought a peaceful resolution to the disagreement and led to cooperation in the Parana basin. By agreeing to Brazil and Argentina's exploitation of the Parana River, Paraguay has been able to develop its tremendous hydropower potential, and it is said to have become the largest exporter of electricity in the world. It is of vital interest to Paraguay to maintain cordial relations with Argentina and Brazil, since these countries control Paraguay's outlets to the Atlantic Ocean. Brazil's willingness to accept some of Argentina's demands could be explained by Brazil's general lack of interest in the Itaipu Project. Brazil was more interested in developing its future hydro projects. Moreover, the concession to Argentina regarding the issue of prior consultation and notification did not pose any serious threat to its own development plan. The fear of Argentina was that in the absence of coordination, the dam at Itaipu would prevent the execution of its own proposed dam project. Its major concern was not the way in which water was shared but to participate in its control management, and once it was achieved, the door was opened for cooperation.

Agreements on international rivers have not been limited to addressing water quality or management issues. In the last two decades, several international river basins have witnessed a trend towards reaching agreements on quantity allocation as well. Competing riparian countries of the Mekong, Jordan, Ganges, Nile, and Zambezi Rivers signed sharing arrangements in the 1990s. The signing of the agreements on these important rivers in conflict prone regions has been regularly used to downplay the possibilities of "water war" scenarios.

Signing Agreements in the Pursuit of More River Water

An agreement can be possible among the contending riparian states over the quantity allocation of a river resource, when there is enough unused water

left in the river. Agreement on the Indus River system became a possibility in 1960 between two traditional rivals, India and Pakistan, because nearly 80 percent of the river water was running into the Arabian Sea, unused by both basin countries. When the then World Bank President Eugene Black, being backed by his financial clout, got into the negotiator role, India and Pakistan agreed on an important issue for the first time. Of course, it took nine long years for the World Bank to bring both riparian countries to an agreement, but it became possible when greater opportunity for exploiting water resources became apparent with the help of new projects.

The approach of the 1960 Agreement was to increase the amount of water available to the two parties. This future prospect persuaded the two countries to share the quantity of the flow, and agree to the following settlement: the partition of the Indus Basin waters by allocating the three eastern rivers – the Ravi, Beas, and Sutlej – to India, and the three western rivers – the Indus, Jhelum, and Chenab – to Pakistan. Partition of the rivers was more acceptable to the countries than joint management, and both got into the business of water exploitation of their respective shares with the help of Indus Basin Development Fund administered by the World Bank (Zawahri 2009).

In recent years, water scarcity in the Indus basin has increased considerably. Both India and Pakistan have reached the upper limits of their infrastructures' capacity to achieve the maximum use of water resources. The water demand is increasing rapidly within their territories. The ongoing projects upstream of the rivers on the Indian side may affect the water flow to Pakistan and that may introduce new problems with the Indus River Agreement (Swain 2009).

A year before the Indus Agreement, another agreement on the sharing of the Nile River was reached between Egypt and Sudan. The 1959 Agreement become a possibility since a large amount of the run-off remained unallocated from the 1929 Agreement. Based on the newly calculated run-off of 84 bcm of water at Aswan, Egypt got the right to use 55.5 bcm and 18.5 bcm was allotted to Sudan. The remaining 10 bcm were reserved for mean annual evaporation and seepage losses from Lake Nasser behind the Aswan High Dam. The agreement also included some provisions for regulating the filling of the storage created by the Aswan Dam.

Lake Nasser, created by the High Aswan Dam, is one of the largest manmade lakes in the world, with a carrying capacity of 164 bcm of water.

More than 55 million people are directly dependent upon the High Aswan Dam for their water supply. Without the Aswan, Egypt would undoubtedly have experienced dire economic straits. The water reservoir has significantly increased the welfare of the country due to the supply of reliable and adequate water for irrigation and municipal and industrial use. However, with increasing water demand upstream and less availability of unused water, the river has already become a source of serious tension among the major riparian countries. This presented a serious challenge to the workings of the 1959 arrangement in the 1990s (Swain 1997a).

The increasing riparian demand has also raised doubts about the continuation of the existing water sharing agreements on the Euphrates-Tigris River system. The Euphrates and the Tigris are the two largest rivers in the Middle East. Both rivers originate from the Anatolian highland regions in Turkey and flow through the Mesopotamian desert plain in Syria and Iraq. Both the rivers unite in Iraq at Qurna to form the Shatt al-Arab River, which runs into the Gulf. Turkey contributes 98 percent of the water flow to the Euphrates River and 45 percent to the Tigris River.

Turkey and Syria signed a bilateral agreement in 1987 to share the Euphrates River. According to the 1987 agreement with Turkey, Syria gets 15.75 km^3 (500 m^3/sec) of water per year from the Euphrates. In spite of bilateral tension, the possibility of future river water exploitation at the national level persuaded both riparian countries to opt for this arrangement. Since the 1960s, Turkey and Syria have had plans for several large-scale water projects over the Tigris-Euphrates. However, Turkey's massive South-eastern Anatolia Project (GAP) on the Euphrates-Tigris River has given rise to serious doubts to future river water developments on the Syrian side.

The relationship between Syria and Turkey took a turn for the worse after the completion of the Ataturk Dam in 1990, which is part of the GAP Project and the ninth largest dam in the world. The filling up of the lake behind this massive dam caused a 75 percent drop in the downstream water supply for an entire month. GAP is made up of 13 sub-projects, which aim to construct 22 dams including the massive Ataturk Dam. Seven of these sub-projects are being undertaken on the Euphrates River, while Tigris provides the sites for other six. Turkey is now building other dams for this huge project. This project has not only strained relations between Turkey and Syria but also Syria's relations with Iraq.

The April 1990 Agreement between Syria and Iraq at Tunis, regulating allocation of water at the point where the Euphrates leaves Syria, allots 58 percent to Iraq and 42 percent to Syria. With the decreasing run-off from the Turkish side, Syria may be forced to reduce the water supply to Iraq. Iraq asks for 700 m^3/sec of water from the Euphrates River on the basis of its historical claim. Thus, GAP has become a source of common concern for Syria and Iraq, and also a serious future threat to the bilateral water sharing agreements between Turkey and Syria and Syria and Iraq (Swain 1998b).

The hope of further exploitation has enabled not only agreements for the Indus, Nile, and Euphrates-Tigris Rivers in the past; it has also facilitated agreements in recent years over some other shared river basins. The struggle over the control of the Jordan River basin is one of the most discussed subjects in the "water conflicts" literature (Lowi 1995). The need for water and the continuing hostility between Israel and the surrounding Arab states has placed the Jordan River as a central bargaining chip since Israel's creation. In the 1967 June War, Israel occupied the Golan Heights and brought under its domination all the headwaters of the Jordan River and a larger stretch of the Yarmuk River. The occupation of the West Bank also gave control of the lower Jordan basin to Israel. The invasion of Lebanon and the creation of the "security zone" in the south gave Israel greater control over the Jordan and Litani Rivers (Elmusa 1996). Taking advantage of its new hydro-strategic position, Israel began to withdraw more water for its own use from the basin.

On October 26, 1994, the prime ministers of Jordan and Israel signed a peace treaty, which brought an end to the state of war that had existed for almost 50 years between the two countries. The peace treaty between Israel and Jordan included an Israeli commitment to provide additional water to Jordan. With the 1994 Treaty, Israel and Jordan agreed on allocations of water from the Jordan and Yarmouk Rivers and from Arava ground waters. Israel has agreed to transfer to Jordan 50 million m^3 of water annually from the northern part of the country. Both countries also committed themselves to building storage facilities to hold excess water from rain floods as well as building dams for river flow management (Jägerskog 2007).

After being prodded by its Western patrons, the Jordanian regime agreed to sign the peace treaty as it expected Israeli support for resolving – or alleviating – its water shortages. By signing the peace treaty, Jordan hoped

to receive Israeli support to build a water conveyance system bringing salt water from the Red Sea to the Dead Sea that would increase the water level of the Dead Sea and thus preserve tourism, agriculture, and mineral extraction in the region. In 1997, the two states agreed to the Red–Dead Sea Canal Project, but the enormous economic expense of such an undertaking coupled with opposition from environmental groups has stopped the execution of the project, and brought an end to further cooperation over this shared river system.

Since 1975 India and Bangladesh have disagreed over the sharing of the Ganges River waters. The quintessence of the complications lies in sharing the Ganges waters for the five dry-season months (January–May). During the rest of the year, there is sufficient water in the river for both India and Bangladesh. But, in the dry-season, the average minimum discharge at Farakka Barrage in 1975 was estimated at only 1,600 cubic meter/sec, whereas from it, India wants to divert 1,100 m^3/sec to Calcutta port (Swain 1993).

Both countries had devised several working agreements from 1977 to 1988 to share the water at Farakka. The gradual decrease in the upstream flow hindered further agreement for eight years. In December 1996, the Prime Ministers of India and Bangladesh signed the Ganges river water sharing agreement again. Instead of their usual short-term approach to share the dry-season flow at Farakka Barrage, they extended the agreement time frame to 30 years. However, this was basically a political agreement which disregarded the real hydrological flow of the river. The agreement was actually based on the river flow average between 1949 and 1988, but the real flow at Farakka in the 1990s was much less than that.

Bangladesh signed the 1996 Treaty hoping to build a barrage on the Ganges at Pangsha, downstream of Farakka in Bangladesh. India supports this proposal and has offered technical assistance, as this project will help to increase the water storage facilities of Bangladesh and, therefore, reduce its dependence on the dry-season flow. However, Bangladesh also would like to increase the flow from the upstream by building storage dams along the Ganges tributaries in Nepal. Bangladesh has supported the participation of Nepal in the arrangement, but without success due to India's reluctance. On the other hand, India intends to divert the Brahamaputra River to the Farakka Barrage via a canal through the territory of Bangladesh in order to

augment supply. This “Indian” plan has failed to take off, however, due to strong opposition from Bangladesh (Swain 2010a).

The 1995 Agreement signed by the lower Mekong basin countries became a possibility as the slow flowing Mekong River provides a lot of potential for further exploitation (only one dam has been built in one of the tributaries of the Mekong River in Laos). The Mekong River consists of six riparian states, China, Myanmar, Thailand, Laos, Cambodia, and Vietnam. However, under the influence of Cold War politics, especially from the United States, a combined effort to exploit the river has been encouraged since the 1950s for the four lower basin countries, namely Thailand, Laos, Cambodia, and Vietnam. Among them, geographical location places Thailand in an advantageous position compared to the other three lower riparian states of the Mekong.

Thailand's ambition to exploit the river for hydropower and to supply water to its north-eastern region is being spearheaded by the Korat Plateau Water Transversion Project. These Thai plans were opposed by the downstream countries especially Vietnam. With the mediation of the United Nations Development Programme (UNDP), a compromise position was finally reached, satisfying Thailand's requirements. In April 1995, a new statute was signed by the four lower riparian countries, giving birth to the new Mekong Commission. However, the non-inclusion of the upper riparian states – China and Burma – has become a spoiler in this cooperative effort to harness the river.

The upstream country, China, is the most powerful in the basin, and also the least dependent on the resources of the river. China is building a series of large dams in the upper reaches of the river (Chellaney 2011). Encouraged by international donors, the lower riparian countries came together to develop a common strategy to discuss the potential of the basin's water development. The hope was to receive financial and technical support to carry out large water projects in the basin. Unfortunately, the member countries of the Mekong Commission continue to be dependent on donor funds for their operations, as well as on the technical expertise provided by donors. Overall, the management of the basin area is not conducive to sustainable cooperation (Hansson, Hellberg, & Öjendal 2012).

The Zambezi River basin is another example of riparian cooperation based on the hope of the further exploitation. The Zambezi passes through eight countries in Southern Africa before running into the Indian Ocean. Its

riparian countries are: Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia, and Zimbabwe. Within these countries a large number of different peoples and sub-groups build much of their social and economic life around the river. The population of the basin is currently estimated to be 30 million (World Bank 2010b: 7). In several cases, development objectives of different riparian countries are based on mutually exclusive claims for water from the Zambezi basin. Countries like Botswana, Namibia, Zimbabwe, and even South Africa have plans for large-scale withdrawal from the Zambezi.

Zimbabwe withdraws water from the Zambezi River for its coal-fired Huangwe thermal station, despite the fact that Zambia has surplus hydropower. There is also tension over the Zambezi River resources due to Zimbabwe's plan to pipe water from the Zambezi (The Matabeleland Zambezi Water Project) to its drought affected second city, Bulawayo. Furthermore, the intensification of irrigated agriculture in Zimbabwe has reduced the water supply to downstream Mozambique. The threat to Mozambique's water supply is not just affected by Zambia or Zimbabwe's water diversion from the Zambezi. South Africa also has a large water diversion plan, the Zambezi Aqueduct, to meet its water scarcity situation (Swain et al. 2011). South Africa intends to withdraw water over 1,200 km from the Zambezi River at Kazungula through Botswana to Pretoria.

In 1995, the Southern African Development Community (in short SADC, of which all the Zambezi basin states are the members) signed a protocol establishing basic principles for the sharing of the region's water resources. For the Zambezi basin, with UNEP support, the Zambezi Action Plan (ZACPLAN) was drawn up in the 1990s. It aims to ensure sustainable utilization of Zambezi water resources within a sound and balanced environment. Thanks to ZACPLAN and regional legislation, proposals for the establishment of a river basin commission have been developed (Swain & Stålgren 2000). In spite of all these encouraging signs in 1990s, the Zambezi River basin has not yet managed to establish a river basin authority in which all the riparian countries participate. After years of negotiation and pressure from the aid community, on July 13, 2004, all the riparian countries except Zambia signed the Zambezi Watercourse Commission Agreement.

So far only Namibia, Mozambique, Angola, and Botswana have ratified the Zambezi Watercourse Commission Agreement. Others have signed it

but have yet to ratify it. Zambia has been refusing to sign, as it argues that 75 percent of the Zambezi River basin is in its territory, which contributes 42 percent of total run-off. Zambia wants those aspects to be acknowledged and factored in when it comes to water abstraction from the Zambezi River. Besides Zambia, the other major riparian state, Zimbabwe, as Turton argues, is not showing much interest in basin based planning because it may affect its predominant status within the existing Zambezi River Authority (ZRA) (Turton 1999).

Major basin countries, those who have shown their willingness to be part of the proposed Commission, have very little interest in joint river management. Their consent to be part of this basin based initiative is primarily guided by the expected international support for their planned unilateral water projects. Zambia and Zimbabwe are interested in building Batoka Gorge Dam about 50 km downstream of Victoria Falls, that would include a 181 meter high dam, individually providing up to 800 MW of hydro capacity for Zambia and Zimbabwe. The other projects of interest to these two major riparian countries are the Devils Gorge and Mupata Gorge Dam projects. The basin based water cooperation in the Zambezi basin is still a distant dream in spite of agreements arrived at in 1995 and 2004.

In the 1990s, due to challenges by upstream riparian states Ethiopia and Sudan, over the 1959 Agreement, the Nile River was considered by many others to be a situation having great potential to induce inter-state conflict in its basin. However, thanks to the World Bank's initiative, a basin-wide cooperation, the Nile Basin Initiative (NBI) was launched in February 1999, of which all but Eritrea (participates as an observer) are members. The NBI has developed a shared vision “to achieve sustainable socio-economic development through the equitable utilization of, and benefit from, the common Nile Basin water resources” (NBI 2001). Joint development of Nile waters requires significant financial resources. The World Bank coordinated an International Consortium for Cooperation on the Nile (ICCON) to promote transparent financing for cooperative water resource development and management in the basin.

In spite of a great deal of hope and hype over the last 11 years, the NBI has been unable to shift the mindset of the basin countries of the Nile water development from a state centric perspective into a basin-based strategy (Allan & Nicol 1998). The NBI brought all the riparian countries of the Nile River under one cooperative framework, where they officially

expressed their desire to work for a joint initiative on the equitable utilization of the Nile Rivers water resources. But, only after years of meetings and deliberations, in June 2007 did the Nile Council of Ministers express their desire to establish a permanent river basin commission. Though basin countries formally agreed to basin-wide cooperation, they continue to unilaterally advocate and promote large-scale hydro projects within their own territories (Swain 2011). Furthermore, the basin countries have not taken any measures to reduce their dependence on the Nile River water; instead their demand for water is constantly increasing. In spite of the international community's support for cooperative water management of the Nile River, almost all the basin countries, particularly Ethiopia, Sudan, and Egypt, have undertaken unilateral actions to protect their water interests. The emergence of China as a major player in the African development process has also provided alternative possibilities for Ethiopia and Sudan to raise financial and technical support for their own water development projects (Swain & Jamali 2011).

Water-scarce states that share a water body have generally been able to find cooperative solutions in the last two decades rather than enter into violent conflict. Signing agreements on water sharing is easy, the real problem is maintaining them. The compliance part poses real challenges. The agreement needs to stand the test of time. Many agreements in recent years have been reached about how the water should be shared. In spite of reaching agreement, riparian discontent has not dissipated as many upstream countries believe they should have complete control over the flow of the rivers and withdraw water according to their demands. In some cases, where the downstream states are often more powerful in economic and military terms, like Egypt and Israel, they challenge upstream rights over the river flow.

Climate Change and New Challenges for River Water Sharing

Global climate change brings further uncertainties to the smooth functioning, even survival, of these recent international water agreements. With increasing temperatures and rapidly melting glaciers, less water will be available to farms and cities during summer months when irrigation demand is high. Some parts of the globe may experience sizeable reductions in precipitation, or significant changes in the timing of summer and rainy seasons. Not only will climate change increase supply side

pressure for river water management, but global warming may also contribute to the demand side pressure because of increased demands in domestic, irrigation, industrial, and ecological use. As Arnell argues, "climate change may affect the demand side of the balance as well as the supply side" (1999: 32).

As climate change can potentially change water supply and demand patterns, the sharing of the scarce water resources of shared river systems in the arid and semi-arid regions will become the most likely security challenges in the near future. Climate science has been able to provide a basic understanding of how the hydrological cycle will change at the global level, but the predictions of water demand and supplies at the regional and basin level is still far from reaching some sort of consensus. It is a fact that the projected impacts of global climate change over fresh water may be huge and dramatic, but they will not take shape on the same scale in each and every geographical region. Even within an international river basin, the effects will vary depending on the location. This further increases the uncertainties and anxieties over the water availability in the shared river systems. Unfortunately, as Eckstein rightly points out, "both domestic and international water laws and policies are inadequate to meet the challenges posed by this global phenomenon or to adapt to the additional consequences that appear to be inevitable" (2010: 412).

Existing water sharing arrangements between the riparian countries of international rivers in most cases provide some mechanisms to adjust to the run-off variability while agreeing on the allocation of fixed quotas of water. Out of 145 river agreements signed in the last century, approximately 37 percent of them dealt with quantity allocations (Wolf & Hamner 2000). According to Drieschova and colleagues, "variability of water flows can create risks for the longevity of agreements, because it is a change of circumstances which may cause states to change preferences, thereby reducing incentives to follow agreements signed in the past" (Drieschova, Giordano, & Fishhendler 2009: 393). Usually, the regular water sharing agreements tend to be based upon the assumption that any resulting shortages will be for a short duration only and that they can address the issue with temporary reallocation methods (Tarlock 1999). However, climate change can bring not only long-term increases or decreases in the average run-off of the river system, it can also influence the variability of

those flows. This in turn asks for flexible water sharing frameworks to cope with these emerging situations (McCaffrey 2003).

As global climate change brings long-term changes to the volume and pattern of run-off in shared river systems, it becomes crucial to examine the suitability of existing agreements to address this challenge. Climate related changes might require comprehensive adjustments to the ongoing water management structure of international rivers (Gleick 1988). The required comprehensive effort in water sharing arrangements should be flexible and competent in allocating reduced and surplus water flow, maintaining certain water quality levels, sustaining ecosystems, controlling floods, and protecting existing water development infrastructures. Thus, the river sharing arrangements need to make provision for information sharing, conflict management mechanisms, flexibility to adjust to the uncertainties, and aim for basin-based development strategy (Goldenman 1990).

Basin countries must be obliged to regularly exchange data and information in order to monitor and manage changing conditions affecting shared water. In case of any dispute or disagreement over shared water management, there must be means available to basin countries to resolve them as soon as possible. International river water management regimes and institutions require a flexible mandate to plan, operate, and implement strategies, in order to cope with changing climatic conditions. Mitigating or adaptive actions of an individual state to address the climate change effects in an international river basin are unlikely to achieve the objective. The emerging unprecedented situation due to changes in climatic patterns requires basin countries to cooperate and act collectively.

There is no doubt that climate change poses extreme challenges to water resource management in international river basins in the South. Maarten de Wit and Jacek Stankiewicz (de Wit & Stankiewicz 2006) demonstrate the dramatic potential effects of relatively small changes in rainfall due to climate change on the perennial drainage of the river. Moreover, climate change might cause extreme weather events, water shortages, changing sea levels, or melting glaciers that can generate serious threats to critical river water management infrastructure. While the importance of adjustment of flow variability in water sharing is crucial, many of the existing provisions within agreements are not adequate to meet the scenarios that global climate change models project. They lack enforcement and are generally dependent upon “ideal” riparian behavior in the case of these eventualities. The

Community of Interest/Optimum Development approach includes joint effort for the planning, construction, management and maintenance of the basin.

To reach an agreement that meets all the competing and fluctuating demands for water in an international basin is in fact a very difficult task. Hydro diplomacy thus needs to adopt a total resource view where river water is seen as a key input for development and growth in the basin. The challenges are not limited to technical and economic sectors, they also include crucial water sector reform, which is political by nature. Moreover, in the face of climate change, the task of hydro diplomacy will no longer be limited to promoting basin-based regimes and institutions, but will also involve achieving effective water management by finding ways to include local, national, and international policies and practices.

Climate change is rapidly emerging as a critical issue in the sharing of international river water negotiation processes. In the past, river sharing matters could be effectively covered by a few negotiators trained specifically to deal with water issues. Now hydro diplomacy has to not only involve itself in an increasing range of fields (such as energy generation, food production, human rights, and health issues) but must also take into account the possible impacts of climate change (such as precipitation pattern, glacier melting, temperature increase and rising seawater encroachment on fresh water systems) as well. Many small developing riparian countries not only have to survive with the existing power asymmetry vis-à-vis “hydro hegemons” in the basins, they also suffer from a lack of competent “ hydro-diplomats” who can address climate change issues while carrying out negotiations over shared water resources.

Hydro diplomacy, particularly in small developing countries, needs to acquaint itself well with an increasingly diversified climate change policy process. River water negotiators are required to have an in-depth knowledge of the climate change phenomenon and the possible impact it can have on humans, society, countries, and regions. They also need to have an understanding of the existing and emerging schools of thought regarding climate change and its impact on water availability and demand. It is also crucial to identify and classify important actors and groupings and their positions on climate change and water management issues. Moreover, hydro diplomacy must have an overview of the ever-increasing number of legal and policy documents, which are produced by international and regional

organizations about the impact of climate change on water resources, and possible mitigation and adaption measures.

The International Community and Water Resource Management

There have been numerous endeavors to establish and strengthen international institutions and create an international legal framework for the management of international rivers. The World Water Council (WWC) and the Global Water Partnership (GWP) are two major international "water institutions" which were established in the 1990s. The WWC, created in Dublin in 1992, aims to promote an awareness of water issues and works to achieve sustainable conservation and management of fresh water. This non-governmental organization provides an independent forum for exchanging views and information, for sharing experience and concerns, and for recommending actions on water management. While the WWC is essentially a forum for discussion the GWP comprises organizations with financial powers to implement various programs (WWC 2010). In August 1995, the World Bank and the UNDP proposed the creation of this organization providing universal access to all parties involved in water resource management. The GWP brings together a large number of organizations including aid agencies in an informal partnership. The GWP promotes integrated programs at both the regional and national level and helps capacity building and sustainable investment across national boundaries. The Global Environmental Facility (GEF) is also an important funding organization, which seeks to help developing countries protect their environment and water resources. Unlike in Bretton Woods Institutions, developing countries and NGOs have relatively greater influence in the decision-making of the GEF (GEF 2010).

Global initiatives on the matter of fresh water have brought the international river sharing problem to the fore. There have also been numerous individual attempts, for instance by the World Bank, UNDP, UNEP, Food and Agricultural Organization (FAO), and World Meteorological Organization/United Nations Educational, Scientific, and Cultural Organization (WMO/UNESCO) to find ways to successfully share the international watercourses among states. For example, in recent years the World Bank has refused to finance projects regarding disputed international watercourses and has insisted upon agreement between riparian nations. This has increased the incentive among regional actors to

institutionalize cooperation. The UNEP and FAO are currently involved in facilitating cooperation among the international river basin countries, particularly in Africa, whilst UNESCO and the WMO are sponsoring the International Hydrological Program, which assesses the global availability of water.

Besides such institutional support for the management of shared rivers, there is an ongoing process to establish a common legal framework for the sharing of international watercourses at the global level. In the first part of this century, the territorial sovereignty doctrine (absolute sovereignty over waters flowing within a country) and the natural water flow approach (the river belongs to all the riparians) attempted to address the issue of the sharing of international rivers. Unfortunately, neither the territorial sovereignty, nor the natural water flow approach provided a solution as they were both based on an individualistic and anarchical conception of international law. None of these frameworks offered a long-term strategy to assist in mitigating or resolving the conflicting interests between the upper and lower riparians of an international river basin. The failure of these two legal approaches led some to think of sharing the rivers on an economic basis. It led to a community of interest/optimum development approach. According to this approach, the whole river basin is regarded as an economic unit irrespective of state boundaries and the waters are vested in the community of the users or divided among the co-riparians. Under an integrated program of development, a river, dam, or other works are to be located at optimal locations and the benefits accruing from them are to be used by the riparian states that need them. This joint approach includes joint planning, joint construction, joint management, and sharing of expenditure on construction and maintenance. The idea of a single basin approach is attractive to economists and water engineers because it allows them to consider the international rivers as single hydrological units, and plan accordingly. However, there are many difficulties involved in sorting out the externalities among the various riparian nations. The regulation and management of international river basins with so much concentration of power in the hands of non-political commissions is an exception rather than the rule in the inter-state practice. Owing to obvious limitations of states actually agreeing to joint development, not many examples are found employing this approach.

The above three approaches were adopted and implemented in individual cases and due to their various limitations were not feasible for international practice. In the absence of any law to regulate international river systems, the International Law Association (ILA) has made several attempts since 1956 to establish a "principle of equitability" in the sharing of international river waters. This principle advocates reaping maximum benefits for all riparian countries, bearing in mind their economic and social needs. When the ILA compiled a set of rules for non-navigational uses of international rivers (Helsinki Rules) and placed it before the UN General Assembly, it was not approved as a model for sharing international rivers by the member states, particularly because of opposition from the upstream nations.

Instead the UN General Assembly recommended that the International Law Commission (ILC) take up the study of the law of the non-navigational uses of international watercourses with a view to its progressive development and codification. After about 25 years of deliberations, the ILC submitted its draft in 1996 for the consideration of the UN General Assembly. Finally, the Convention on the Law of the Non-Navigational Uses of International Watercourses, adopted by the UN General Assembly on May, 21, 1997, was submitted to the member states for their ratification. Nevertheless, the process has moved along at a very slow pace, only being approved by 24 countries thus far (UN Treaty Collection 2011).

By having both the principles of "equitable use" and "no- harm" in the text, the UN Convention was able to obtain majority support in the UN General Assembly. Stephen McCaffrey describes the Convention as "a basket of Halloween candy: there is something in it for everyone" (McCaffrey 1998). However, whether it will be able to address the issues over the sharing of specific international rivers remains questionable. The major problem may arise in defining the "equitable use" and its conflict with the "no-harm principle."

Even if this Convention is ratified by member states and becomes a legal framework, it will not be sufficient to address the problem of water sharing in different parts of the world. The sharing of international rivers among the riparian countries in different geographical regions is a problem of huge magnitude. Complex water disputes can only be solved by cooperation and compromise, not by a strict insistence on rules of law.

A Multilevel Approach is Key to Avoid "Water War" in the Future

For fruitful and long lasting cooperation on shared waters, a comprehensive approach is needed to address the water scarcity issue. This comprehensive approach includes a series of measures to be taken at the basin level. The basin-based measures include: treating the river system as a single unit, involvement of both state and non-state actors in water management, recognition of social and cultural contexts in water use, clear appropriation rules in water sharing, and an information sharing network among the riparian countries (Swain 1999).

An international river, lake, or aquifer does not, by definition, respect national boundaries and as such, shared water systems should be treated as single units as regards the maximum utilization of their resources. The development of these shared water resources occurs optimally at the basin-wide level and the whole basin should be regarded as one economic, ecological, and political unit irrespective of state boundaries. The regulation and management of basin organizations should be entrusted to an independent body, which is outside the political control of any single riparian state. Management of international fresh water systems should grow beyond the sphere of national sovereignty to achieve the Best Possible Use of Water (BPUW), i.e., efficiency, equity, and environmental sustainability.

Not only states, but also non-state water users, must be eligible to participate as decision-makers in the basin-based organizations. The sustainable use of fresh water requires user participation in all aspects of water policy and management in the basin. In order to construct sustainable basin-based water management institutions, contextual considerations are of the utmost importance. Existing traditions of rain water harvesting, water storing practices, and agricultural patterns are some of the issues to be taken into particular consideration while formulating basin management policy. It is necessary to have a clear set of rules and regulatory measures in the basin regarding water rights and environmental obligation. Basic needs for water must be identified and given priority. In several cases, riparian countries have unequal access to data and information due to differing data accessibility and asymmetric competence to process data. This asymmetric information can be scientific and/or strategic. For the smooth running of a river basin management regime, a functional information-sharing framework is required.

These basin-based initiatives need to be augmented and supported by various nation-state and international measures. Most of the developing countries are exposed to water stress or even water scarcity. The adoption of a supply management strategy addressing only water shortage in the region is nowhere near sufficient. To meet growing demand water use has to be minimized, particularly in the agricultural sector. Riparian states may opt for a planned allocation of agricultural activities to improve the productivity of water in their various regions in order to meet the future demand for food. The demand for the increasingly scarce water resources in the basin needs to be restricted and regularized. The full-cost pricing of water will create quantity restrictions for competing users. It will also force consumers to use water more efficiently than if there were no price tag on it or if it were available at a highly subsidized price.

External intervention and assistance can sometimes facilitate the negotiation of water resource sharing agreements. Riparian countries in the South are unable to establish institutional cooperative arrangements because of their concern regarding existing and future water rights. Mutual suspicion and uncertainties about reciprocal action obstruct constructive engagement. To overcome such obstacles, international actors can possibly provide credible and impartial international assistance to start the process of cooperation. Gradually, the involvement of international actors could help to increase mutual trust and confidence among the basin riparians in order to achieve collective action. Formation of river basin organizations encourages international collaboration and assistance for river water development. As constraints on the resource grow, the opportunity cost for not cooperating is becoming clearer. The increasing scarcity of available fresh water per capita and lack of financial strength in the developing countries may gradually encourage the basin countries to cooperate in order to achieve the optimal benefit of the shared water. Basin-based development of irrigation, hydropower, water diversion, or flood control projects can provide riparian countries with greater net benefits than those they could have achieved through purely state-centric development.

4Protecting the Forest

Promoting Peace or Conflict?

Deforestation: A Global Concern

Deforestation has remained prominent in the global environmental agenda for some time now. The common perception is that deforestation is mainly associated with tropical rainforest degradation. In reality, the clearing of trees from forest land is occurring all over the world, particularly in the developing world. Forests are integral components of a healthy environment. However, historically, deforestation has paved the way for development; nonetheless continued deforestation has serious implications at the local, regional, and global level. Massive exploitation of forest resources is destroying the environment and the source of sustenance of thousands of indigenous people. Decreasing forest cover risks severe degradation of biological diversity and ecological cycles, including nutrient recycling, watershed management, and climate regulation. Unfortunately, the pace of deforestation has not been slowing at the global level as was hoped.

After a comprehensive satellite survey of forest cover in August 2001, the United Nations Environment Programme (UNEP) came to the conclusion that the world has probably lost more forest cover than previously thought. This collaborative survey of scientists from the UNEP, US Geological Survey, and US space agency NASA is the first of its kind using satellite data. The previous global surveys were primarily based on the information obtained from the individual countries. The discrepancy between the countries' estimates and the satellite imagery is quite substantial, even for developed democracies. While 37.5 percent of Canada and 25.2 percent of the United States are actually covered with closed forest, they give their own estimates 45.3 percent and 30 percent respectively (Henderson 2001). The

global forest assessment suffers from a data comparability deficiency, because the individual countries employed different forest assessment methodologies to calculate forest cover. The use of satellite imagery, remote sensing techniques, and ground based survey makes the data incompatible with each other. After analyzing the satellite readings taken between 1990 and 1995, UNEP warned that the world's remaining healthy forest will perish unless there is a “miraculous” change in the attitude of governments and people, and called for an international strategy to save the key closed-canopy forests in 15 countries. The rate of deforestation has decreased to 13 million ha per year during the last decade compared to 16 million ha per year during the 1990s, but it is still taking place at an alarming level (FAO 2010). Net loss of forest area between 1990 and 2010 was greatest in Africa and South America.

In October 2000, the Economic and Social Council of the United Nations (ECOSOC) established the United Nations Forum on Forest (UNFF). In 2006, the UN General Assembly Resolution 61/193 declared 2011 the International Year of the Forest to enhance political commitment on protecting forests (GA Resolution 61/193 2006). In 2007, after intense negotiations, UNFF's members agreed on the first international instrument for sustainable forest management, called the Non-Legally Binding Instrument on All Types of Forests (NLBI). This instrument is considered a milestone as it is expected to have a major impact in advancing international cooperation and sustainable forest management (UNFF 2011). The deforestation issue has remained prominent in the global environmental agenda for some time now. Tropical forests account for the majority of primary forest area. At the global level, the area of primary forest decreased by around 4.7 million ha per year in the 1990s, and by 4.2 million ha per year between 2000 and 2010, which is 0.4 percent of the primary forest area annually over the last 10-year period (FAO 2010). Deforestation has stabilized in the North, but only a very small portion of temperate forest is there. Due to tree planting and natural regeneration of marginal lands, Europe's forest area has increased nearly 10 percent in the last 40 years (EEA 1995). Although managed forests and plantations provide much of the commercial wood in Europe, logging from natural forests is still a common practice in North America. However, because of pollution, about 60 percent of all forests in Western and Central Europe are either seriously or moderately degraded (Fischer et al. 2010).

Deforestation has symbolized the over-exploitation of natural resources. Destruction of nature leads to the lowering of living standards of human beings, especially the poorer section of the society, as they are more dependent on natural resources than other groups. In spite of the adverse effects being generated due to an unsustainable assault on nature, very little is being done to arrest it. Neither inter-governmental cooperation nor numerous non-governmental initiatives seem to have made any substantial difference in reducing forest destruction, particularly in the tropics (see Table 4.1). Unfortunately the Thai saying is true: "Experience is a comb which nature gives to a man after he is bald."

Causes of Deforestation: Population Pressure, Poverty, and Conflict

In the pre-industrial period, civilizations relied on wood in the same way that industrial societies rely on fossil fuels. Wood was used not only to construct buildings, but also to build ships and to provide the energy needed in the production of a wide variety of products (Perlin 1989). Cutting down trees is part of an age-old human quest for shelter, food, and warmth. It is a common but mistaken belief that deforestation is a recent occurrence, gaining momentum in the tropical regions of the world since about 1950. As a matter of fact, deforestation has a long history, and stretches back to the time when humans first began to use fire deliberately, probably half a million years ago. Clearing forest for cultivation and human settlement has historically contributed to deforestation in each and every continent. The urban-centred "civilizations" arose by deforesting areas in the Far East, South Asia, the Mediterranean basin, meso-America, and the Andes (Westoby 1989). However, the capitalist economy in Europe since the fifteenth century has led to a massive escalation in deforestation. Vast areas of forest were cleared for agricultural cultivation. This European system of forest exploitation was adopted in the United States in a big way in the nineteenth century. Canada, New Zealand, South Africa, and Australia then followed the same practice. The commercial and military penetration of Europe into the Far East, Africa, and the Americas over the last 500 years also accelerated the deforestation of these areas. Societies that were not affected by European penetration have also exploited their forests at a rapid rate, however comparatively slower than European countries. Forests everywhere continue to be exploited to meet increasing demand.

Table 4.1 World's Decreasing Forest Cover, area in 10,000 ha

Region	*1990*	*2000*	*2005*	*2010*
World	4 168	4 085	4 061	4 033
Asia excl. Middle East	551	544	557	565
C. America & Caribbean	102	95	93	91
Europe	998	1 006	1 009	1 013
Middle East & N. Africa	33	34	35	35
North America	606	610	612	614
Oceania	199	198	197	191
South America	938	896	874	856
Sub-Saharan Africa	742	701	684	667
Developed Countries	1 808	1 822	1 826	1 827
Developing Countries	2 360	2 263	2 235	2 206

Source:(FAO 2010a)

There is some confusion regarding the definition of deforestation. The Food and Agriculture Organization (FAO) defines deforestation specifically as the complete clearing of tree formations (closed or open) that leads to non-forest land use (Singh 1990). This definition is strongly contested by conservationists, biologists, and ecologists. Instead, they consider deforestation as the degradation of "entire forest ecosystems," which includes wildlife, gene pools, and biomass stocks (Myers 1989). Within this broad concept of deforestation, if the ongoing exploitation continues, as a UN study warns, "most tropical forest will disappear sometime during the twenty-first century, or be reduced to small patches with only a few blocks of primary tropical rain forest remaining in inaccessible or effectively protected areas" (Barraclough & Ghimire 1995: 12).

Deforestation takes place in several ways. Large tracts of forest are cleared for agricultural purposes, grazing cattle and planting crops. Massive population growth over the last century is commonly blamed for the increasing demand for forest land. The world population is projected to stabilize at the end of this century with nearly 9 billion people. There has been serious concern about the consequences of human population growth for the environment and for social and economic development. With the population continually increasing in the South, the growing number of poor are forced to look for new land in virgin forests (Lambin et al. 2001).

Small farmers cut down trees. But, the role of the logging industry is not small either. Trees are cut down to sell as timber or pulp to make paper. In

temperate regions, commercial forestry is mostly responsible for deforestation. Logging for commercial purposes in the South also reflects the demands of developing countries to compete and develop within the global economy. Government support of beef ranchers in Amazonia has been a major cause of deforestation in that region. In the 1970s and 1980s, fast food corporations were making great demands for more beef and governments were in need of cheap revenue, forest areas were therefore converted into cattle ranches.

Poverty, starvation, and misery have contributed strongly to an increasing pressure on forest resources. As Dudley and others argue, the reason why people destroy or damage forests is because they don't seem to have another option. The benefits of destroying the forest outweigh the costs. Factors such as poverty, unequal land ownership, education, and population form the underlying causes for this behavior (Dudley, Jeanrenaud, & Sullivan 1995). Rapid forest degradation causes stress for countries like Brazil that is home to the world's largest forests. This situation is further deteriorated by a development model, which has led to a concentration of wealth, disadvantaging the poor and the underprivileged who are dependent on the forest for their survival (Kengen & Mery 1990). The same problem also affects Southern Africa and South-East Asia. In South-East Asia, there are large numbers of people who have a desperate need for land. The increasing populations of most developing countries are disproportionately in search of new arable land. Shifting agriculturalists are also confined to an area too small to allow adequate fallow periods. This problem is further exacerbated in many cases by the maldistribution of land (Porter 1994). Poverty and landlessness force the people to encroach on forest area.

While most industrial wood is obtained through the commercial market, fuel wood is obtained by self-collection. Temperate developed countries mainly produce the industrial wood, but the developing world is the largest producer of fuel wood. Fuel wood accounts for 80 percent of all wood used in developing countries. Although fuel wood collection doesn't completely destroy the forests, it impoverishes the community significantly in the long term. The other causes of deforestation are some supplementary ones. The search for minerals, fossil fuel, and hydro-power also contribute substantially to deforestation. Large-scale mining in the Amazon, Congo, and Zambia, and oil exploration in Ecuador have destroyed large tracts of forest land. The construction of new roads in the forest leads to clearing of

trees on either side of the road. These roads also provide access to dense forest, which facilitate deforestation. Construction of large dams and their reservoirs is another important factor in deforestation.

War is another contributor to the deforestation process. Japan lost most of its forests in the Second World War. The Indochina conflict of the 1960s and 1970s also destroyed large areas of forest. Nearly 2 million ha of Vietnamese forest were destroyed due to bombing and the spraying of defoliant (WCMC 1994). Armed conflict in Nicaragua and El Salvador in the 1970s and 1980s directly resulted in considerable forest destruction. All these conflicts displaced a large number of the population, who cleared more forest areas in order to survive. Forest provides an easy refuge for a large-scale influx of refugees and internally displaced people. These displaced people clear the forest land to build houses, grow crops, and collect fuel wood.

Forests areas are increasingly being encroached upon by industrial and residential development. Some countries, for various reasons, encourage their peasants to relocate to forests areas to establish themselves. Ecuador, Peru, and Colombia encourage their people to resettle at Rio Putumayo, Bangladesh sponsors the migration of its population to the Chittagong Hills. Forests are being cleared as populations grow and urbanization expands. However, population growth, as some may prefer to argue, is not the only reason for the increase in deforestation. High population density in the Andean highlands causes deforestation in the Amazonian plain, but this effect of population growth does not manifest itself in the Indonesian island of Java. As Roper and Roberts argue in their paper for the Canadian International Development Agency (CIDA),

> the effect of population pressures as a predisposing condition for deforestation is dependent on the influences of the carrying capacity of the land, the prevailing land use practices, the importance of forest-derived products and services to the local people, and the strength or weakness of the institutional framework in place.
>
> (Roper & Roberts 1999: 13)

In short, population pressures play a decisive role as one of the driving forces in the deforestation process.

The Effects of Deforestation: More Poverty and Conflicts

Forests are an integral component of a healthy environment. There is an increased recognition of the fact that trees are essential for the health of the planet. Deforestation in some cases may provide beneficial results. As Roper and Roberts argue, given the right mix of social needs, economic opportunities, and environmental conditions, it can be a rational conversion from one type of land use to a more productive one (1999). Historically, deforestation has contributed to the expansion of arable land. Without deforestation, it would have been impossible to provide food and shelter to the world's rapidly increasing population. However, unsustainable deforestation on a massive scale in recent years has produced multiple societal and environmental problems. While some may consider deforestation a local or regional problem, its consequences can be global.

At the local level, deforestation leads to soil erosion and that makes soil less fertile. In the absence of tree cover, topsoil is lost to the wind and rain. That increases surface evaporation and reduces the moisture content of the soil. It brings changes in water tables, which places further stress on the remaining trees. The loss of trees also drives away species that perform the recycling of soil nutrients. A combination of deforestation and its effects on the local environment form an important component of land degradation. Loss of forests is also responsible for an increased frequency in natural disasters: droughts, floods, and, even, high winds. Deforestation affects the climate significantly, in particular it plays a major role in the water cycle. The deforested area heats up faster, which enhances the formation of clouds and ultimately produces more rainfall. Deforestation has also been a major factor in other environmental issues of global concern. Forests are home to much of the world's biodiversity. There is no doubt that deforestation deprives the world of countless species, destroying crucial biodiversity and losing species with potential uses in medicine, agriculture, and industry. The burning and felling of the forests is also exacerbating the greenhouse effect. Of an estimated 8 billion tons of annual carbon discharge, mostly in the form of carbon dioxide, burning fossil fuels accounts for 6 billion tons, while deforestation and forest fire contribute the remaining 2 billion tons.

Deforestation threatens the existence of indigenous peoples in many parts of the world. The cutting down of the forests jeopardizes the way of life and survival of the indigenous communities. Among these are the Kyuquot of the Amazonia, the Saami of Lapland, and the Kyuquot of Vancouver Island's temperate rainforest. There have been more extinctions of tribal peoples in

the twentieth century than any other, with Brazil losing 87 tribes between 1900 and 1950 (*IBTimes* 2011). Even in the rare cases when forest dwellers are compensated for this loss, the changes visited upon their cultures by the inexorable expansion of industrial culture are devastating. In many regions, traditional land rights of forest people are not recognized by law or honored by the authorities. When the forests disappear, these people lose their access to plants and animals, the source of their survival. Many forest based customary occupations become obsolete due to deforestation. Logging affects the collection of non-timber forest products. Many timber trees are themselves the source of many non-timber products. Logging also destroys the trees that are not commercially valuable as timber. The loss of these activities can upset local communities and bring economic instability to the local population. Thus, there are many cases of reported conflicts between the forest people and environmentalists, on the one hand, and the logging companies and the state, on the other.

Forests have various beneficial effects and deforestation has various negative effects, which are not limited to the forest areas. According to Mather and Chapman, " the total economic value of the forest resource is the sum of use value (including that of 'minor' forest products and services such as recreation as well as of wood), option value, bequest value and existence value" (Mather & Chapman 1995: 117). Rarely do countries undertake a full-scale valuation of their forest. Sweden, which has done a full valuation, estimated in the early 1990s the net value of wood production at US$ 1.2 billion, compared with nearly US$ 550 million for other products. Among the other values, mushrooms and game birds of US$ 180 million, recreation US$ 250 million, and the value of preserving species and virgin forest is US$ 115 million (Wibe & Jones 1992). As shown in Table 4.2 the use of the forest is divided into three categories and the forests should not exclusively be viewed as the source of wood production. Thus the adverse impact of deforestation can be multifaceted in nature.

Table 4.2 Various Uses of Forest Resources

Traditional Use and "Minor Products"	*Industrial Use*	*Services*
Fodder, grazing, shifting cultivation	Saw logs	Soil conservation
Food – fruit, seeds, nuts, honey, game	Pulpwood and other industrial wood	Water conservation and watershed protection
	Fuel wood and	Nature conservation and

	charcoal	biodiversity
Medicines	Cork and turpentine	Amenity
Fibers		Recreation and tourism
Gums, dyes, oils, waxes, and resins		
Building materials		
Wood for domestic utensils and furnishings		
Fuel wood		

Source: (Adapted from Mather and Chapman 1995)

Continued deforestation poses serious implications at the local, regional, and global level. Unsustainable exploitation of natural forest resources is destroying the environment and the source of survival of thousands of indigenous people. Decreasing forest cover causes severe losses in biological diversity and ecological services, including nutrient recycling, watershed management, and climate regulation. Unfortunately, the pace of deforestation has not been slowing at the global level as was as was estimated by the by the national forest inventory systems (FAO 2010a). Moreover, the situation in some countries is much worse compared to others. As an FAO study calculated more than a decade ago,

> at constant rates of deforestation, the forest cover would be down to half of its 1995 extent around 2004 in Lebanon and Jamaica; around 2005–10 in Afghanistan, the Comoros and the British Virgin Islands; around 2014–18 in St Lucia, the Philippines, Haiti, El Salvador, Costa Rica and Sierra Leone; and around 2019–24 in Pakistan, the Bahamas, Paraguay, Thailand, Nicaragua, Jordan and Malaysia.
>
> (Marcoux 2000)

The International Community and Measures Taken against Deforestation

The world has recently witnessed several national and international initiatives to address unsustainable deforestation. At the international and multilateral levels, several measures and approaches have been taken by the World Bank, UNEP, FAO, and United Nations Commission on Trade and Development (UNCTAD) to promote the sustainable use of forests. In the mid-1980s, two international initiatives were undertaken to reduce the

industry's impact on tropical forests: the Tropical Forestry Action Program (TFAP) and the International Tropical Timber Organization (ITTO). Since the Earth Summit in Rio de Janeiro in 1992, the forest conservation issue has featured prominently on the global agenda.

At the national level, some developed countries have put some supply side restrictions on tropical timber imports, with high tariffs and even, in some cases, labeling them by country of origin and species. The Forest Stewardship Council (FSC) is an independent, non-profit, non-governmental organization founded in 1993 as an international accrediting organization for timber certification. The first certifiers were accredited by FSC in 1995. Timber certification can enable consumers to choose between a sustainable product or paying a premium for a sustainable product. However, certified forest products as a proportion of total consumption is still very low. The largest export markets for certified forest products are the UK, Germany, and the Netherlands (Vilhunen et al. 2001). While the efforts of environmental NGOs have been successful in establishing the Global Forest and Trade Network and the demand for FSC certified forest products is gradually growing in the North, this development has caused concern in the South. Many developing countries are becoming increasingly worried that eco-labeling schemes may have trade impacts (Elliott & Viana 1996). Some exporters, like Indonesia, have tried to overcome this problem by providing government subsidies to the logging industry. However, this has led to smuggling of timber and also tampering with export records (Repetto 1990). In South-East Asia, where domestic and regional markets are rapidly expanding and where Thailand and the Philippines have become major timber importers, the consumers in Bangkok or Manila do not hold the same view on timber certification as their counterparts in London or Berlin (Elliott 1995). Campaigns at the national level in some developed countries, like Austria and the Netherlands, have sought to ban unsustainably produced tropical timber, but have been unsuccessful due to criticism of their discrimination against tropical producers.

FAO has taken a leading role in promoting “social forestry.” The World Food Program and ITTO are also supporting this initiative. Social forestry is described by Barraclough and Ghimire as,

> a new name for age-old practices of combining tree growing with crop and livestock production in time and space, and for the cooperation of members of a community in protecting, and managing and sometimes

> planting certain forest areas to meet their needs for fuel, fodder and other forest products and also for exchange or markets.
>
> (Barraclough & Ghimire 1995: 162)

Social forestry is not a new practice. Even in the early eighteenth century, rural people kept aside land for communal forests in Europe. The term "social forestry" was popularized in Gujarat, India. In spite of strong interest shown by some developing countries, like India, China, Indonesia, Kenya, and Costa Rica, and the encouraging support provided by some international agencies, this latest social forestry initiative has not been able to achieve the desired results. Developing countries lack proper forest technology and financial resources. Moreover, economic and cultural reasons prevent the rural poor from sticking to the social forestry program.

There have been efforts to help indigenous people acquire rights over forest land. Community-based management of forest areas is encouraged as it aims to involve the local community in projects to enhance their access to forest products, improve benefits for livelihoods, and increase household income. In some countries, like India, Zimbabwe, and Honduras, new approaches have been developed for resource sharing and co-management of the forest. This sharing arrangement aims to create partnerships between the state and local communities for the management and sharing of the forest resources. Though, this is based on a sound premise, it has its weaknesses. People within a forest area may belong to different ethnic groups. These different groups have their own leaders, whose pride and honor prohibit them from becoming subordinates to any leadership from traditionally opposing tribes. Some of the groups are too powerfully disjointed and faction-ridden to be mobilized and organized as a community that can function as an integral whole to sustain the common good, i.e., the forest.

There is now awareness of the contributions forests make in climate change mitigation. The UN Collaborative initiative on Reducing Emissions from Deforestation and forest Degradation in developing countries (REDD) was launched in September 2008 to assist developing countries to protect, better manage, and wisely use their forest resources. REDD+ (plus) aims to go beyond deforestation and forest degradation, and includes the conservation of forest carbon stocks, sustainable management of forest, and enhancement of forest carbon stocks. REDD+ includes the UN-REDD

Program and the Forest Carbon Partnership Facility and Forest Investment Program supported by the World Bank.

Some claim that the REDD mechanism is based on inaccurate data of the forest and carbon stock. Since there are no practical methods to directly measure all forest carbon stocks within the national territory, there is a large variation in the national-level forest biomass carbon stock estimates (Gibbs, Brown, & Niles 2007). The REDD mechanisms were not only criticized for providing inaccurate data, but also for failing to protect the indigenous people who live in the forest. The implementation of REDD requires good governance from the developing countryside that can use the fund appropriately to reduce deforestation. However, the people who live in the forests have been systematically neglected by central governments. Not only can the influx of government and private company exploitation of the forest in developing countries can jeopardize people's livelihoods, but it can also force them to resettle.

However, particular attention is being paid to the establishment of forest reserves, national parks, and other protected areas. This measure is being increasingly adopted and encouraged for the protection of the forest and wildlife.

The UN Conference on the Environment and Development (UNCED) in 1992 endorsed the goal that countries protect 12 percent of their area to conserve the natural flora and fauna. Pressures from international agencies such as financial institutions and aid agencies tend to support this measure.

Focus on the Protected Areas

According to the World Commission on Protected Areas, by 2000 there were over 30,000 protected areas covering around 8 percent of the Earth's surface, the combined size of India and China. By the end of 2005, the World Database on Protected Areas recorded more than 114,000 sites covering 19 million km^2 which is equivalent to 12.9 percent of the Earth's surface. In addition, 5,000 internationally registered areas including World Heritage Sites, biosphere reserves, and the sites protected by the Ramsar Convention (Chape, Spalding, & Jenkins 2008).[1] International and national concern about deforestation and loss of biodiversity has led to this development. Three percent of Brazil's Amazon region has been declared protected reserves, and an additional 28 percent is reserved for the use of indigenous populations. The first of these reserve forests is Mamiraua, currently the

world's largest block of protected rain forest, an area larger than Costa Rica. Brazil also plans to expand preservation to 10 percent of its rain forest area in the next 10 years (*BBC News* August 1, 2009). In India, nearly 29 percent of the forest area is protected (Human & Pattanaik 2000).

The International Union for Conservation of Nature (IUCN) defines a protected area as, “an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means” (IUCN 1994b). The main purposes of managing these protected areas are: scientific research, wilderness protection, preservation of species and generic diversity, maintenance of environmental services, protection of specific natural and cultural features, tourism and recreation, education, sustainable use of resources from natural ecosystems, and the maintenance of cultural and traditional attributes. Based on these objectives, the IUCN (1994a) made six categories for the management of these protected areas. Category Ia is a Strict Nature Reserve, managed mainly for science. Category Ib is a Wilderness Area, managed mainly for wilderness protection. Category II is a National Park, managed mainly for ecosystem protection and recreation. Category III is a Natural Monument, managed mainly for conservation of specific natural features. Category IV is a Habitat/Species Management Area, managed mainly for conservation through management intervention. Category V is a Protected Landscape/Seascape, managed mainly for landscape/seascape conservation and recreation. Category VI is a Managed Resource Protected Area, managed mainly for the sustainable use of natural ecosystems. Different countries use different terms for their designated protected areas. Thus, the IUCN categorization helps identify them on the basis of their management objectives. Tables 4.3 and 4.4 show the number of protected areas according to the IUNC management categories and the number of protected areas classified by region.

Table 4.3 Global Protected Areas Network Classified by IUCN Management Category

IUCN Management Category	*Number of Protected Areas*	*Extent of Protected Areas (1,000 km²)*	*Mean Size of Protected Areas (km²)*
Ia	5 549	1 050	190
Ib	1 371	640	465
II	4 022	4 480	1 110
III	19 813	270	15
IV	27 466	3 000	110
V	8 495	2 390	280
VI	4 276	4 280	1 000
No Category	43 304	3 270	75
Total	**114 296**	**19 381**	**170**

Source: UNEP-WCMC 2006

Table 4.4 Global Protected Areas Network Classified by Regions

Area	*Number of Protected Sites*	*Extent of Protected Areas (10,000 km²)**	*Mean Size of Protected Areas (km²)**	*% of Lland Area Protected**
Antarctic	122	7	576	0.5
Australia/ New Zealand	9 595	154	160	19
Brazil	1 286	161	1 253	19
Caribbean	967	7	71	29
Central America	783	16	202	30
East Asia	3267	176	540	15
Eastern & Southern Africa	4067	169	415	15
Europe	53 060	87	16	17
North Africa & Middle East	1 324	129	971	10
North America	13 554	411	303	17
North Eurasia	17 697	176	99	8
Pacific	411	7	161	12
South America (excl. Brazil)	1 450	210	1 447	23
South Asia	1 217	31	255	7
South East Asia	2895	86	298	19
Western & Central Africa	2601	112	431	9
Total	**114 296**	**1 938**	**170**	**13**

Source: (Adapted from Chape et al. 2008)
* rounded values

There is regular overlap between these categories of protected areas. In many cases, one category is accompanied by another. There is also a global regional variation over the establishment and management of protected areas. In some of the regions, like Sub-Saharan Africa, Europe, North America, the Pacific, South America, South and South-East Asia, the establishment of protected areas began in the 1920s and 1930s. With the exception of South-East Asia all of these have witnessed a steady increase in

the number of protected areas since then. In the Middle East and North Africa protection initiatives only began to accelerate in the 1960s. In Central America, the Caribbean, and East Asia, the process began only in the 1970s. In Africa, South America and parts of Asia, there are a smaller number of protected areas but they are larger in size. Europe has many protected areas, but they are smaller in size. Regional variation is not only limited to number and size of the protected areas. Some regions have more of a particular category of protected area than others. More than half of the Category V sites are located in Europe, as such, there is a concentration of Category V in Europe, and to a lesser extent in developing countries. In the developing regions, Category V sites are fewer in number and size (Ghimire & Pimbert 1997: 11–12).

Protected areas cover many types of landscapes and seascapes (see Table 4.5). The landscape varies from forest cover to desert, from grassland to lake systems. Under the scheme of protected areas, there has been relatively good progress in protecting tropical and sub-tropical forests compared to the temperate and scler-ophyllous forests. Due to pressures and incentives provided by the North, larger areas of tropical moist forests are being covered by protected programs. Table 4.5 shows the various habitat types, their coverage, and the area that is protected.

Nature transcends political boundaries. Animals and plants refuse to recognize these political boundaries. For several reasons, many of the protected areas exist on international boundaries. In many cases, protected areas in neighboring countries connect across international boundaries. A variety of terms exist for protected areas that meet across international borders, for example, transboundary protected areas, trans-frontier protected areas, adjoining protected areas, and peace parks. The number of Trans-boundary Protected Areas (TBPAs) is growing (see Tables 4.6 and 4.7).

Table 4.5 Protected Areas

Types of Habitat	*Total Area (10,000 km²)*	*Area Protected (10,000 km²)*	*% of Total Area Protected*
Temperate and boreal needle leaf forest	1 075	154	14
Temperate broadleaf and mixed forest	1 032	126	12
Tropical moist forest	1 210	280	23
Tropical dry forest	317	34	11
Open forest	382	61	16
Savanna	1 301	165	13
Grassland (temperate)	755	118	16
Warm desert and semi-desert	2 223	224	10
Cold desert and semi-desert	729	61	8
Tundra	468	71	15
Shrubland	697	91	13
Inland waters	508	63	12
Permanent snow and ice	1 540	103	7
Predominantly anthropogenic	2 458	114	7
Ocean	36 263	164	0.5
Total	**50 962**	**1 865**	**4**

Source: (Chape et al. 2008; UNEP-WCMC 2008)

The existing 227 clusters of adjoining protected areas involve 126 different countries and cover at least 24 percent of the total area of the world's protected areas (UNEP 2007). Protected areas that meet across boundaries provide opportunities for collaboration among neighboring countries. These protected areas not only protect the forests, they may also play a significant role in promoting trans-frontier cooperation and the creation of international peace parks. Agreeing to participate in a trans-frontier conservation area does not lead to loss or dilution of national sovereignty nor does it restrict the participating countries from pursuing a particular model of conservation in the protected areas. On the other hand, the trans-frontier cooperation has the potential to bring together people from neighboring countries to establish links and increase cooperation (Kock & Nyoni 1994).

Table 4.6 Internationally Adjoining Protected Areas

Adjoining Protected Areas	1988	1998	2007

Complexes Regions			
North America	5	8	12
Central & South America	7	24	35
Europe	20	44	82
Africa	20	33	47
Asia	7	25	51
Total	**59**	**136**	**227**

Regions	*Complexes with Three Countries in 1998*	*Complexes with more than Three Countries in 2007*
North America	0	0
Central & South America	6	6
Europe	6	9
Africa	9	9
Asia	3	8
Total	**27**	**32**

Source: (UNEP 2007; Zbicz 1999)

Table 4.7 The Number of Trans-boundary Protected Areas by Country

Russia	24
China	17
Germany	11
Poland	11
US	11
Argentina	10
Canada	10
Czech Republic	10
Brazil	9
India	9
Slovakia	9
Ukraine	9
Bolivia	8
Finland	8
Ireland	8
Norway	8
UK	8

Source: (UNEP 2007)

Trans-boundary Protected Areas: Promoting Peace or Conflict?

There were only 59 groups of trans-boundary protected areas in 1988, since then the number has climbed to nearly 200. Establishment of trans-frontier protected areas, particularly "peace parks," may possibly aid in reducing hostilities between warring neighbors by facilitating the withdrawal of military assets from those zones. This demonstrates the possible scope of these parks for peaceful dispute resolution to help resolve boundary disputes. According to Sandwith and colleagues, peace parks are "trans-boundary protected areas that are formally dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and to the promotion of peace and cooperation" (Sandwith et al. 2001:3). They have identified nine specific objectives of peace parks:

> (i)Supporting long-term cooperative conservation of biodiversity, ecosystem services, and natural and cultural values across boundaries;
> (ii)Promoting landscape-level ecosystem management through integrated bio-regional land-use planning and management;
> (iii)Building trust, understanding, reconciliation, and cooperation between and among countries, communities, agencies, and other stakeholders;
> (iv)Preventing and/or resolving tension, including over access to natural resources;
> (v)Promoting the resolution of armed conflict and/or reconciliation following armed conflict;
> (vi)Sharing biodiversity and cultural resource management skills and experience, including cooperative research and information management;
> (vii)Promoting more efficient and effective cooperative management programs;
> (viii)Promoting access to and equitable and sustainable use of natural resources, consistent with national sovereignty; and
> (ix)Enhancing the benefits of conservation and promoting benefit-sharing across boundaries among stakeholders.
>
> (Sandwith et al. 2001: 3)

Though the IUCN desires to develop an international certification process to designate protected areas as "peace parks," it has yet to be achieved, and those countries that have established them, have adopted differing approaches. In February 1988, Costa Rica and Nicaragua signed a letter of understanding to establish an International System of Protected Areas for Peace (SIAPAZ). The creation of the SIAPAZ Park, with technical support from IUCN and financial support from the Netherlands, Norway, and Sweden has helped to bring an end to a territorial dispute between two neighbors. Costa Rica and Panama have also established La Amistad International Park, one of the first of its type in Central America to promote the integrated development of their border regions. The treaty in 1998 resolving the boundary disagreement between Peru and Ecuador also paved the way for the creation of a peace park in the disputed Cordillera del Condor. Both countries disputed the territory for more than 150 years, after independence from Spanish rule. This agreement has been able to "re-establish centuries-old relationships among the indigenous populations living in the zone, and improved relationships between the states and between the professionals from both countries who work together to conserve this exceptional biological richness" (Alcade et al. 2005: 63). The large number of trans-frontier protected areas along the former Iron Curtain has contributed to peaceful relations between European countries in the past and since the fall of the Berlin Wall; they have provided many opportunities for cooperation. Greece and Turkey are also considering setting up a peace park on an island in the Evros River. The establishment of peace parks is also being promoted in the Great Lake regions of Africa and in the Middle East. The peace treaty between Israel and Jordan in 1994 at Aqaba also plans for the establishment of a Jordan River Peace Park while a similar solution is being proposed for the Golan Heights. Indonesia and Malaysia have also agreed to promote bilateral cooperation by establishing trans-boundary protected areas on the island of Borneo. There have even been proposals to convert the demilitarized zone between North and South Korea into a peace park. Conflict between the two countries has prevented development activities in the area, but incidentally provided a sanctuary for wildlife. The lobby group, which advocates converting the demilitarized zone into a peace park, has been given a boost with the support of CNN founder Ted Turner.

Trans-boundary cooperation over protected areas may also strengthen the relationship between not-so-hostile neighbors (Swain 2009). The

collaboration since the 1940s between the Big Bend National Park in the United States and the Madera del Carmen Protected Area across the border in Mexico has gone beyond park related issues to actually address regional economic development. Initiated by Rotary International, Canada and the United States established the first peace park, the Waterton-Glacier International Peace Park in the Rocky Mountains in 1932. The creation of the Karelia Friendship Park in the old growth forest between Finland and Russia has also brought further cooperation between the two countries. In anticipation of some of these "spin-off" advantages, the Southern African region is enthusiastically promoting the creation of trans-frontier conservation areas (Katerere, Hill, & Moyo 2001). Southern Africa also hopes to take advantage of the nature-based tourism industry, which will get boost due to the protected areas. South Africa's Peace Park Foundation is vigorously supporting several trans-boundary protected areas among the Southern African states.

According to Lothar Brock, trans-boundary parks are:

> in the interest of environmental protection; at the same time they can serve as buffer zones between conflicting parties, they can help to demilitarize sensitive border areas, they can function as a vehicle for the establishment of lines of communication between conflicting parties, etc.
>
> (Brock 1991: 414)

Thus, in recent years, it has been suggested that the disputed Siachen area in South Asia should be declared a trans-boundary peace park.

Trans-boundary protected areas may help to bridge the divide between neighboring countries and pave the way for regional cooperation, but it is not realistic to think that they alone may be able to resolve the conflicts. They can at best provide a useful instrument for national and regional strategies to enhance cooperation between and among countries. On the other hand, there are several problems associated with trans-boundary cooperation over protected areas. These initiatives may become problematic due to inter-state inequalities over the differing resource endowments and the dominance of larger and more powerful states. Cooperation between India and Bhutan or South Africa and Mozambique over the adjoining protected areas has suffered from such problems. Domestic political

instability and military strategy may also hinder the establishment of the protected areas adjoining international borders, such as in Central America. Strong nationalism, religious and ethnic differences, and difficulty determining the location of the site are the other impediments to trans-border initiatives for protected areas. In many cases, there is a lack of high-level political commitment, and if there are protected areas they are not being supported by effective management on the ground. Protected forest areas adjoining the international boundaries may help to strengthen cooperation among the neighbors and lead to regional peace. But protected forest areas in general have at the same time become the source of several types of conflicts at the interstate and intrastate levels (Swain 2009).

International environmental groups and international development and conservation agencies have worked to promote the establishment of protected areas, accompanied by sizeable amounts of foreign aid. Besides this incentive, the North is also putting various pressures on the South to place larger areas under this scheme. Protected areas include sizeable tracts of land and forest resources in developing countries. The forest-rich developing countries put forward the argument that to refrain from utilizing their own forest resources they must receive compensation. Tropical forests are considered a crucial link between biological diversity and climate change. In spite of the fact that the carbon binding capacity of old growth forests in temperate areas is often higher than that of tropical rain forests due to the larger storage capacity of understory vegetation and soils (Miller, Reid, & Barber 1991; Trexler 1991). Hence, in the climate negotiations, industrialized countries are putting pressure on the tropical countries to put aside larger areas of their forest for preservation. The forest-rich developing countries are opposed to the idea that they should refrain from utilizing their own resources. Thus, the creation of newly protected forest areas in many developing countries has become one of the most controversial and challenging issues. Disagreement, however, has not been limited to the idea of creating protected areas between developing and industrialized countries. In several developing regions, trans-frontier conservation areas are also being used as havens for insurgents and poachers, which has led to conflicts between neighboring countries. Moreover, the establishment of protected areas in many cases has become a source of conflict between local people and the state, particularly in the South.

Protected areas play an important role in maintaining a sustainable world, protecting the forest cover, and providing refuge for biological diversity. Protected areas have generally gained support when they are perceived as supporting local resource management. As Borrie and colleagues argue, “the income derived from the protected area, and the attachments people form with the area, often becomes an important component of the local community” (Borrie, McCool, & Stankey 1998). However, if the management of the protected area affects disproportionately the local population and/or is perceived to be guided by external interest, it leads to resentment and conflict.

Unfortunately, most of the protected areas are insufficiently or ineffectively managed. Rarely can a protected area be managed well in a “hands-off” fashion. The resources, economic, institutional, and human, needed for the effective management are in short supply. Economic benefits derived from protected areas are rarely channeled back into protected area maintenance or forest community development. In many countries tourism plays a major role in the establishment of protected areas. There is always a danger of tourism harming the area's environment. Tourism activity in a national park or any other protected area can serve as a self-financing mechanism and, therefore, as a tool of conservation. However, due to various factors, the benefits of the tourism sector do not reach those people who are traditionally dependent on the forest. Urban-based tourist interests benefit only a few. The switch from agriculture to tourism as the source of livelihood also makes local people vulnerable to shifts in the tourism industry, which are beyond their control. A small group of elites are perceived to reap the benefits from forest and wildlife conservation, while the access of farmers, agricultural workers, and landless laborers to various forest resources becomes restricted. The wild animals of the protected areas may also damage crops and attack the nearby villager, which enhances resentment.

A core issue in protected area management revolves around meeting the demands of resident populations that utilize resources within or adjacent to designated areas. Frequently, local demands for resource use conflict with other goals to conserve resources. When an area is protected, people living near or within it generally restrict their use of its resources. According to Ghimire and Pimbert, “most national parks legislation alienates protected areas to the state, thereby annulling, limiting or restricting local rights of

tenure and use" (1997: 109). Local people suffer from serious restrictions to their customary livelihood activities, and tend to perceive that society at large reaps the benefits of protected areas at their cost. Though many people are dependent on the forest resources, the two groups that are hit hardest are women and tribal communities. They are prohibited from grazing, hunting, fishing, and gathering food, wood, and fodder in the protected area. In several cases, open conflict has erupted between hunters, gatherers, loggers, miners, fishermen, tourism operators, protected area staff, and environmental advocates. Conflicts become serious when traditional forest users are not consulted and customary rights are overlooked. Indigenous inhabitants in the protected forest area are dependent on shifting cultivation for food (i.e a system in which plots of land are cultivated and then abandoned) and on the forest as a source of firewood, construction materials, and medical plants. Exclusion of these peoples from the decision-making process and the resulting restriction imposed on their livelihood can result in physical conflict between the forest authority and local people. Failure to recognize community interests at the local level also fuels increasing land and resource-based conflicts between the managing authorities of protected areas and the local community.

In some cases, when a protected area is established people have to be relocated. In India alone protected areas threaten to displace 600,000 tribal peoples (Swain 2010b). Typically, these people are provided with no support to find an alternative source of survival. When the state undertakes the responsibility of resettlement, it is often not properly planned or administered by the state authority. In many cases, when monetary compensation is allocated to displaced, poor, and uneducated people, corrupt officials misappropriate a large proportion. Whatever money does reach the displaced persons is often quickly spent. The best option the state can offer displaced people is to resettle them in a new place. In recent years, worldwide experience with involuntary settlement has shown that most of the displaced people were left excessively aggrieved, while in some other cases, certain groups ended up poorer and more marginalized than others (Cernea & Guggenheim 1993; Colson 1971; World Bank 1998). The transfer of people to a different socio-economic environment with a provision of land unsuitable for their traditional agricultural activities foments frustration and anger among the people towards the state in general and the protected area authorities in particular.

Protected areas increase the state's control over the forest, while simultaneously decreasing the community's control. Though protected area initiatives make regular references to involvement of local communities, generally they are only used as a labor pool for the maintenance and protection of protected areas. There are efforts by NGOs and donor agencies to transfer rights of local resources to local actors, but when it happens it is only partial in nature and primarily designed as a temporary measure to diffuse conflict between the state and local communities. In general, the forest communities, those who traditionally consider the forest as common property, are excluded from access to resources. The limited logging that is allowed usually takes place under license or permit. Generally, one observes that people care for what they have ownership of. The indigenous population, those who are dependent on biodiversity of rich forests to sustain their livelihood, target the forest for unsustainable uses if they perceive that they are losing customary custodianship. Thus, protected areas, have become not only the sources of conflicts, but they have also failed to adequately conserve the forest and wildlife. If the brutal state power is able to enforce conservation within the protected forest areas, then the protected area often becomes an island of conservation amidst the massive destruction of nature which surrounds it (Ghimire 1994).

Multi-level Stakeholders' Engagement is Key to Successful Management of Protected Areas

Cooperation among various stakeholders, international, national, and local, is essential for the protected areas to be successful in their objective to protect nature, and at the same time to become tools for conflict management in the region. A core issue in protected area management revolves around meeting the demands of resident populations that utilize resources within or adjacent to designated areas. Frequently, local demands for resource use conflict with other goals to conserve resources for visitor enjoyment or biological integrity. There is a need to build a partnership between state and local communities. Devolution of protected area management to local communities should be promoted and supported. External authorities usually lack the local knowledge of social and environmental interactions (Nathan & Kelkar 2001). The state will gain from bringing local people on board, as this process will make the scheme more cost effective and sustainable. At the same time, however, local communities

must engage the state to play a positive role in the management of local resources, as communities are unable to manage and regulate resource use outside of the community. This collaboration between stakeholders at various levels can be mutually beneficial to all, as long as they organize and recognize each other in earnest.

Sustainable forest management and forest conservation are evolving concepts. Decisions on forest conservation and protection go far beyond the conventional forest sector. International and national political decisions on forest conservation cannot be effectively implemented if they are not understood, accepted, and supported by the populations that are directly and indirectly affected by them. The idea of forest protection is located primarily in the developed world and has been seen an imposition on a skeptical Third World. There is a need to bridge the gulf between the North-South divide. Provisions should in place to compensate groups and countries for the foregone benefits of forest resources. An ecology of justice has to be created between the North and South in order to achieve a sustainable future for forest resources. Without proper financial and technological support, it will not be possible for the South to be successful in protecting its forests. According to Friends of the Earth, between 1990 and 1995, the deforestation rate rose significantly for heavily indebted poor countries, compared to the rest of the world. Two of these countries in Central America, Nicaragua and Honduras, lost almost 12 percent of their forest area in these five years, which is 7.5 times greater than the world rate (Friends of the Earth 1998).

There is a need to enhance the capacity of developing countries for forest conservation. The North can provide help with proper training and share with them the best available practices in this regard. More importantly, the temperate industrialized countries should implement concrete measures on their forest management front to be credible enough to persuade the tropical countries to protect their forests. The industrial world should conserve more old-growth forests and maintain the diversity of their forest areas. They need to follow the standards of forest management which they preach so that tropical developing countries are more likely to take them seriously and recognize the threats that deforestation poses.

At the national level, the state agencies must actively include local communities in forest management, particularly in the management of protected areas. Forest conservation priorities cannot be determined in isolation from the local people and broader patterns of natural resource use.

Forest conservation must be complemented by policies promoting sustainable and equitable development of the natural resource base as a whole. Methods should be explored to engage resident populations in protected forest area management that addresses the application of local knowledge, the analysis of stakeholder interests, and the assessment of local land-use practices on resource sustainability. A fruitful partnership between state and people would be possible not only by enacting new legislation and policies, but by shifting attitudes of the state agencies to include people in decision-making and management processes.

5Achieving Food Security

A Growing Challenge

Global Food Security Challenges

The problem of escalating food prices has become a critical concern internationally. The poorer section of the population in developing countries is particularly vulnerable as the prices of most basic food items have increased to very high levels since 2007. Increasingly food price volatility is pushing larger numbers of people into poverty and hunger, and is contributing to political instability and civil unrest in various parts of the world. Climate change is predicted to further contribute to increasing food shortages and rising food prices. In this context, Lester Brown argues that "the biggest threat to global stability is the potential for food crises in poor countries to cause government collapse," and concludes, "the resulting social chaos can have serious adverse effects beyond the nation's own borders" (2009: 55–57).

During the first quarter of 2011, the world witnessed a serious food crisis. The food price index rose by 15 percent between October 2010 and January 2011, representing a 29 percent rise above its level a year earlier and only 3 percent below its June 2008 peak (World Bank 2011b). Just a month later, the FAO's Food Price Index reached a new record, rising by 2.2 percent from January 2011, the highest increase (in both real and nominal terms) since January 1990, when the index was first recorded (FAO 2011a). Consequently, the ensuing global food crisis has increased the number of undernourished people in the world beyond the 1 billion mark (Asian Development Bank 2000), resulting in millions of people living in poverty. As the President of the World Bank argues, the most vulnerable are those who spend more than half of their income on food, since rising food prices

divert substantial amounts of their meager resources to hunger reduction, at the expense of combating poverty, child mortality, maternal health, and basic education (World Bank 2011b). It has been suggested that the failure to meet global food needs, is primarily due to a lack of income and not just food availability (Blum 2002). However, it is estimated that in the near future, food availability will soon become a serious problem as well. FAO has predicted that demand for food will grow by 50 percent by 2030, and 70 percent by 2050 (OECD-FAO 2009). Meanwhile, the global supply of food calories per person continues to rise, for instance from 2,254 kcal per day in 1961 to 2,809 kcal per day in 2003 (EarthTrends 2006).

As such, food security is of considerable interest as "a fundamental need, basic to all human needs and organization of social life" (Hopkins 1986: 4) in the new global era. The importance of food security is evident as one of the key organizing principles for development, with complex links to several aspects of livelihood and human security, ranging from health (through malnutrition), sustainable economic development, environment to trade. In addition to development considerations, food security – or insecurity – has played a role in past conflicts and is setting the stage for potential new conflicts. Because the causes, implications, and potential solutions to food security issues are so diverse, differing viewpoints in scholarly work abound. However, it is evident that steps need to be taken to address food insecurity around the world to avoid potentially disastrous consequences. The ability of the global food and agriculture system to meet the world's future demands for food security in the twenty-first century remains an urgent task that is susceptible to numerous risks and challenges.

Evaluating Demand and Supply

Despite recent breakthroughs in food production and increases in supply, fueled by the twentieth-century Green Revolution in Asia, Latin America, and Africa, as well as advancements in the understanding of environmental and socio-economic dynamics and improved technologies, tackling food security remains "a difficult task for decision makers as demonstrated by local food crises in many countries of the region" (Negin et al. 2009). Food, as the most basic of all human needs, remains unaffordable – resulting in nearly a billion people that are undernourished worldwide (Bread for the World Institute 2010). According to the FAO (2010b) the majority of the hungry live in developing countries, but hunger has also been documented in

the industrialized world. The Asia-Pacific region is home to the largest number of the hungry at 578 million people, while Sub-Saharan Africa has the highest prevalence of hunger at 239 million people, a third of whom are undernourished. Furthermore, the global demand for food is predicted to increase during the next 40 years and recent studies suggest that the world will need 70–100 percent more food by 2050 (Godfray et al. 2010). Therefore, the continuing challenge facing world agriculture is how to match the growing demand for food with a sustainable supply.

The most important socio-economic challenge that drives the increasing global food demand is population growth, with its impact on the urbanization process and the increase of wealth in emerging economies. According to the United Nations Population Division, the rapid growth of the world's population is a recent phenomenon. The global population has already reached 7 billion and will surpass 9 billion people by 2050 (Crosette 2011; UN 2009), which makes the task of how to feed such a booming population more challenging than ever before. Significantly, most of the growth in the world's population will occur in urban areas, resulting in the urbanization of more than 70 percent of the world's population by 2050 (FAO 2009b). Urbanization is an important factor that influences agricultural markets and challenges food lifestyles and diet patterns by posing a greater demand for meat and convenience food, and less demand for traditional diets (Müller et al. 2008).

Moreover, another particularly important factor that drives the global food supply-demand imbalance is the rapidly rising income growth. The rapidly rising economies (particularly China and India) are blamed for their increasing consumption of huge amounts of food, a new trend dubbed “the rich get hungrier” (Sen 2008). A higher purchasing power of the growing middle class results in increased consumption and a greater demand for diets richer in meat, processed food, dairy, and fish – which require more grain and water use, thereby putting more pressure on the food supply system (Evans 2008; Godfray, et al. 2010).

In addition, increasing biofuel production also represents major risks for long-term food security. A worrisome trend to emerge amidst the growing shortfalls of global food supply in relation to its demand is the rapid increase in the production of biofuels production converted from agricultural feedstock. This has resulted in intensive competition between food and biofuel commodities for more scarce agriculture resources. Over the last

century, the rapidly growing fossil energy consumption in the transport sector, rising world fuel prices, supply insecurity, and concerns about global warming have rendered biofuels (bioethanol, biobutanol, and biodiesel) a particularly interesting alternative energy source. From 2000 to 2008, biofuel production based on agricultural commodities increased more than threefold (FAO 2009b). Bioethanol and biodiesel, which account for more than 90 percent of global biofuel usage (Dufey 2006), are produced respectively from sugarcane (i.e. Brazil ethanol), corn (i.e. US ethanol), and other oil crops (i.e. German biodiesel from rapeseed) (Chakravorty, Hubert, & Nøstbakken 2009). However, as the global demand for biofuels increases, policy-makers and analysts are increasingly concerned that it could "crowd out" (Rosegrant et al. 2006) production of food crops in some developing countries, where demand for food is expected to grow but fertile lands may be set aside for more profitable bio-energy and industrial purposes (FAO 2009b), creating scarcities in the food and feed market. In China, the government has recently decided to slow down its ethanol plant expansion program because of worries that the rapid expansion could threaten the country's food security (Kojima, Mitchell, & Ward 2007). Biofuel production competes with food crops, culminating in the so-called "food versus fuel" debate. Because biofuel production is a land and water intense technology, it requires more of these scarce resources in direct competition with agricultural crops. However, water scarcity is likely to become a more critical issue in the future, especially since the global demand for water has tripled in the last 50 years (Wang et al. 2006). In addition to the use of land for food and biofuel production, land availability is further limited by the effects of forest conservation, urbanization, soil loss to erosion and desertification. For instance, due to the relative land scarcity in Europe, it is expected that half of the crops used in biofuel production must be imported in order to meet the production target (Banse et al. 2008). Biofuel production may pose a major threat to food security in the long term, unless farmers adopt more efficient biofuel generation methods in concert with improved technologies for higher crop yield.

Biofuel production is also significantly subsidized in developed nations, such as the United States. According to some researchers, these subsidies "for biofuels that use agricultural production resources implicitly act as a tax upon basic foods" (Flammini 2008). Adjusted for inflation, food prices dropped between 1974 and 2005. However, since that time food prices have

risen rapidly, driven by the cost of grain. Between January 2005 and June 2008, three main grains have shown incredible price jumps: the cost of rice increased 170 percent, maize almost tripled in price, and wheat jumped 127 percent. These findings by the World Bank played a significant role in its declaration in a 2008 report that the large production of biofuels in Europe and the United States played a predominant role in the rising global food prices and the so-called 2007–08 food crisis (Mitchell 2008). This highly controversial viewpoint further highlights the challenges faced by the poor living in developing nations, but most researchers agree that further research is necessary to definitively determine the full impact of the biofuel demand for food grain on the cost of food.

Since agriculture is extremely vulnerable to climate change, forces that shape substantial and catastrophic climate change will seriously impact food productivity. Climate change will affect agricultural systems through higher temperatures – which eventually reduce the yield of desirable crops while encouraging weed and pest proliferation, and increasing pressure of crop diseases (FAO 2009b). It will also create changes in precipitation patterns – which in the short-term increase the likelihood of crop failures and lead to a decline in production in the long term (Nelson 2009). Further, it causes a change in climate variability and extreme events, such as changes in the frequency and severity of heat waves, droughts, floods, and hurricanes, all of which could make it less feasible to continue food production in the affected regions (for more see Environmental Protection Agency 2011). Although there will be gains in some crops in some regions of the world, such as developed-country yields, it is argued that the overall effects of climate change on agriculture are expected to be negative, further threatening global food security, and adversely affecting crop production (Gregory, Ingram, & Brklacich 2005; Nelson 2009). Though the impact of climate change on food production (food availability) will be mixed and vary regionally (Parry 2007), developing countries, which are already vulnerable and food insecure, are likely to be the most seriously affected. Lobel et al. (2008), in an analysis of climate risks for crops in 12 food-insecure regions based on statistical crop models and climate projections for 2030, indicated South Asia and Southern Africa as two regions that will likely suffer negative impacts on several crops that are important to large food-insecure human populations. Meanwhile, a report for the International Food Policy Research Institute (Nelson 2009) assessed the effects of climate change on crop production in

2025, in comparison to production without climate change. In South Asia and Sub-Saharan Africa, the climate change scenario results in a 14 and 15 percent decline in rice production, respectively, relative to the situation without climate change (Nelson 2009). The global food availability is obviously more vulnerable to substantial climate change, and unless efficient warnings and adequate coping mechanisms are instituted, climate change will increase the number of people at risk of hunger in the world by 40 to 170 million (Easterling & Aggarwal 2007).

Land Grabbing: A New Challenge to Global Food Security

In developing nations around the world, millions of ha of farmland are being purchased or leased by foreign investors. These agreements are predominately found in Africa but are also present in Latin America and Central and South East Asia, and are posing significant risks to local populations' food security. The purchases come in part as a response to the recent world food crisis, but also to satisfy the need for land to produce the necessary components of biofuels. Especially for larger European nations, the rising biofuel consumption necessitates the acquisition of land outside their own borders. Foreign governments make up only a portion of those acquiring land, however, most of the private investors receive support from their respective governments in some form (Cotula et al. 2009; Von Braun & Meinzen-Dick 2009). The scope of these leases and purchases is difficult to quantify, and there are no reliable figures of how much land is being purchased or leased through land grabs.

A 2011 World Bank report referred to the 45 million ha acquired in 2009 as a positive investment opportunity for African nations (Deininger & Byerlee 2010). However, many organizations have decried such investments as being the opposite of positive for many Africans, some going so far as to label the practice as a form of neo-colonialism (Pagano 2009). Much of the acquired land was already in use by locals. The acquisition of the land removes the main source of livelihood for many local people, causing instability for these groups, including their food security. Further, the land that is being purchased or leased is usually the high-value land, including that which is close to markets or has irrigation potential (Cotula et al. 2009). These factors contribute significantly to the food insecurity of many Africans.

While the so-called land grabbing takes place in Asia and Latin America, the bulk of the land acquired is located in Africa. In fact, between 2004 and 2009 nearly 2.5 million ha of land were acquired in just five African states: Ghana, Mali, Sudan, Ethiopia, and Madagascar (Cotula et al. 2009). A recent deal in Madagascar fell through when mass protest broke out (Sharma 2008). Daewoo, a large South Korean corporation attempted one of the largest land deals, planning to acquire nearly 530,000 ha in Madagascar in an attempt to boost production of palm oil and corn. However, public anger eventually ended the deal that would have leased the land to the South Korean company for 99 years. The deal is also considered to have contributed to the ousting of the president of Madagascar in 2009 (Pagano 2009). In 2009, the new president of Madagascar, Andry Rajoelina cancelled the deal with the South Korean corporation unilaterally.

The human security aspect of land grabbing includes lack of necessary food for the local population, environmental degradation due to the change of vegetation, eviction of local residents from the acquired land. Land grabbing in the developing world is not a new phenomenon. In the past, land grabbing was one of the main mechanisms of colonization and played its role to transfer wealth from the South to the North. The "new" land grabbing has the same mechanism as "old" land grabbing, but some of the major actors are different. Now, it is not only developed countries that acquire land from the developing countries. The new actors also include the newly wealthy countries from Asia and the Middle East, such as China, South Korea, India, Saudi Arabia, Qatar, United Arab Emirates, Kuwait, Jordan, and Bahrain (see Table 5.1). The new land deals are signed with the approval of the target countries. The new investors lease the land plots to cultivate any kind of crop, as much as they want.

The massive size of these deals and the spree of land purchase or acquisition during the food price crisis have brought adverse political responses from the targeted countries. The Philippine government is being forced to review the big land deals signed in recent years including the deal with China to lease 1.24 million ha of land. The Saudi Binladin Group also clinched a deal deal with Indonesia to lease half a million ha of land to grow rice *(The Economist* 2009). The focus of the new foreign investors acquiring land abroad is as the solution to food security at home as well as hedging the risk of climate change or benefitting from biofuel production. The increasing opposition by the affected population to these land deals will not only create

political instability, it can also lead to conflict between the two signatory countries. Thus the recent land deal trend not only poses a threat to the security of the marginalized groups in the developing world, it also raises the possibility of larger inter-state conflicts.

Table 5.1 Recently Signed "Land Grab" Deals

Investor	*Type of investor*	*Target country*	*Plot size (ha)*
Bahrain	government	Philippines	10 000
China	private entity (ZTE)	DR Congo	2 800 000
China	private entity (ZTE)	Laos	700 000
China	government	Zimbabwe	101 171
Egypt	government	Sudan	Unspecified (land to grow 2 million tons of wheat annually)
India	private companies	Ethiopia	359 100
Jordan	government	Sudan	25 000
Libya	government	Mali	100 000
Libya	government	Ukraine	250 000
Qatar	government	Kenya	40 000
Qatar	government	Philippines	100 000
Saudi Arabia	private company	Sudan	9 200–10 117
South Korea	private company	Sudan	690 000
Switzerland	private company	Sierra Leone	26 000
UAE	private company	Pakistan	324 000
UAE	government	Sudan	378 000
UK	private company	Ukraine	100 000

Source: (Baxter 2011; Dasgupta 2011; GRAIN 2008; Von Braun & Meinzen-Dick 2009)

Food Security as an Evolving Concept and the International Community

The notion of "food security" is not recent, but rather the term was coined in the early 1970s over discussions of international food problems during the world food crisis in the same period. It was highlighted at the World Food Conference of 1974, the primary focus of which was on increasing production in food-deficit countries, as well as promoting a coordinated

system of national and international food reserves (Adedeji 1989: 13). The predominant debates at the time were mostly concerned with national and global food security, defined in terms of the level and reliability of aggregate food supplies (Maxwell & Smith 1992: 6).

Yet, during the 1980s food security underwent a significant shift towards a more household and individual level, with the emphasis on access, vulnerability, and entitlement. The food crisis that plagued Africa in 1984–85 was a particularly critical event that awakened global interest to the fact that adequate food availability at the national level did not ensure the accessibility of individuals and households to food (Frankenberger & McCaston 1998: 1). In fact, the primary hindrance to access to food was equitable access to land and lack of income opportunities rather than food supply (Sen 1981). Besides concerns with deteriorating basic needs during structural adjustments, the benefits of an intellectual progression were also other attributed contemporary factors for the shift in the level of analysis. Therefore, the focus on household and individual food security was the provisional trend in which "the problem of food security emerged in a more concrete way"(Maxwell 1996; Maxwell & Smith 1992: 6).

By the mid-1990s, the concept of food security was broadened to include many themes and sub-themes, ranging from significant concerns about the relationship between food security and nutrition, to wider concerns about household livelihood security and long-term sustainability. It was even argued that households' access to available resources of food was not the only sufficient condition for food security; but, rather, an additional malnutrition equation based on dietary intake and diversity, health and disease, as well as maternal and child care (UNICEF 1990). Moreover, socially or culturally determined food preferences also became a consideration. Poor households considered food only one of the priorities they pursued (Frankenberger & McCaston 1998). It was one of a whole range of factors that determined the poorest sector of the population's decisions, perceptions, and choices to balance food procurement against the satisfaction of other needs. According to Maxwell and Smith (1992), this is how they finely balanced competing interests in order to subsist in the short and longer term. Hence, on a broader level, the concept of food security emerged from a simplistic one to a multidimensional phenomenon, in which concerns for household food and nutritional security were transformed into household livelihood security, with an emphasis on the dynamic

relationships between the political economy, poverty, malnutrition, and the complex strategies that the poor use to negotiate survival.[1]

The core concept of food security evolved over time, and has gradually become more complex. However, the most widely accepted definition agreed by the FAO is the one given at the Rome Declaration on World Food Security and the World Food Summit Plan of Action in 1996: "food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO 1996). This definition focuses on four distinct but interrelated elements that are essential to achieving food security, namely: *food availability* (sufficient quantities of food of appropriate quality, available for consumption), *food access* (adequate resources for acquiring appropriate foods for a nutritious diet), *utilization* (through adequate diet, clean water, sanitation, and health care to reach a state of nutritional well-being where all physiological needs are met), and *stability* (access to food at all times, no risk of losing access to food as a consequence of sudden shocks or cyclical events) (FAO 2006a). The definition encompasses multiple facets such as individual, household, national, regional, and global; however, it is argued to be most closely related to the seminal study by Amartya Sen (1981), in which household food security is the application of this concept to the family level, with individuals within households as the focus of concern.

As FAO defines it, *food insecurity* exists "when people do not have adequate physical, social or economic access to food as defined above." Similarly, *hunger* or *undernourishment* exists "when caloric intake is below the minimum dietary energy requirement" (2010b: 8). Undoubtedly food security/insecurity is a valuable concept as Pinstrup-Anderson argues "if used with clear understanding of what it means, its limitations and how it interacts with behavior and non-food factors" (Pinstrup-Andersen 2009: 5–7). Food security is a matter of subjective perception and perceived differently in various countries. In fact, some countries have become much more food insecure than the others. For developing countries, food security or insecurity may be a matter of life and death, but for developed countries, the longer-term health consequences of poor nutrition linked to low incomes may be foremost (Goodall 2009). A recent report by FAO warned that the majority of the world's undernourished people live in developing countries. Table 5.2 shows that undernourished people account for 98 percent of the

affected population. As Table 5.2 shows, the bulk of the undernourished are concentrated in Sub-Saharan Africa. Two thirds live in just seven countries (Bangladesh, China, the Democratic Republic of the Congo, Ethiopia, India, Indonesia, and Pakistan), with over 40 percent living in China and India alone (FAO 2010b).

Recent rises in global food prices have resulted in increased vulnerability to hunger and malnourishment globally and alerted policy-makers and the general public to global food insecurity. Therefore, one of the most critical long-term targets of the UN and FAO is the Millennium Development Goals 1, aimed at reducing hunger and extreme poverty by half by 2015. Significant progress in combating the prevalence of hunger was recently reported, indicating a decline from 20 percent of the world's undernourished population in 1990–92 to 16 percent in 2010 (FAO 2010b). Despite this recent progress in reducing global hunger, the task is a challenging one that could be derailed by increases in global food prices and surges in the world's population.

Table 5.2 Prevalence of Undernourishment in the Developing World (%)

	1990–92	*1995–97*	*2000–02*	*2005–07*
East Africa	45	44	39	34
Southern Africa	43	41	38	33
Western Asia	41	27	15	7
Sub-Saharan Africa	34	33	31	28
Central Africa	32	49	55	53
The Caribbean	26	28	22	24
South-East Asia	24	18	17	14
South Asia	22	20	21	22
Asia and the Pacific, Oceania	20	16	16	16
Developing World	20	17	17	16
West Africa	20	15	14	10
East Asia	18	12	10	10
Latin America and the Caribbean	12	11	10	8
South America	12	10	10	8
Central Asia	8	9	18	10
North and Central America	8	8	7	7
Near East	7	11	10	9
Near East and North Africa	6	8	8	7
WORLD	**16**	**14**	**14**	**13**

Source: (Data courtesy of the FAO 2008)

Ripe Time to Promote Sustainable Agricultural Production

The global population is expected to reach 9 billion people by 2050, a milestone that illustrates the urgent need for boosting agricultural production worldwide in sustainable ways that do not compromise environmental or economic integrity. In order to meet increased food demand, some analysts argue that whereas increasing crop yields has historically satisfied previous increases in demand, in the future expansion of acreage will also be required (Evans 2008). Others argue that future food production and supply must use less land and fewer inputs, produce less waste, and have a lower environmental impact (Global Food Security 2011), which obviously necessitates technological advances. Nevertheless, recent approaches to food production and agricultural development have largely failed to ensure environmental sustainability (Pretty, Thompson, & Hinchcliffe 1996), which makes the task even more challenging and critical for future food security. Expansion of agricultural production is likely to lead to a significant change in the global ecosystem, whereas the absence of a clear understanding of the impact of intensification and diversification of agriculture on natural resources and environment could lead to both immediate and long-term consequences that directly impact on the livelihood of food security (UNEP 2008).

Over the centuries, humans have responded to food shortages by expanding land frontiers for agricultural purposes. However, due to the booming global population and massive urbanization process, this solution is increasingly expensive and more unlikely (Godfray et al. 2010), particularly in the densely settled countries in Asia where 60 percent of the world's population live (Hossain 2007). Furthermore, in recent decades, agricultural land that was formerly productive has been lost to desertification, salinization, soil erosion, and other consequences of unsustainable land management, as well as climate change and first-generation biofuels (Godfray et al. 2010). As such, it is becoming much more critical when seeking solutions to address increasing global food demand, to ensure that agricultural land usage and expansion does not encroach on marginal lands which may be at greater risk of environmental degradation (Rosegrant & Cline 2003). Moreover, further encroachment into natural habitats also poses a major threat to biodiversity. Although land-saving technological advances (such as in the 1960s) have facilitated higher crop yields and therefore accounted for increased land productivity over many decades, their benefits

have now been almost exhausted (Hossain 2007), thus urgent technological replacements to maintain sustainable agricultural production are needed

In the past, one of the solutions to food shortages was to exploit new fish stocks, however, this is less of an option today. The decline in global fisheries is one of the most worrisome environmental issues of our future food production, as fisheries contribute more than 20 percent of protein intake by humans (Sumaila et al. 2007). Currently, there are no major new fishing grounds, as all capture fisheries are over-exploited (Godfray et al. 2010). Over the last 40 years, the capacity of the global fishing fleet has increased sixfold (Godfray et al. 2010), which is more than twice the size that the oceans can sustainably support (Porter 1998). Over 55 percent of the 49 island countries are exploiting their coral reef fisheries in an unsustainable way; total landings of coral reef fisheries are currently 64 percent higher than can be sustained (Newton et al. 2007). Furthermore, government subsidies (standing at about US$ 14–20 billion a year) are also considered a major driver of overcapacity and unsustainable exploitation of the ocean (Milazzo 1998). As Sumaila et al. (2007) argue, government subsidies to fisheries support unprofitable fleets to continue fishing, which leads to overfishing: more fish are being caught than can be sustained. As Table 5.4 shows, the massive growth of fisheries has resulted in almost all of the world's stocks being harvested to full capacity or over-exploited. This poses a number of threats for the ecosystem health, stock resilience, and long-term output and value. Moreover, these underlying trends place increasing pressure on aquaculture (Evans 2008). However, future expansion of cultured fish production will be greatly challenged by the tough competition of limited availability of land, fresh water, and energy.

Table 5.3 Agricultural Production Indices (Base Year 1999–2001)

	Total		*Per capita*	
	1991–93	*2001–03*	*1991–93*	*2001–03*
World	**101.1**	**106.5**	**92.3**	**107.9**
Asia (excl. Middle East)	–	–	–	–
Europe	–	83.7	–	108.9
Middle East & North Africa	–	–	–	–
Sub-Saharan Africa	79.1	103.1	97.5	98.2
North America	85.0	99.0	–	–
C. America and Caribbean	–	–	–	–
South America	75.7	107.3	85.8	104.3
Oceania	76.8	97.0	86.5	94.5
Developed	**97.1**	**99.3**	**100.5**	**98.6**
Developing	**74.6**	**105.3**	**85.4**	**102.2**

Notes:
*Data shown is an average, calculated over the indicated three-year period by WRI
~Agricultural production indices present net production after deduction for feed and seed of a country's agricultural sector relative to the base period 1999–2001

Source: (Data courtesy of WHO 2011)

Table 5.4 World Fish Production and Consumption (millions of tons)

	2000	*2001*	*2002*	*2003*	*2004*	*2005*
PRODUCTION						
Capture	96	93	93	91	95	94
Aquaculture	36	38	40	42	45	48
Total world fisheries	132	131	133	133	140	142
UTILIZATION						
Human consumption	97	100	100	108	106	107
Non-food uses	34	31	34	31	35	35

Source: (Data courtesy of WRI 2005)

Sustainable meat production is another remedy to food shortage that will continue to draw considerable interest in the coming decades, especially because livestock production is growing rapidly as a result of the increasing global demand for meat – which is estimated to rise from 233 million tons in 2000 to 300 million tons in 2020 (Speedy 2003). Rising personal incomes in emerging economies have created more demand for better diets, as more people switch from traditional low cost foods to more expensive and

nutritious meat products. Livestock is clearly an important source of food, particularly of high protein, minerals, vitamins, and micronutrients. However, it is estimated that 1 kg of meat production can require 3 –10 kg of grain. Meanwhile, over the past 40 years, global per capita meat production has increased more than 60 percent (Tilman et al. 2002). Such a scenario poses a long-term risk of stagnant or declining per capita grain consumption.

More so, meat production has been shown to have a significant negative impact on the environment, as it accounts for 15–24 percent of current greenhouse gas emissions (FAO 2006b) while the air, ground, and surface water pollution associated with animal waste poses health and environmental risks as well as making extensive use of ecosystem services (Tilman et al. 2002). Despite advances in animal breeding models and veterinary services to help optimize livestock production (especially in developed countries), the trend of high-density animal production operations poses a risk of disease incidence that could undermine the livestock industry – including new emerging diseases (e.g. H5N1 virus from Hong Kong chicken in 1997, foot-and-mouth virus from livestock in Britain in 1967 and 2001, or mad cow disease in 1996) (Tilman et al. 2002). Tables 5.5 and 5.6 show the global increase in various types of meat production, the significant difference in food consumption between the developed and the developing world, and meat consumption per region.

Table 5.5 World Meat Markets at a Glance

	2008	*2009**	*2010*+
PRODUCTION	(millions of tons)		
Bovine meat	65.2	64.7	64.8
Poultry meat	91.8	92.3	94.8
Pig meat	103.6	106	108.1
Ovine meat	13	13	13.1
Total Production	**280**	**281.5**	**286**
CONSUMPTION *Per capita food consumption*	(millions of tons)		
Developed (kg/year)	81.7	81.1	80.7
Developing (kg/year)	30.9	31.3	31.6

Notes:

* estimated

+ forecasted

Source: (Data courtesy of FAO 2009a: Global Market Analysis)

Table 5.6 Consumption of Livestock Products per Region (kg per year)

Consumption per capita	*Meat*		
	1964–66	*1997–99*	*2030*
Developing countries	10.2	25.5	36.7
Near East and North Africa	11.9	21.2	35.0
Sub-Saharan Africa[+]	9.9	9.4	13.4
Latin America and the Caribbean	31.7	53.8	76.6
East Asia	8.7	37.7	58.5
South Asia	3.9	5.3	11.7
Industrialized countries	61.5	88.2	100.1
Transition countries	42.5	46.2	60.7
World	24.2	36.4	45.3

Notes: [+]excludes South Africa

Source: (Data courtesy of WHO 2011)

Perhaps, one of the solutions for future sustainable agriculture lies in adopting a low-input production system. Over the last half century, world agriculture has kept pace with demand at real agricultural prices that were falling for much of the time, at least until the mid-1980s (FAO 2009a). This was largely due to scientific and technological innovation, such as the Green Revolution, which first emerged in developed countries and was later transferred to developing ones. Since the 1960s, land-saving technologies have become a dominant method applied to scarce land, with higher use of labor, chemical fertilizers, and irrigation (Hossain 2007). However, in recent years, crop yields have slowed down substantially in many countries and for major commodities. This is attributed to a decline in total investment in research and infrastructure in developing countries and the switch from the public to private sectors. Apparently, large farms with research and development capacities usually carry out technological innovations in developed countries; whereas the private sector performing a similar task in developing countries are unlikely to make significant investment in crop improvement research. Declining crop yields are also attributed to technological progress reaching its limit in the irrigated ecosystem, limited expansion of irrigated area due to growing scarcity of water, and a large yield gap in the rain fed system due to non-availability of technologies suitable for the unfavorable environments (Hossain 2007). With the existence of yield gap, it is difficult to transfer and adapt improved technologies in developed countries to the developing ones, due to various

geographical conditions. A solution for closing the yield gap is to spread knowledge, skills, and technology to farmers in developing countries. Although women comprise the majority of farmers in many of these regions, direct training services are primarily offered to men, which explains why only 5 percent of all worldwide agricultural extension services reach women in the developing world (FAO 2009c).

Finally, future sustainable agricultural production has to include waste reduction. According to Godfray et al. (2010), about 30–40 percent of food is wasted at all stages of the food chain, from production and harvest to post-purchase by the consumer. Developing countries are especially prone to food waste arising from poor storage conditions or inefficient transport networks. For instance, in India, it is estimated that 35–40 percent of fresh produce is lost because neither wholesale nor retail outlets have cold storage (Godfray et al. 2010). Meanwhile, in industrialized countries, substantial waste occurs in households after purchase, through retail, distribution, and processing, which has reached a concerning level (Godfray et al. 2010). Consequently, the challenge of how to reduce waste in food production requires different strategies to tackle the issues in both developing and developed worlds. Obviously, public investment in transport infrastructure, better-functioning markets, availability of capital, and improved technologies would constitute critical elements in alleviating food waste in developing countries; nevertheless the task is further complicated by individual behavior and cultural attitudes towards food (Godfray et al. 2010). Interestingly, incentives have been used successfully in some developed countries, and shown that public policy can be a potentially effective tool in alleviating waste reduction.

Key to “Food Security for All” is Distribution

Despite some recent progress, food security has become one of this century's key global challenges. The UN's efforts towards the Millennium Development Goal target of halving the proportion of undernourished people from 20 percent in 1990–92 to 10 percent in 2015 now seems an unachievable goal. The number of chronically undernourished has grown in recent years. Particularly, as a consequence of the 2007–08 world food crisis and the global economic recession a year later, the number of undernourished people surpassed 1 billion in 2009 (see FAO 2011c). Although the proportion of the undernourished in the world declined slightly

to 925 million in 2010 (FAO's latest estimations in 2011), it remains unacceptably high, even surpassing the number of 817 million in 1990–92 (UN 2010). Surprisingly, the increased food insecurity during 2007–09 was not primarily due to poor crop harvests or a lack of food supply. In fact, there were significant increases in the global food production index, with an increase of 3.8 percent in 2008–09 (FAO 2011b). Instead, the global financial crisis and persistence of high domestic food prices in many developing countries reduced the purchasing power of poor er sections of the community, thereby creating detrimental pressure on their food access and threatening their food security.

Hence, it can be argued that increased national or global agricultural production, while essential, is not always sufficient to combat the scourge of hunger. India, for instance, has conquered famine, raised incomes, and moved from food deficits to food surpluses, but remains home to more undernourished people than live in all of Sub-Saharan Africa (Sheeran 2010). Adequate supply of food at the aggregate level, global or national, does not necessarily always guarantee that all people have enough to eat and that hunger will be eliminated (FAO 2009b). Even in the United States, which is among the largest and most efficient food producing nations on the planet, tens of millions of American children, women, and men are threatened by hunger (Sheeran 2010). As Amartya Sen (1994) points out, food production is undoubtedly an important component of solving the problem of hunger in the modern world, but there are also other matters involved, such as special access to food on the part of vulnerable people.

Therefore, in a new era when solutions to reduce undernourishment are driven by a multiple factors, long-term food security requires a comprehensive approach, which embraces both increased agricultural productivity and guarantee of enlarged access to adequate and affordable nutritious food for all people. Still, numerous factors pose a challenge to the ability of various segments of the population to access food, including the lack of income opportunities, absence of effective social safety nets, targeted/vulnerable groups, and political wills.

Assuming adequate aggregate food supplies, a lack of income opportunities is one of the most important factors hindering poor people from obtaining essential food needed for an adequate diet. Currently, almost half of the world lives on less than US$ 2.50 a day and about a billion of those survive on less than US$ 1 a day (World Bank 2008b). For most, the

margin between earning and spending on food is razor thin (Sheeran 2010). Moreover, during an economic crisis, poor people are hit especially hard. The recent global food and economic crisis has proven that the era of cheap food has become a thing of the past, as the skyrocketing cost of staple foods means that many people, mainly in developing countries, spend up to 75 percent of their income on food (Centre for Non-Traditional Security Studies 2010). Amongst the large segments of the population in developing countries, the urban poor may experience the most severe problems, i.e. increased unemployment, declining wages, and reduced demand for their work; but the rural poor also share a similar burden (see more FAO 2010b). The price mechanism serves to link food availability to access, however the strongest mechanism de-linking them is income inequality and chronic poverty (Gill et al. 2003).

According to the 2010 Global Hunger Index, countries with high levels of gross national income per capita tend to have low hunger index scores, and vice versa (Grebmer et al. 2010). This can be seen in the case of developing countries, which account for 98 percent of the world's undernourished (FAO 2010b) and have very low annual incomes. Moreover, there is a vicious cycle between poverty and hunger. The poverty-stricken do not have enough money to buy or produce enough food for themselves and their families. In turn, they tend to be weaker and cannot produce enough to buy more food. In developing countries, 75 percent of the poor live in rural areas and their incomes are heavily linked to agriculture (FAO 2009b; WFP 2011); however, poor farmers often cannot afford seeds to plant their crops, nor advanced tools and other means for their trade to improve conditions for a secure future. As such, this is a poverty trap that makes the poor hungry, and then their hunger traps them in poverty.

Recent shocks in both agricultural markets and the world economy have highlighted the vulnerability of global food security and job security. The people most affected are typically in countries with pre-existing high levels of poverty and malnutrition, which lack food safety net programs to cushion these crises. Obviously, food-based safety nets and other protection programs “can play a key role in forestalling increase in poverty” and “help households maintain access to food, energy, and essential services” (Sheeran 2010: 9). The 2005 UN Millennium Project Task Force on Hunger also emphasized the need for food-based safety nets as a means of ensuring adequate access to food. Consequently, when an insufficient supply of food

is the root cause of hunger, the fundamental right to be free from this threat obliges all states, rich and poor alike, to establish safety nets for those in need, as a crucial and effective policy response during a time of crisis (Mischler, Schubert, & Vidar 2005).

According to the World Bank, food-based safety nets are designed to ensure livelihoods, increase food purchasing power, and relieve deprivation for food (Besley, Burgess, & Rasul 2003). In order to assure livelihoods during a food crisis, governments are obliged to take action by expanding targeted food safety nets tied to the provision of food, either directly (cash) to vulnerable groups, or through in-kind transfer programs (food stamps, coupons) or subsidies, as well as food-for-work programs. These methods are considered to be efficient in seeking to reduce poverty by redistributing wealth and protecting households against income shocks. However, in many developing countries, food-based safety nets were instituted as a temporary response to a short-term crisis (Lorge Rogers & Coates 2001). Evidence from Argentina, Bangladesh, and India shows that government social spending tends to be less well targeted in times of economic shrinkage (FAO 2011b). Moreover, while the understanding of safety nets is growing in importance within middle-income countries, the challenge often lies in how to apply the lessons learned to fragile states with lower capacities (FAO 2011b).

Furthermore, the right to be free from hunger is considered universal, and therefore eradicating this threat entails ensuring that people have the right kind of food to eat at the right time. However, a critical challenge to the world is that numerous vulnerable populations lack access to an adequate food supply to meet their nutritional demands. Children under 5 years old and pregnant or lactating women are the group most affected by food insecurity over a lifetime. According to UNICEF (2009: 22) there is a global crisis of child under-nourishment exemplified by the epidemic proportions of about 195 million stunted children under the age of 5 and nearly 25 percent underweight children under the age of 5, in the developing world. For instance, more than 90 percent of the world's stunted children live in Africa and Asia, with India alone accounting for 48 percent of the world's stunted children (below age 5) in 2005–06 (Grebmer et al. 2010: 21).

The lifelong cost of poor nutrition in early childhood is a serious problem for obvious reasons. First, children who are undernourished in the uterus, during their first two years, or both are more likely to become shorter adults,

complete fewer years of schooling, earn less income, and the girls risk having low-birthweight children as adults (Haddad 1999: 102). Strikingly, women also constitute a vulnerable social group to food insecurity despite their role as primary actors in the food production process. Highly persistent gender inequality within society, especially in South Asia, results in serious implications for the food security of women and their households (see more at Mukherjee 2009: 7). Malnutrition in women is generally related to poverty, lack of development, or awareness and illiteracy (Dewan 2008). Furthermore, vulnerability to food insecurity can cause social and economic problems, in terms of fewer opportunities for education and greater instances of early marriage (Mathur 2011).

Finally, as food is "purchased" with political pressure as well as income (Sen 1981), food security is a function not only of production and market access, but also of the environment created by economic and political institutions at all levels (FAO 2011b: 47). Political will can either facilitate people's access to essential livelihood assets, or obstruct food security, as "war and state violence increase nutritional vulnerability" (Nafziger 2006: 9). An example of such a case is the man-made famine in Cambodia during 1979, which resulted in about 2 million deaths (Devereux 2000). At the national level, absence of good governance (including political stability, rule of law, respect for human rights, control of corruption, and government effectiveness, etc.) can be a major obstacle to hunger reduction and food security (FAO 2011d: 34). For instance, in many African countries, independence has often been associated with increased political instability, civil wars, and armed conflicts. As such, in 1991 20 million deaths from severe malnutrition occurred in six African countries, Ethiopia, Liberia, Sudan, Somalia, Angola, and Mozambique, where food trade was disrupted by domestic political conflicts (Nafziger 2006: 9).

Furthermore, political will can become a threat to food insecurity as a matter of dictatorship, in which dictatorial and military governments have used the withholding of food as a political weapon to exacerbate human suffering. It has been noted that blaming the weather for food shortages is standard practice in dictatorships (Metzler 2008), such "Stalin's famine" in the Ukraine in 1932–34 or Mao's maniacal farm policies reforms in China (Devereux 2000: 34).

Similarly, the current food crisis in North Korea, which has now continued into its second decade, indicates the importance of dictatorship

influences on food security. The case of North Korea has been exhaustively discussed over the years since in addition to its food shortages, the nationalistic regime pursues nuclear and missile technology proliferation, at the expense of the nutritional needs of the North Korean people (Metzler 2008). Therefore, the current critical matter to food security is how to ensure that national and international policies maintain the potential for food security, the right to food and freedom from hunger for all of the world's population in twenty-first century. There is no doubt that the task of ensuring global food security for the world's growing population that is expected to reach 9 billion people by 2050 is an enormous one. Several challenges including increased global food demand in emerging economies, land diversion for biofuel production, and climate change pose serious risks for global food security. There is an urgent need to boost global agricultural production in sustainable ways that do not negatively impact the economy or environment. While previous food shortages were mitigated by increasing land acreage, a booming population with increased urbanization makes this option less feasible. Instead, a broader range of options such as applying technological innovation in the food system, sustainable meat production, as well as reducing waste through improved storage and transport infrastructure should be pursued. It is noteworthy that boosting agricultural production alone is not sufficient to achieve food security, since rising global food prices in many developing countries have reduced the purchasing power of poor people and hence their access to food. The complexity of the challenges requires a comprehensive and collaborative approach among actors at various levels to achieving sustainable food security.

6Health and Security

Special Focus on HIV/AIDS

Emerging Infectious Diseases and Expanding Risks

Health issues are increasingly becoming an important part of the international agenda and discourse. In recent decades, worldwide more deaths have been attributed to emerging infectious diseases, than all other security threats combined. Dramatic changes in population dislocations, poor patterns of land and water use, environmental degradation, the rise of mega-cities with severe health-care deficiencies, ease of global mobility, the growing number of refugees, combined with increasingly drug-resistant microbes and a lag in the development of new antibiotics have hastened the spread of infectious disease. As Singh describes, "overcrowded cities, intensive food production, sexual practices, poverty, and global warming are some other ingredients that form a suitable culture medium for the emergence, maintenance, and spread of new infectious diseases, as well as allowing the resurgence of older diseases such as cholera, malaria and tuberculosis" (Singh 2004: 186). In 2009, globally there were more than 220,000 reported cases of cholera, of which almost 5,000 were fatal. In the same year, there were more than 1.6 million deaths due to tuberculosis and more than 780,000 deaths due to malaria (WHO 2011c). These infectious diseases pose considerable socio-economic and political threats to society, especially as affected countries or regions lose present and future generations.

The emerging infectious diseases that spread quickly and easily create new challenges for public health systems all around the world. Most of these diseases have an unknown source, signs and symptoms, and mode of transmission. Moreover, no initial therapy or vaccination exists (Reintjes,

Krumkamp, & Kassen 2006). The persistence and spread of infectious diseases are somehow dependent on environmental and social factors. McLean and colleagues list these factors as:

> (1) demographic characteristics and processes, e.g. human mobility; (2) land use, other environmental changes, encroachment on new environments; (3) consumption behaviors (eating, drinking, and, more generally, culinary culture); (4) other behaviors (sexual contacts, IV drug use, hospital procedures, etc.) and; (5) host conditions (malnutrition, diabetes, immune status, etc.).
>
> (McLean et al. 2005: 7)

Outbreaks of these communicable diseases can cause significant economic losses. Some of the estimated losses due to outbreaks are: the cholera epidemic in Peru in 1991 (US$ 770 million), plague in India in 1994 (US$ 1.7 billion), Bovine Spongiform Encephalopathy (BSE) in the United Kingdom (an estimated US$ 38 billion by 2000), and the global Severe Acute Respiratory Syndrome (SARS) epidemic in 2002–03 (US$ 100 billion) (National Intelligence Council 2003; WHO 2000). Outbreaks can have an impact far beyond the actual economic loss. They generate fear and uncertainty and can influence political, economic, and cultural forces that can affect the daily lives of ordinary people, for better or worse.

Avian Influenza (Bird Flu)

Influenza pandemics are rare but recurrent events. In the twentieth century, the world experienced three pandemics of this variety: the 1918 Spanish Influenza that killed between 40–50 million people worldwide, considered one of the deadliest in human history; the 1957 Asian Influenza claiming approximately 2 million lives; and the 1968 Hong Kong Influenza which caused 1 million deaths (WHO 2005b). A pandemic influenza occurs when a new influenza virus emerges against which humans have no pre-existing immunity. Therefore, the disease typically spreads more easily and poses a more serious threat than normal influenza. Spreading happens through coughing and sneezing.

H5N1 (Bird) Flu is an influenza A virus sub-type that is highly contagious among birds. On rare occasions, birds infect other species, such as pigs and humans. Rare but lethal human infections with the H5N1 Flu virus have

occurred. Influenza happens when a new sub-type emerges that has not previously circulated in humans (WHO 2005b). The most recent influenza virus, the H5N1 virus, infected humans in Hong Kong in 1997, infecting 18 people, and killing 6. Again in 2003, infections in people exposed to sick birds were identified. With over 500 human infection cases of H5N1 Flu viruses reported to date by more than a dozen countries, 60 percent have died. At present, the virus does not move easily from birds to humans or proliferate fast among humans. The World Health Organization (WHO) warns that "should H5N1 evolve to a form as contagious as normal influenza, a pandemic could begin … and once a fully contagious virus emerges, the global spread is inevitable" (WHO 2005c). The WHO estimates that between 2 million to 7.2 million people would die as result of an epidemic of this influenza. Death rate is determined by four factors: (1) the number of people that become infected; (2) the virulence of the virus; (3) the underlying characteristics and vulnerability of affected populations; and (4) the effectiveness of preventive measures (WHO 2005c).

In the situation that the H5N1 becomes a global infectious disease, countries might opt for some measures to stop the disease from spreading even further. Measures such as border closure and travel restrictions could delay the spread of the virus, but not stop it. Moreover, since more people are expected to fall ill to this influenza than a common type, it creates a great challenge, since few countries have the staff, facilities, equipment, and hospital beds to cope with the consequences. In addition, inadequate supplies of vaccines are of particular concern, especially for developing countries. Notable influenza viruses of the twentieth century (Spanish, Asian, and Hong Kong Influenza) took six to nine months to travel the globe – when most international travel was by ship. With today's globalized world, and the ease, speed, and volume of international air travel, this type of influenza could spread in a fraction of that time, possibly less than three months to circumnavigate the globe. Great social and economic disruptions are expected as a result of high rates of illness and worker absenteeism. The effects on social and economic life might be temporary and not occur in all parts of the world at the same time. However, in these modern times with growing interdependence and in an interconnected world, the consequences of economic disruptions could affect trade and commerce in a devastating manner.

SARS

Between the months of November 2002 and July 2003 the SARS virus infected a recorded 8,422 people and resulted in 916 confirmed human deaths worldwide (WHO 2007). Within a few months, the disease spread outside Hong Kong, rapidly infecting individuals in some 37 countries in North America, South America, Europe, and Asia. The spread of SARS is a clear illustration of the role of global air travel in moving a new agent across the world (McLean et al. 2005). Thankfully, SARS seems to spread mainly via close person-to-person contact. The virus that causes SARS is believed to be transmitted by respiratory droplets that are produced when a person sneezes or coughs. McLean et al. (2005) reason that a pandemic influenza would be much worse and more difficult to control than SARS.

The outbreak of SARS demonstrated how in an interconnected and interdependent world, a disease that is poorly understood with no vaccine and no effective cure can have serious consequences on economic growth, trade, tourism, business and industrial performance, political careers, and social stability (McLean et al 2005). A coordinated approach based on evidence from international travel data and a joint response network is crucial to stop the virus from spreading internationally. However, even European Union (EU) member states responded without having a common approach to the threat of this pandemic infection (Reintjes et al. 2006).

Swine Influenza (H1N1)

The H1N1 Influenza epidemic outbreak in April 2009 was the second H1N1 outbreak since the 1918 Spanish Influenza. Since the outbreak of the pandemic, an estimated 1.4 million people have been infected and 25,000 have died as a result of the influenza (the most infected country was Germany, with approximately 220,000 infections, followed by Portugal and China with approximately 160,000 and 120,000 infections respectively) (ECDC 2010; WHO 2010b). Despite the fact that it is often referred to as "Swine Flu," the virus is not transmitted through eating pork or pork products. The transmission of this influenza happens the same way as a regular seasonal influenza; droplets through coughing and sneezing, and contaminated hands or surfaces.

The influenza does originate from the animal influenza virus but is different from other recurring seasonal influenza viruses. This virus caused

high levels of summer infections in the Northern hemisphere, and even higher levels of activity during the cooler months – very unlike seasonal flu patterns. Moreover, this type of influenza led to new patterns of death, i.e. greater causalities among young people who are otherwise healthier. The WHO declared a pandemic in April 2009, after the rapid spread, where 74 countries reported infections among their population. The virus first manifested in Mexico. Due to poor public health facilities, it took the Mexican authorities several months before they detected the virus. However, Mexico announced a public health emergency, which was necessary to prevent a transmission disaster, but which also resulted in unfavorable economic consequences, costing the country almost 1 percent of its annual GDP *(The Economist* 2009). The outbreak of the epidemic caused a sharp drop in private consumption as Mexicans decided to avoid public events, restaurants, bars, and nightclubs, which cost Mexico City's service and retail industries US$ 55 million a day. The low consumer confidence affected the financial markets: the peso fell 5.5 percent against the dollar from the onset of the emergency. Moreover, Mexico's export sector was hit. Even though there is no evidence suggesting that meat spreads the virus, China stopped importing Mexican pork *(The Economist* 2009). Expanding air travel has created a global village, where health issues in distant countries can affect everyone in a short period of time. New infectious diseases like Swine Flu bring uncertainty about how to predict what will emerge next.

The WHO declared the end of the H1N1 Influenza in August 2010. However, the WHO also says that cases and pandemics of the virus will continue to occur and will affect mostly pregnant women. The WHO recommends vaccination for prevention. Vaccination against the flu pandemic was available for the public by October 2009, one of the fastest vaccine productions in history. Many questioned the safety issues that accompanied a fast-track vaccine. There were also uncertainties about the risks of the vaccine, that it might have adverse effects once applied to healthy persons. One year after the outbreak of the epidemic, 26 out of the 94 developing countries that requested the H1N1 vaccine received vaccinations (Harwood 2010). The WHO demands certain requirements, such as keeping the vaccination safe and cooled, which need to be met before help is considered.

Enterohaemorrhagic Escherichia Coli (EHEC)

The outbreak of EHEC is not something new. In fact, every year there are EHEC outbreaks in different parts of the world, including Europe. *E. coli* is a common bacterium that is found in intestines of humans and warm-blooded animals. EHEC is a rare strain of the *E. coli* bacterium that can cause severe food-borne disease (WHO 2005a). Previous EHEC outbreaks have occurred, but they have never claimed so many lives. The biggest outbreak was in Japan in 1996 where almost 10,000 people were infected with EHEC (with 11 confirmed deaths). The 1996 *E. coli* outbreak in Japan affected mostly school-aged children, which is rare since this is not the typical group (elderly, sick, and babies) that is affected by viruses and bacteria (Watanabe et al. 1996). The most recent outbreak of EHEC was in Germany in May 2011, an outbreak of EHEC that involved a particularly rare strain: the O104:H4, resulting in more than three dozen deaths. A minority of these cases presented complications with Haemolytic Uraemic Syndrome (HUS), a life-threatening disease that causes kidney damage and is a severe complication resulting from an EHEC infection.

The exact source of the infection has not yet been identified, but the most probable sources of contamination are bean sprouts, lettuce, tomatoes, and/or cucumbers. The bacteria are transmitted through the oral/facial route and by eating contaminated raw or undercooked ground meat products, raw milk, and fresh produce. Human transmission is also possible through poor hygiene (not washing hands).

Due to speculation on the source of the bacteria, consumers bought less, leaving the producers of fruits and vegetables with great surpluses. In Italy, the agricultural union Coldiretti was worried about a "psychosis which could be devastating to health and the economy" *(Le Nouvel Observateur* 2011). Large exporting countries of fruit and vegetables were hurt the most, especially Spain, where its cucumbers were falsely accused of being carriers of the EHEC bacteria. Spain, the biggest exporter of fruit and vegetables within Europe, experienced a loss of € 200 million per week. The weekly loss for the Netherlands was € 10 million and for Belgium, € 3–3.5 million *(Le Nouvel Observateur* 2011).

Infectious Disease and the International Responses

Coordination efforts on national and international levels are essential for surveillance, management, and to promote a common strategy to fight infectious diseases. The main institution responsible for international

coordination is the WHO. In 1969 the WHO adopted the International Health Regulations (IHR), a set of international legal rules binding WHO member states concerning the control of infectious diseases with the potential to spread internationally. In 2000 the WHO created the Global Outbreak and Response Network (GOARN) to centralize a network to assist countries dealing with infectious diseases and monitor the global spread of infections. In 2005, the European Centre for Disease Prevention and Control (ECDC), an EU agency, was created to strengthen Europe's defense against infectious disease (ECDC 2011). The creation of GOARN and ECDC in the last decade is a testimony to the significance of new emerging health threats that have the potential to spread globally and affect the world population.

Some of the most deadly infectious diseases in the WHO list are Diarrheal diseases, Hepatitis B and C, HIV/AIDS, Influenza (respiratory diseases), Malaria, Measles, andTuberculosis, (see Table 6.1). Other common infectious diseases are: African Trypanosomiasis ("Sleeping Sickness"), Cryptosporidiosis (waterborne), Dengue, Hepatitis A, Japanese Encephalitis, Leishmanuasis (sand-fly bite), Meningitis, Onchocerciasis, Pneumonia, Rotavirus, Schistosomiasis (fluke worm), Shigellosis, Typhoid, and Yellow Fever. Increasing globalization creates the circumstances that facilitate a greater level of exchange of persons and products that amplifies the spread of deadly pathogens (Caldwell & Williams 2006: 80). Besides developing emergency response mechanisms, there is a need for longer-term measures to strengthen institutional capacity as this improves a country's ability to manage other emerging and epidemic-prone communicable diseases effectively. Effective control of pandemics requires learning from past experiences and regularly evaluating the safety and effectiveness of preparedness taken both within and between countries.

Table 6.1 Total Deaths (in Thousands) by the Deadliest Infectious Diseases in 2008

Infectious Diseases	8 721
Respiratory infections	3 534
Diarrheal diseases	2 464
HIV/AIDS	1 776
Tuberculosis	1 342
Malaria	827
Hepatitis B and C	197
Measles	155

Source: (WHO 2011a)

Besides HIV/AIDS (which will be discussed in detail in a later part of this chapter) the outbreak of the Avian Flu in 1997, SARS in 2003, Swine Flu in 2009, and, more recently *E. coli* virus in May 2011 are alarming examples of the infectious diseases threatening global peace and stability. Moreover, several diseases from warmer climate regions have been identified in countries like Canada in recent years. The vector-borne infectious diseases, including malaria, dengue, and viral encephalitides, are particularly sensitive to changes in climate. Annually around 225 million people are affected by Malaria, primarily in South Asia and Sub-Saharan Africa (WHO 2010a). These communicable diseases present serious human security challenges to the region and require a comprehensive response. An effective response involves deeper engagement by the affected and at-risk countries and also a stronger regional and global commitment of support to implement prevention and treatment efforts.

Fortuitously, due to the intermittent onset of these highly communicable diseases that pose a serious risk to domestic populations, regional cooperation, and economic growth, health concerns have begun to emerge on the security policy agenda of developed countries. Among all these diseases, particular concern has been directed towards HIV/AIDS. In the last three decades, this epidemic has continued to surpass all estimates in the severity and scale of its impact. Lack of success to control the spread of HIV/AIDS and its greater demographic, social, and economic impact prompted the US Secretary of State Colin Powell to proclaim that it "now represents so great a threat to stability in Africa, Asia and Latin America that it needs to be regarded as a national security issue" (Gow 2002: 57).

HIV/AIDS as a Pandemic

HIV is the human immunodeficiency virus, which can lead to Acquired Immune Deficiency Syndrome, or AIDS. Atlanta-based Centers for Disease Control and Prevention (CDC) first recognized AIDS in 1981. At the end of 2010, there were an estimated 34 million people living with HIV, of which 22.9 million were in Sub-Saharan Africa. Out of 2.7 million new HIV infections worldwide, 1.9 million were in Africa. Africa also accounted for 1.2 million HIV-related deaths in 2010, which was 67 percent of the global total of 1.8 million deaths (UNAIDS 2011). Within the region, Southern Africa is worst affected. In 2001, national adult HIV prevalence had exceeded 15 percent in eight of the countries in the region (Botswana,

Lesotho, Mozambique, Namibia, South Africa, Swaziland, Zambia, and Zimbabwe). The highest levels of new infections in the worst affected African countries are found among women and girls, who account for 60 percent of new infections. To date, nearly 30 million people have died as a result of the disease (see Table 6.2) (UNAIDS 2010).

There is no permanent cure for the disease and scientists have yet to find a vaccine, but antiretroviral therapy (ART) is being given to suppress the HIV virus and stop its progression. Antiretroviral treatment reduces both the mortality and the morbidity of HIV infection, but these drugs are expensive and routine access to antiretroviral medication is not available in all countries. The number of people in low and middle income countries receiving antiretroviral therapy rose from 1 million in 2005 to 5.25 million at the end of 2009 (in addition, 700,000 received ART in high income countries), but still this is almost one-third of the total infected individuals that need access to ART. Access to treatment has contributed to a 19 percent decline in deaths among people living with HIV between 2004 and 2009. At the end of 2010, nearly half of the people (47 percent) eligible for antiretroviral treatment were receiving it (UNAIDS 2011).

Table 6.2 Global Summary of the AIDS Epidemic, December 2009

	Adults	*Women*	*Children under 15 years*
Number of people living with HIV in 2009	30.8 million	15.9 million	2.5 million
People newly infected with HIV in 2009	2.6 million		370 000
AIDS deaths in 2009	1.8 million		260 000

Source: (UNAIDS 2009)

HIV/AIDS as a Traditional Security Issue

In 2000, the UN Security Council's Resolution 1308 declared that "the HIV/AIDS pandemic, if left unchecked, may pose a risk to stability and security." With the passage of this UN Security Council resolution, HIV/AIDS officially became a security issue. The path to the UN Security Council resolution was not smooth by any account. It was precipitated by a US National Intelligence report on the risk to national security that infectious diseases posed. The report singled out HIV/AIDS as the greatest risk (de

Waal 2010b; Rushton 2010). Following the report, US Permanent Representative to the UN, Richard Holbrooke joined forces with the head of UNAIDS to press the Security Council for a resolution. Some key countries like Russia, China, and France were uneasy about the Security Council expanding its scope from traditional security issues. After intense negotiation and significant softening of the language contained within it, Security Council Resolution 1308 was passed on July 17, 2000 (Rushton 2010). Despite the fact that the resolution was passed unanimously, there were significant doubts by key members – not to mention UN member countries outside of the Security Council – that HIV/AIDS should be addressed as a threat to international peace and security. However, framing the threat of HIV/AIDS as part of international peace and security rather than as a public health problem was expressed through three linkages: (1) prevalence rates in the uniformed services (including peacekeepers), (2) the impact of high prevalence rates on state stability, and (3) the conflict and spread of HIV (McInnes & Rushton 2010).

HIV-prevalence levels are generally higher among the armed forces. The high susceptibility is attributed to:

> their work environment, their relative low levels of maturity combined with high levels of testosterone, their high levels of sexual activity, and the military' s professional ethos, which tends to excuse or even encourage risk-taking on and off battlefield, also in regard to sexual behavior. Also, aggressiveness is abetted by high levels of alcohol and drugs consumption.
>
> (Benz 2009: 273)

Alex de Waal highlights HIV/AIDS as a threat to the operational capabilities of the armed forces (de Waal 2010a). High HIV infection and a large number of untimely deaths in the armed forces affects their strength, staffing, and morale (Elbe 2006).

HIV infected soldiers lack the energy to withstand the rigors of training, combat, and living in tough conditions, placing additional burdens on other soldiers, which contributes to problems of morale. The middle-ranking officers between 25 and 30 years of age are most affected, leading to significant human resource deficiencies in armies (Kershaw 2008: 10). In some Southern African countries, 20–40 percent of defense forces are

estimated to be infected with HIV. Because of poverty, in many African countries, HIV-infected people join the army to gain access to ART (Gordon 2000). There is still insufficient evidence about the impact of HIV/AIDS on the long-term operational abilities of African armed forces (Ndinga-Muvumba & Pharoah 2008). Some sources argue that military HIV/AIDS rates may actually be lower than that of the general population, because many recruits are drawn from rural backgrounds where prevalence is lower than urban areas (De Waal 2005). However, the possible consequences of a high HIV prevalence among the armed forces are many: (1) heavy toll on decision-making command structures, (2) rising costs in the retraining of highly skilled personnel, (3) delayed deployment to international peace operations, and (4) risk of spread of HIV within conflict zones by peacekeepers (home and abroad).

Uganda started a strong campaign for AIDS prevention within its armed forces in 1986, after President Yoweri Museveni sent 60 of his top officers for training in Cuba, where 18 tested positive for HIV. Realizing his fighting force was going to be decimated, Museveni took some strong and effective measures (Faris 2006). But, this sort of concerted commitment is missing in many other countries in Africa. According to some estimates, AIDS accounts for seven out of ten military deaths in South Africa and AIDS deaths have reduced Malawi's forces by 40 percent in recent years.

As international peacekeepers are alleged to be infected with HIV/AIDS, peacekeeping operations have been blamed for introducing HIV to countries with conflicts. The arrival of UN peacekeepers in Cambodia between the spring of 1992 and September 1993 also coincided with the dramatic increase of the HIV rate in the country. Though there is insufficient evidence to link the spread of the pandemic to the presence of international peacekeepers, it does not stop officials in Phnom Penh from blaming the UN Transition Authority in Cambodia (UNTAC). In 1997, Nigeria found that a significant number of its armed forces who were carrying out peacekeeping duties in Sierra Leone became HIV-positive (Bazergan 2002). This led to Nigeria's reluctance to send more peacekeepers. The high rate of HIV in the African armed forces also makes it more difficult to staff international peacekeeping operations in that continent. South Africa faced serious problems in finding HIV free peacekeepers to send to Darfur.

Of the nearly 98,000 UN uniformed personnel in the world in 2011, almost 70,000 were deployed in Africa. About 80 percent of the UN

peacekeepers were deployed in seven African conflict zones: Western Sahara, Sudan's Abyei Area, South Sudan, Darfur, Democratic Republic of Congo, Côte d'Ivoire, and Liberia (UN 2011). Ndinga-Muvumba and Pharoah (2008) argue that if the problem of HIV/AIDS remains unaddressed in Africa, there is a possibility that the process of institutionalizing peacekeeping will be slowed down. Security Council Resolution 1308 of July 2000 has categorically asked for international and national efforts to protect peacekeepers from, and to prevent them from transmitting HIV.

The actual relationship between HIV/AIDS and armed conflict is a separate issue to the relationship it shares with the armed forces. The US Central Intelligence Agency suspects that HIV/AIDS has a concerning relationship to terrorism (Selgelid & Enemark 2008). The suspicion is based on the assumption that AIDS orphans are prime targets for militant terrorist organizations to train to become terrorists, as they are more susceptible to radicalization. Others have suggested that impoverished, AIDS ravaged countries are havens for terrorist organizations (Selgelid & Enemark 2008). These arguments are certainly sensational, but little research could be found to demonstrate any concrete link. Dennis Altman (2003: 421) presents more conventional links of HIV/AIDS to armed conflict. HIV/AIDS presents a security risk that it is spread through armed conflict through numerous avenues: “the creation of large refugee camps and the conditions making for unprotected and forced sex within them; poverty leading to an increase in commercial sex; decline of literacy and access to basic prevention information; and the collapse of health services, leading to lesser ability to follow infection protection guidelines” (Altman 2003: 421). Griffin and Khoshnood's research on Afghanistan finds evidence that

> prolonged conflict and insurgency in Afghanistan has contributed to a scenario in which the largest refugee movement in recent history led more than 8 million Afghans into neighboring regions where injected drug use was more widespread and HIV/AIDS prevalence far higher than currently observed in Afghanistan.
>
> (Griffin & Khoshnood 2010: 164)

Spiegel et al. (2007) attempted to locate the evidence of conflict-induced HIV transmission. They found the linkage to not be straightforward, but rather complex. There is no evidence that refugees exacerbate the HIV

epidemic in host communities, but over time refugees' prevalence of HIV approaches the rate of infection of the host communities. Others argue that conflict might in some circumstances act as a brake on the spread of the disease as conflict limits human mobilization, which is believed to limit the spread of HIV (McInnes & Rushton 2010). The scarcity of reliable data is one of the main reasons for the lack of any definite conclusion in this context. There is no doubt that collecting data during and after a conflict is riddled with difficulty and often suffers from biases. In the Great Lake region of Africa, there are allegations of HIV/AIDS being used as a weapon of war, as warring militias encourage their HIV infected soldiers to rape the enemy population (UNAIDS 2000). Many sources confirm that intentional HIV infection was used as a war strategy during the genocide in Rwanda (Mills & Nachega 2006). Evidence suggests that the HIV prevalence rate among rape survivors in Rwanda was very high (IRIN 2003).

Economic considerations are also partially responsible for the framing of HIV/ AIDS as a security threat. Those who support securitization of the pandemic argue that the links between HIV/AIDS and economic ramifications are so significant that HIV/AIDS poses a great risk to state stability as the disease is bringing numerous African societies to the verge of economic collapse (Selgelid & Enemark 2008). AIDS kills mostly young adults, leaving households primarily composed of the very young and elderly. Loss of the youth population in their most productive years affects a country's economic output. AIDS also endangers the economic productivity of significantly afflicted countries because of the resulting employee sick leave, decreased production, and costs associated with training new employees to replace those that have died. Direct costs include money spent on medical care, medicines, sick leave, and funerals, while indirect costs involve productive time loss (patients and dependents) due to illness, recruitment and training costs to replace workers, and care of orphans. The costs reduce the national savings and the reduction in investment could lead to a significant reduction in economic growth.

HIV/AIDS and Human Security

Agriculture is the largest economic sector in most African countries accounting for a large portion of production and the largest source of employment. HIV/ AIDS pandemics are shifting from urban to rural areas and gradually affecting more women. This trend is decimating the

agricultural labor force for generations to come, threatening sustainable agriculture in these vulnerable societies. As de Waal and Whitehead (2003) have argued, HIV undermines the resilience of the affected individual and the household resulting in new patterns of hunger and food insecurity. There is an urgent need to secure the provision of food for populations affected by HIV/AIDS. In most cases, securing food becomes the first priority of people affected by the pandemic.

The impact of HIV/AIDS on state stability is a problem not only in the short term but the long term too. For example, 10 percent of teachers in Africa are expected to die from the disease. AIDS affects the education sector not only by creating shortages of experienced teachers, it also forces children to be kept out of school to attend sick family members or to work in the fields to support household income. In addition to the education sector, the health services of a country are affected due to an increased number of people seeking the services of a decreased supply of health-care professionals. Approximately, 25–50 percent of health-care workers are expected to die in the worst stricken countries. Many states face a reduction in GDP of as much as 20 percent as a result of the disease (Singer 2002) . The social costs of this pandemic are very high as well. Due to the stigma of the disease it commonly results in the loss of dignity for the patient and family. With a large percentage of the younger population being claimed by the disease, it creates a larger number of dependents per capita and increases the role and responsibilities of the elderly population. Violence against women is also both a cause and a consequence of rising rates of HIV infection in society.

In 2003, with particular reference to the situation in Southern and Eastern Africa the UN produced a report highlighting the “triple threat”–HIV, food insecurity, and a lack of state capacity (UN High Level Committee on Programmes 2003) . Research work has shed light on the scope of this crisis in Swaziland and Zimbabwe (Naysmith, de Waal, & Whiteside 2009; Price-Smith 2007; Whiteside, Whalley, & Maysmith 2007). It describes how this combination of stresses exerts moderate to significant negative effects upon the two countries’ economic and social stability, and ultimately their national security. However, Barnett argues that there is little or no relationship between state stability and HIV/AIDS (Barnett 2009). He focuses primarily on governance, rather than accounting for the social and economic consequences. While the prevalence of HIV may not influence state stability

directly, it is not correct to dismiss the economic and social factors that are relevant to assess this link. In many cases, HIV/AIDS is seriously eroding the social and economic fabric of affected countries.

HIV/AIDS also brings serious challenges for the smooth functioning of political institutions in afflicted countries. The untimely death of elected politicians brings a sudden loss of expertise and specialization among political elites. Law-making institutions also face a larger number of expensive by-elections to fill vacancies. In Zambia alone, between 1985 and 2003, AIDS was responsible for 59 out of 102 by-elections (Chirambo 2006: 18). Not only is the institutional capacity of these poor developing countries adversely affected, even democratic frameworks are possibly in danger (Strand et al. 2004). Due to a high increase in the mortality rate, the voter list is often fraught with deceased (ineligible) voters because the government has failed to revise the voter registry, increasing the opportunity for and prevalence of bogus voting. Many patients are forced to sell their votes in order to receive ART. Frequent elections additionally lead to voter fatigue, resulting in decreased electoral participation (Chirambo 2006). Inadequate infrastructure and social stigma deter HIV infected voters from voting as well (Strandet al. 2004). Notwithstanding these possible contributions to the political fragility of the affected countries, as Sato argues, "it is rarely the case that these events are caused by HIV/AIDS alone" (Sato 2008: 8).

Benz argues that:

> poor countries with little social cohesion face high levels of susceptibility to HIV-infection and high levels of vulnerability to its impact. … conflicts result in increases in the disparity in income, in the breakdown of social cohesion, and declining levels of wealth. The mobility of populations (soldiers, refugees, IDPs) increases healthcare and education system breakdown … and social values rapidly change (as woman become refugees). In addition, institutions, laws, and order break down, and biological co-factors of transmission (malnutrition, presence of other STDs and virus' sub-types) become prevalent.
>
> (Benz 2009: 271)

A number of other works have also shown levels of social cohesion, social capital, wealth, or income inequality correlate with HIV/AIDS (de Holtgrave & de Holtgrave. 2003; Kawachi 2000; Mahal 2001; Over 1998).

Need for a Coordinated Approach in Confronting HIV/AIDS Pandemic

Despite the fact that the UN Security Council resolution was passed unanimously more than a decade ago, significant doubts persist as to whether or not HIV/ AIDS should be addressed as a threat to international peace and security. There is also a debate as to whether its securitization is in the best interest of those fighting to end the pandemic. The discourse on HIV/AIDS has received heavy criticism in recent decades: from a near consensus that there is an AIDS-security linkage (Heymann 2003; Maher, Coupland, & Musson 2007; Ostergard 2007; Price-Smith 2007; Singer 2002) to a linkage that has become less prominent in the current discourse (McInnes & Rushton 2010). Many argue that HIV/AIDS is a health issue and it should be framed that way (McInnes & Rushton 2010; Peterson 2002; Whitesideet al. 2007). To them, securitizing a health issue moves the issue from civil society to the military, and they argue that civil society is better suited to address the issue of HIV/AIDS than the military (Elbe 2006). Selgelid and Enemark argue, "it is conceivable, for example, that the sight of troops on the street might exacerbate rather than assuage popular anxiety" (2008: 461). Moving the management and response of the issue to the military sphere, they argue, moves it to organizations "with the power to override the civil liberties of persons living with HIV/AIDS" (2008: 458).

There is no question that the HIV/AIDS pandemic has serious implications for society, politics, and the economy of a state. The disease is undoubtedly a threat to human security, but there are disagreements on whether or not it puts national defense at risk (Peterson 2002). It is important for the international community and policy-makers to focus on the demographic implications of the HIV/ AIDS pandemic rather than engaging in a debate about its implications for international security. There is no doubt that in the present international system, weaker and poorer nations will continue to suffer the heaviest burden of HIV/AIDS.

The HIV/AIDS pandemic has been compared to the 1918 flu epidemic and the fourteenth-century Black Death since they are similar in scale and capacity to transform social, political, and economic life. The difference lies in the way that the Black Death was a visible disease, followed by a more imminent death, whereas HIV is a lengthy progression between HIV-infection, deterioration of the immune system, and then the onset of an AIDS-related death (Ndinga-Muvumba & Pharoah 2008). In 2007, President George W. Bush committed US$ 15 billion to the Emergency Plan for AIDS

Relief (PEPFAR 2011), which constitutes by far the largest international health initiative ever undertaken by one nation to address a single disease. The program aims to provide ART to 2 million infected people and prevent 7 million new infections. Besides PEPFAR, an international financing institution, the Global Fund to Fight AIDS, Tuberculosis and Malaria also supports large-scale HIV/AIDS prevention, treatment, and care programs.

Due to preventive measures, in 33 countries HIV incidence fell by more than 25 percent between 2001 and 2009. Most importantly, of these countries 22 are in Sub-Saharan Africa. The biggest epidemic countries in Sub-Saharan Africa – Ethiopia, Nigeria, South Africa, Zambia, and Zimbabwe – have either stabilized the prevalence rate of HIV/AIDS or the numbers are in decline. However, in seven countries in the world, most of them in Eastern Europe and Central Asia, HIV incidence increased by more than 25 percent between 2001 and 2009. Nearly 90 percent of the newly reported HIV diagnoses in this region occurred in two countries, the Russian Federation (66 percent) and Ukraine (21 percent), but newly reported HIV diagnoses are also increasing in other countries, including Uzbekistan, which now has the largest epidemic in Central Asia. Injecting drug use is a major factor in spreading the epidemic in this region.

The apparent stabilization of the global HIV prevalence rate does not mean that the scale of the epidemic is diminishing, as the number of people newly infected with HIV is almost equal to the number of people dying of AIDS. Moreover, the scaling up of ART has its own pitfalls. Research among homosexual men in industrialized countries has shown that preventive measures (ART) are outweighed by an increase in risky behavior, and in some instances lead to an increase of HIV incidence. NGOs and grassroots movements in sub-Saharan Africa have shifted their focus from community mobilization and prevention to treatment support activities (Van Damme, Kober, & Laga 2006).

Public health reflects the quality of life and well-being of a society. The battle against communicable diseases like HIV/AIDS demands innovative, multi-sectoral, and interdisciplinary responses. Social stigma and discrimination create serious hurdles for prevention efforts. Stigma originates from fear and fear is assuaged by knowledge. Proper education is needed for vulnerable groups as well as decision-makers and policy-makers. In this context, the media can play a vital role in creating awareness of the epidemic. It is also important to educate and engage political and religious

leaders in the battle against HIV/AIDS and other communicable diseases. A single misguided leader can cause serious damage to disease prevention efforts, as recently happened in South Africa. With an improved understanding of the nature of the disease, political leaders can play a positive role in policy-making, while religious leaders with their tremendous influence within communities can help to provide critical cultural and religious support to take decisive steps towards HIV prevention.

Responding to HIV/AIDS on a scale proportionate with the epidemic is a global obligation. Greater coordination and cooperation among a varied group of actors is needed to amplify the efficacy of the response to this communicable disease. Responses need to be effective and comprehensive in order to prevent an even larger disaster than the current one. As Piot and his colleagues maintain, “the imperative now shifts to garnering the requisite global, national and community leadership that will be the only basis on which the total social mobilization against AIDS can be sustained” (Piot et al. 2001).

7Migration and Conflict

The Complex Linkage

Large Population Migration: An Increasing Concern

Migration is a highly multifaceted term, which includes all types of voluntary as well as forced movements of a population. A series of demographic, economic, socio-cultural, and psychological issues influences the nature, pattern, and direction of voluntary human migration, while forced migrations are the result of civil war, political and ethnic persecution, famine, and environmental disasters (Swain 1996b). Much of the existing literature on voluntary migration emphasizes the economic motives of migrants. According to proponents of this approach, migrants move to take advantage of better economic prospects in terms of employment and income. The neo-classical economic framework, "the equilibrium model of migration," conceptualizes population movement as the geographical mobility of workers who are responding to imbalances in the spatial distribution of land, labor, capital, and natural resources (Wood 1982). The push (supply) pull (demand) theory is the more general conceptual umbrella for this equilibrium model. Unlike this neo-classical equilibrium theory, which is based on a microeconomics approach professed mainly by the North American research community, the historical-structural school on the study of migration is derived from various approaches adopted by social scientists in Africa and Latin America. This historical-structural school consists of various macroeconomic approaches: dependency theory, internal colonialism, the center-periphery approach, and the global accumulation framework.

Whereas the explanation regarding "voluntary" migration is dominated by the economic approach, the causes of "forced" migration are usually

attributed to political factors. The world at present is experiencing a third wave of large-scale human migration. In the first wave up to 1914, nearly 10 percent of the population of the world moved from one country to another – and in many cases from one continent to another. The second wave of human migration took place after the Second World War, and was caused by massive destruction and the redrawing of state boundaries, particularly in Europe. The present and third wave is a combination of both voluntary and forced migration composed of a large section of the world population. According to the International Organization for Migration (IOM), the total number of international migrants increased from 150 million in 2000 to 214 million persons in 2010 (IOM 2011). The number of people forcibly displaced worldwide reached 43.7 million in 2010 (UNHCR 2010). Immediately after the end of the Cold War, the number of internal conflicts increased, displacing a large number of people. Although there has been a drop in the number of civil wars in recent years, population migration has not decreased. Historical evidence is one of the most reliable predictors that the population migration will increase in the decades ahead. There is no holding back this tsunami. The United States alone detains more than 1.5 million people along the Rio Grande border with Mexico every year.

Conflict Forcing People to Migrate

Armed conflict peaked in the early 1990s as the Cold War came to an end in Europe and new states were formed in the aftermath of the collapse of the Soviet Union and Yugoslavia. Since that time the world has experienced a precipitous decline in the number and severity of international and civil wars (Gleditsch et al. 2002; Lacina, Gleditsch, & Russett 2006; Mack 2005; Marshall & Gurr 2005; Muller 2004). The current armed conflict levels are the lowest they have been since the decades immediately following the Second World War. The humanitarian effects of civil war, including the number of civilians killed and forced migration, reflect similar trends. However encouraging these global patterns may be, as reports of daily violence in places such as Iraq, Afghanistan, Sudan, and Somalia poignantly illustrate, human suffering, induced by conflict is far from disappearing. Although international wars are now limited, civil wars continue on all but one continent of the planet. Each year thousands lose their lives in battle or become victims of one-sided violence, and many thousands more are

forcibly displaced from their homes. In 2009 alone the world witnessed 36 armed conflicts fought in 27 locations around the world (see Table 7.1).

The effects of these armed conflicts continue to be devastating to the collective well-being of nations. As a result of violent wars, poor countries are further submerged by the disruption to the formal economy, the destruction of physical infrastructure, and renewed tensions between social groups. While many states struggle to cope with the ongoing effects of wars, others are struggling to consolidate recent gains. Peace agreements have taken place in one third of the 121 conflicts active since 1989 (Harbom, Högbladh, & Wallensteen 2006). After the cessation of violence, societies cope with precarious situations of insecurity, as identities and inter-group tensions forged in the caldron of violence persist in the face of attempts to reinvigorate the economy, rebuild infrastructure, and fashion a new national ethos.

Internal armed conflicts and their effects do not occur in isolation, but are spread across borders. Globalization further facilitates this diffusion process through the increasing movement of people, capital, information, goods, and services around the world without reference to national borders. Through ethnic ties, refugee movements, cross-border sanctuaries, and the spread of international terrorism, violence spans the boundaries of states, incorporating new actors or creating new conflicts. War economies are linked through migrant networks to the global economy. Global communications deliver around the world the sense of insecurity experienced at the local level during civil wars. And the costs of war are shared internationally through their effects on economic relations, the accommodation and repatriation of refugees and asylum seekers, and the demand for international development aid, peace-making and peace-building which require taking risks and investment of substantial monetary, diplomatic, and military resources. A central element of globalization is the circulation of migrants. As Table 7.2 shows, the world is currently experiencing a mass wave of international migration.

Table 7.1 States Experiencing Civil War in 2009

Afghanistan	1	13 636	1 905 804
Iraq	1	58 736	1 785 212
Somalia	1	155 851	678 308
Sudan	1	21 364	348 500
Myanmar	3	43 447	206 650
Central African Republic	1	34 142	154 005
Turkey	1	1 539	146 386
Sri Lanka	1	6 332	145 712
Angola	1	303	141 021
Rwanda	1	1 591	129 109
Russia	1	6 122	109 455
Colombia	1	30 216	104 388
Iran	1	5 753	72 773
Ethiopia	2	6 484	62 873
Pakistan	2	1 590	35 132
Chad	1	875	21 646
India	5	707	19 514
Nigeria	1	1 521	15 608
Algeria	1	138	8 184
Uganda	1	278	7 554
Peru	1	126	6 271
Mali	1	163	2 926
United States	1	12	2 367
Yemen	1	233	1 933
Israel	1	58	1 310
Philippines	2	42	979
Thailand	1	14	486
27 locations	36 conflicts	391 273	6 114 105

Source: (Adapted from Lotta Harbom et al., 2009)

It is true that the global refugee population within the United Nations High Commissioner for Refugees (UNHCR) mandate dropped somewhat in the first half of the 1990s, though it has started increasing again. The international community claims that it is due to the peace-building efforts in the conflict zones and voluntary repatriation. However, the refugee statistics fail to tell the whole story.

Table 7.2 Refugee Population (UNHCR) between 1992 and 2009 (Thousands)

Region (end of the year)	*1992*	*1996*	*2001*	*2005*	*2009*
Central Africa – Great Lakes	6 442	4 082	5 086	3 166	945
East and Horn of Africa	960	1 351	540	1 338	779
Southern Africa	2 629	2 648	2 420	1 088	143
Western Africa	1 757	285	474	410	149
Asia and Pacific	172	148	86	229	2 667
Middle East and North Africa	1 235	1 178	1 064	118	1 962
Europe	769	761	437	989	1 642
Americas	701	1 404	897	1 124	519
Various/Stateless	3 133	1 461	1 026	200	n/a
Total number of refugees	17 798	13 317	12 030	8 662	8 807
Estimated IDPs	25 000	17 400	25 000	23 700	27 100
Total number of people concerned	**42 798**	**30 717**	**37 030**	**32 362**	**35 907**

Note: Figures are based on UNRWA records, which are regularly updated; however, registration with the Agency is voluntary and these figures do not represent an accurate population record.

Source: (UNRWA 2010)

In reality, the total population of concern to the UNHCR increased from 19.5 million persons at the beginning of 2005 to 26 million by 2009 (UNHCR 2010). This 6 percent increase is due to increasing numbers of internally displaced people (IDP) and stateless persons. In 2010, in Iraq alone, 2.8 million people were internally displaced, and in Sudan, it is estimated that approximately 4.5–5.2 million people were internally displaced. At the end of 2010, some 43.7 million people worldwide were forcibly displaced due to conflict and persecution, the highest number in 15 years. This included 15.2 million refugees, 27.5 million IDPs, and close to 1 million individuals whose asylum application had not been adjudicated by the end of the reporting period. Also noteworthy, was the sharp rise in IDPs due to conflict, increasing to 27.5 million by the end of 2010, which is the highest number in more than a decade. At the end of 2010, approximately 2.9 million people had been newly displaced (UNHCR 2010). The UNHCR statistics on refugees also excludes another large section of the refugee population, the Palestinian refugees. In 2010, there were more than 4.8 million Palestinian refugees living in refugee camps within the territory of Jordan, Lebanon, Syria, the West Bank, and the Gaza Strip (see Table 7.3) (UNHCR 2010).

According to the operational definition given by the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA), “Palestinian refugees” are those people whose normal place of residence was Palestine between June 1946 and May 1948, who lost both their homes and means of livelihood as a result of the 1948 Arab-Israeli conflict. Some argue that the UNRWA's definition in fact recognizes the Palestine refugees as IDPs (Lee 1996). Although the rights of refugees were safeguarded by the 1951 international Convention Relating to the Status of Refugees and its 1967 Protocol and the UNHCR mandates, UNHCR provided protection to IDPs upon request of the General Assembly or the Security Council. In 1992, Boutros Boutros-Ghali designated Francis Deng as the representative of the Secretary-General on IDPs. During the same year, the Commission on Human Rights adopted a resolution on IDPs (OHCHR Resolution 56/1992) which was approved by the General Assembly in 1994 (GA Resolution 48/135 1993), paving the way for larger international support of IDPs. In 2009, of 27.1 million IDPs UNHCR was able to assist 15.6 million.

Table 7.3 Registered Number of Refugees by United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) (Thousands)

Field	*1950*	*1970*	*1990*	*2000*	*2010*
Jordan	506	506 038	929 097	1 570 192	2 004 795
Lebanon	127	175 958	302 049	376 472	427 057
Syria	82 194	158 717	280 731	383 199	477 700
West Bank	–	272 692	414 298	583 009	788 108
Gaza Strip	198 227	311 814	496 339	824 622	112 269
Total	**914 221**	**1 425 219**	**2 422 514**	**3 737 494**	**4 820 229**

Notes
1 Figures are based on UNRWA records, which are regularly updated; however, registration with the Agency is voluntary and these figures do not represent an accurate population record.
2 Until 1967, the West Bank was administered as an integral part of the Jordan field.
3 Excluding the 45,800 persons receiving relief in Israel who were the responsibility of UNRWA until June 1952.

Source: (UNRWA 2010)

Increasing Number of Environmental Migrants

Besides violent conflicts and persecution, other factors such as ecological crisis, natural disaster, poverty and underdevelopment at home, and economic opportunity abroad also account for the global increase in migration. Environmental changes threaten to accelerate the rate of

displacement. Furthermore, various state measures to counter environmental scarcity can also lead to environmental changes and force people to migrate. Active government policies of energy-driven development and resource exploitation cause population displacement. Each year 10 million people are uprooted and impoverished by development projects undertaken by states. In 1995, the World Bank announced that over the past 10 years between 90 and 100 million people became involuntarily displaced as a consequence of planned development, including the construction of large dams, transport routes, industrial zones, and other policy decisions concerning land usage. When compared to the number of current refugees (18–20 million) it becomes evident that forced population displacement resulting from adopted development strategies is a problem of enormous proportion and significance, though largely a hidden problem. Population displacement will grow as the world's population increases and urbanizes, forcing states to find solutions to the challenges of housing, provision of clean water, food security, and power generation.

The loss of living space and source of livelihood due to environmental stress could lead to the migration of affected people. The decision to leave home is not always a simple one. People generally choose to stay in their native land and struggle to survive the impact of environmental disruptions until their hope of survival wears out. However, environmentally forced migration is not a new phenomenon. Throughout history, people have been forced to flee from their homes, because the land on which they lived could no longer sustain them. Deforestation, desertification, and drought have had a significant impact on the movement of the population in the past. One could even reasonably argue that mankind's entire history has been defined by migration. However, “what is more recent – and more alarming – is the potential for mass migration caused by irreversible destruction of the environment.” Increasing numbers of people are running away from their homes because life has become insupportable there. They are moving within and across international borders, and from rural areas to cities in large numbers (Martin 1992: 963).

Every year, the world population increases by 78 million, roughly the equivalent of another Germany (UNFPA 2009). Some describe world demographic trends as “revolutionary,” because though the human species emerged perhaps 150,000 years ago, most of its growth has been in the last 40 years. More than 90 percent of the population growth is taking place in

developing countries. Recently, research has found population growth pressure to have a significant impact on the likelihood of a state becoming involved in interstate military conflict. Whether or not the population growth directly affects the decision of the state to go to war , it undoubtedly generates scarcity of resources in a technologically underdeveloped country. In spite of whopping claims by agricultural scientists, it's true that the 925 million people on Earth do not receive the 2,200 calories per day generally accepted as the nutritional minimum, and that 40,000 die every day of hunger and hunger related diseases (FAO 2010b). The availability of fresh water has also fallen short of meeting the increased demand. One billion people in the world lack access to clean water and more than two billion do not have adequate sanitation facilities (UNICEF 2010). In addition, the loss of living space and source of livelihood due to civil war and/or environmental change could force the affected people to migrate. Ethnic conflicts and food scarcity have already forced a large number of people to move across international borders. This phenomenon has been of growing concern to the international community, particularly because the mass movement of the human population creates security concerns for nation-states.

Moreover, in recent years a strong consensus has built up among the scientific community that global warming is increasingly taking place. The predicted dramatic sea-level rise caused by this climatic change may take away the living space and source of livelihood of millions of people in the near future. The Intergovernmental Panel on Climate Change (IPCC) has predicted that sea levels could rise an average rate of 6 cm per decade over the next century. A rise of this magnitude will no doubt threaten densely populated low-lying countries and the coastal zones of China, Egypt, Bangladesh, and certain island states, such as the Maldives. In an emotional speech to the UN General Assembly, back in October 1987, Maumoon Abdool Gayoom, then president of the Maldives, pronounced that a sea-level rise of only 1 m would threaten the life and survival of all his countrymen (Brown & Flavin 1988). Climate change could also potentially alter the usual rainfall pattern which may lead to increased flooding, drought, and soil erosion in tropical and arid regions of the world. Among the other effects, there could be an increase in tropical cyclones. Increased cyclones would also enhance the risk of coastal flooding.

Globally 17 million people were displaced by natural disasters (including earthquakes and tsunamis) in 2009, and 42 million in 2010 (Foresight 2011). Climate change has an effect on many aspects of life and severely affects human security to such an extent that it can lead to the forced migration of vulnerable populations. There is still considerable debate as to the size and scale of environment/ climate induced migration: 150 million by 2050 (Myers & Kent 1995), 200 million by 2050 (Myers 2002), and 150–200 million by 2050 (Stern 2007). More specifically on the issue of sea-level rise, the World Bank study estimates that a sea-levels rise of 1 m would affect 56 million people and of 5 m would affect 245 million people in 84 developing countries (Dasgupta et al. 2007).

Migration Induced Regional and Local Conflicts

Large-scale trans-border migration has several dimensions for inducing conflict between the receiver and sender states. In some cases, giving permission to the migrants to enter into its own territory may strain the relationship between the receiving state and the sender country. The tension may arise from the exposure of the sender's inability to handle the migration crisis by itself, or the sender may suspect or allege that the receiving country is encouraging the migration. The other possibility is that the migrants, after being settled in the host country, may indulge themselves in anti-government activities against their native government, which they may perceive as the perpetrator of their plight. The new location, physical proximity, and protection from the former regime's retribution can provide a good opportunity for them to take revenge. In some cases, the migrants may be encouraged or be manipulated by the host state in their effort to take revenge because of existing political differences between the host and the sender states. This will of course result in creating negative implications for regional security (Swain 1996b).

The trans-border migrants may pose a structural threat to a host country by putting increasing demands on its scarce resources. Competition with the local population over resources may lead to conflict between migrants and the local population and produce political problems for the government of the receiving state. The host country may also feel threatened when the migrants try to enter its fragile domestic political process and exert pressure on the government. In some situations, the migrants may become a serious law and order problem in the receiving country, or the receiving state may

even perceive the mass migration and settlement in a particular area as a ploy by the sender to prepare for a future unarmed conquest or assertion of sovereignty. Attempts by the host state, in response to pressure from its own citizens and law enforcement agencies, to send the migrants back to their own country may deteriorate the relationship between the sender and receiver states and could even incite an armed struggle (Swain 1996b).

Not all displaced people migrate to another country. Most of them try to find other areas within their own country to migrate to. The failure of the ecosystem to support the rural economy may induce the villagers to eventually migrate to nearby urban areas. The rapid urbanization in the developing world creates, no doubt, various social problems, but, more importantly, also brings a disgruntled population into close physical proximity. Living close to one another may help them to organize themselves against the state authority, which they perceive as the cause of their misery. Access to modern communication systems and news media can have a profound impact on this crusade. The opposition political elites may also find it much easier to mobilize these people to struggle against their exploitation, something that would prove much more difficult in remote villages.

State authorities in developing countries customarily place little importance on this kind of insurgency or opposition, in terms of allocating military, economic, and political resources, unless they threaten the capital or other main cities. This attitude among developing states has helped to increase the relevance of urban centers for the political movements in many of these countries (Sayigh 1990: 33). It is very likely that organized and motivated displaced people in these cities will bring the struggle to the doorstep of the state administration. The availability of the new resources at their hands could also possibly make them more effective in this endeavor. In this way, migration could potentially transport the conflict from rural areas to a distant urban locality.

Probable conflicts in the urban centers of developing countries between migrants and state authorities could be the result of a transformation of popular disenchantment into an organized political struggle. This organized protest challenges the authority of the ruling government, and brings to the attention of the government the problems of the migrant population. At the same time, the changing situation can intensify conflict in developing societies, and pose a threat to political regimes.

Wherever migrants settle, they flood the labor market and add to the local demand for food and other basic necessities, which puts greater burden on society. The assimilation of the migrants into a society is not easy in any circumstance, but when it takes place in another developing society, the situation becomes even worse. The influx of migrants is likely to deplete local food supplies and to drive up food prices (see Chambers 1979; Kibreab 1983). The increasing competition for common property resources – water, grazing areas, forests – is likely to be especially damaging for local hosts.

The resulting resource scarcity in the new area may help to generate a strong feeling of "nativism" among the original inhabitants of the receiving area. Myron Weiner defines "nativism" as a claim by a group of people that by "virtue of its indigenous character, rooted in historical claims, it has rights upon land, employment, political power and cultural hegemony that are greater than those people who are not indigenous" (Weiner 1992: 319). The indigenous people, called "bhoomiputras" in Malaysia, "sons of the soil" in India, and "native people" in other societies, organize themselves as a group to protect their interests on the basis that they as a people exist only within their own country, whereas the others have other homes to which they can return, and this by itself can breed native-migrant conflicts in society. While going through a serious financial crisis at the end of the 1990s, Indonesia witnessed a wave of violence against Chinese immigrants. In May 2008, South Africa saw a wave of anti-immigrant violence, as poor South African natives attacked immigrants from other parts of Africa, killing nearly 50, and forcing thousands to leave *(Independent* 2008).

This native-migrant conflict is also likely to occur as mass migration can bring alteration to the power equation among the elite. To safeguard their interests, the elite can actively build up a strong group identity within their community and incite one group to take action against the other group. In their effort to organize the natives, the elite of the community may use ethnic differences between the migrants and the natives as a major instrument of mobilization. Fear of retaliation by the natives may be used by the elite in the migrant community to counter their native counterparts. This type of conflict is an expression of a feeling of insecurity among the elite of native and migrant communities and an attempt to protect their interests against each other.

Not only can internal migration transport conflicts from rural to urban areas, it also has the potential to transmit these conflicts from the areas of

displacement to faraway places. This transmitted group conflict can spark riots and internal wars in the host society (Swain 1996a). These migration-aided conflicts may also contribute negatively to the process of nation-building in many developing states by arousing greater ethnic rivalries. Developing countries with multiethnic compositions are likely to be more vulnerable to large-scale ethnic unrest, particularly if the migrants are identified with one major ethnic group in the country (Swain 1996b).

Mass Migration and Muddled Response

The fear of mass migration has already become a major issue in the international community. It is important to mention here that, though major research attention and media coverage have disproportionately highlighted the South–North migration and East–West migration, most of the ongoing movements are from rural areas to urban localities inside the developing countries or from one developing country to another. The world's largest trans-border migration is taking place in Africa, Asia, and Latin America. In South Asia alone, about 35 to 40 million people have crossed international borders within the region in recent years.

There is no doubt that the world is already in the “middle of an urban revolution.” According to UNFPA's estimate, by the year 2050, 88.8 percent of Latin America's population, 64.7 percent of Asia's population, and 61.6 percent of Africa's population will be city dwellers. It is also projected that by the year 2025, 29 cities will be mega-cities with a population of more than 10 million each. Of these, 23 will be located in developing countries. The cities in the developing world are swelling every year: between 20 and 30 million of “the world's poorest people” move from rural areas into urban zones annually (UNFPA 2011). Though many of these cities are showing the strain of over-population and worse is yet to come. Of the total urban population increase of 5.56 billion people projected over the 1950–2050 period, approximately 3.49 billion of his increase will take place after 2010. While the urban population is growing by only 0.68 percent per year in more developed regions, the growth rate in less developed regions is 2.4 percent. The cities in developing countries are already surrounded by shanty suburbs which contain millions of inhabitants, a high proportion of whom are without jobs (UNFPA 2007).

The problem of environment/climate forced population migration ranks as one of the foremost crises of our times. To date, however, these people have

been viewed as a peripheral concern. But, their sheer numbers have brought them to the fore as one of the most important issues on the global political agenda. This phenomenon has also caught the attention of the research community. Many attempts have already been made to conceptualize this phenomenon. Among the most frequently used terms to describe this type of human migration are: “environmental refugees,” “climate refugees,” “ecological refugees,” “resource refugees,” “environmental migrants.”. The use of the term “refugee” when referring to people who have been displaced by non-political factors has become quite controversial.

The definition of “refugee” faces conceptual limitations as it lacks the inclusion environmental or climate induced migrants in its sub-categories. The legal definition of the term “refugee” was imposed by the 1951 United Nations Convention on Refugees, together with the 1967 Protocol, which extended the Convention by excluding restrictions on time and geography.[1] It reads as follows:

> The term “refugee” shall apply to any person who … owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it.
>
> (Gordenker 1988: 199).

This legal limitation of the term “refugee” makes it inadequate for absorbing types of forced migration other than those stemming from persecution. In spite of efforts by the Organization of African Unity (OAU) and the Central American countries to make the term “refugee” more inclusive,[2] the definition provided by the 1951 Convention still rules the common psyche and governmental policies. This definition is furthermore limited to trans-border migrants, which prohibits the inclusion of internally displaced migrants in its terminology.

Thus the concept of “environmental refugee” or “climate refugee” is not included in the definition of refugee as established,” making it hard – if not impossible – for the environmental and climate refugees to make their case

on legal grounds (and) to apply for asylum. The conceptual rigidity of the term " refugee" has already contributed to the famine disaster in Western Sudan, the problematic situation in Ethiopia and Somalia, and so on. International refugee agencies have not been able to save the lives of many environmentally displaced people in this region due to the absence of their mandate. The limitation is not only about the causal nature of migration. The term "refugee" also excludes forced internal migrants from its category. The trans-border character is extremely important to be labeled as a refugee. When the number of environmentally or climate induced internally displaced people is close to 20 million every year, and also, most often, the level of suffering and casualties is much higher among the internally forced migrants than those who have crossed the border, they simply cannot be ignored.

Large-scale population migration poses a serious challenge to the peace and security of many nations in most parts of the world. Large numbers of people have already left their homes to survive, and the potential for more to follow presents a dreary picture for the future. What is the answer to this critical predicament? A number of states are restricting the legal entry to their territory; some are constructing barbed wire fences on their borders, and some are using armed forces to resist the inflow of migrants. Forcible deportation is now a very common practice in both industrialized and developing countries. But as the past experiences and present developments suggest, it is practically impossible to protect an island of affluence amidst a sea of poverty with the show and/or use of force.

There is a need for a positive approach to squarely face this monumental task of large-scale human migration. Attention needs to be focused on preventing the causes of population displacement rather than the use of force to stop migration. The ever-increasing numbers of displaced people can be addressed only in terms of setting up a comprehensive agenda to achieve human security. The fundamental aim of this comprehensive form of human security is to bring balance between the human numbers and the available natural resources in an equitable way. This dilemma can be ameliorated only through an effective long-term approach. International as well as bilateral aid and assistance has to target migration producing countries or areas within such countries. Foreign aid could attach conditions to ensure that funds are allocated to address the problems that cause people to be displaced. The issue of population displacement cannot be confronted without energetic and earnest initiatives by migrant producing developing countries. Increased

state measures to check population growth, protect the environment, and adhere to the path of sustainable development can help attenuate migration. The achievement of this objective requires true commitment: recognition of the link between human security and migration, a better early warning system, and an aggressive incorporation of the migration variable in state planning. At the same time, countries and the international community need to accept the positive contributions of migration. In many cases, the migrant communities are playing a significant role in the economic development of the host and home countries. Many countries draw a significant portion of their revenue from remittances. In some cases, migrants are even contributing to peace negotiations in their homeland conflicts.

Migrants' Contributions to Peace, Security and Development

Large sections of ongoing research on migration are primarily focused on examining the trans-border migrant's role as a promoter of conflict or spoiler of peace negotiations in homeland conflicts. Generally, migrant communities are regarded as obstacles to conflict resolution and peace-building. Some researchers do not hesitate to describe trans-border migrant groups as being extremist or long distance nationalist communities, who pursue radical political agendas while taking advantage of the freedom and economic benefits that the host land provides for them. Benedict Anderson coined the phrase "long distance nationalist" to emphasize the political irresponsibility of migrant groups who dabble in the identity politics of their homeland without paying the price of violent conflict that might result. Such people, he suggests, can fuel the tension and repeat the old platitudes intrinsic to established conflict positions, but put far less effort into the difficult compromises or leadership that is required to lead ethnic groups towards a more peaceful middle ground (Anderson 1992: 13).

When migrant groups are mentioned within the context of violent political conflict, the focus is frequently placed on their tendency to fund the continuation of warfare and to destabilize negotiations and peace-building efforts. Collier and Hoeffler's contribution focuses, in particular, on the financial donations of migrant groups as a key variable in the continuation of violent conflict, as they suggest that "a large diaspora considerably increases the risk of repeat conflict" (Collier & Hoeffler 2004: 575). The importance and influence of diaspora remittances and support or promotion of conflicts in the homeland have been well documented.

Emerging research has begun to focus on the potentially positive impact of migrant communities, particularly as critical agents of social, political, and cultural change, without denying their negative role. Despite the negative (perhaps more visible) headlines provided by Anderson's "long distance nationalists" there is also evidence that some migrant groups have made significant contributions to promoting peace in their homelands. An array of "soft power" strategies can be observed, such as the lobbying of governments, particularly of host nations, as well as other national and international policy-makers, where migrant groups seek to encourage political settlements in their homelands (Cochrane, Baser, & Swain 2000; Zunzer 2004).

Migrant groups not only act as spoilers of peace processes, they also have the capacity to positively affect conflict resolution processes in their homelands. They can have positive political impacts on peace-making through human rights advocacy and raising consciousness among the host land public and decision-makers. They may also potentially provide direct political support to pro-peace actors in the homeland, as well as participate in the homeland peace-making initiatives as advisors.

Members of the diaspora may also act as facilitators and communicators between the homeland officials and host land peace-makers. They act as mediators rather than resorting to military force as a way to solve conflicts. Migrant groups have assisted the international community in their efforts to establish contacts with leaders of warring factions, as a prelude to negotiating ceasefires or peace processes during conflicts. A thorough understanding of local issues, historical complexities, and the personalities of the group leaders makes diasporas well suited to offer international mediators the insight necessary to effectively manage negotiations (Baser & Swain 2008).

Consequently, some have argued that the direction a migrant group takes in either supporting or resolving conflicts depends on the different opportunity costs that such action would entail. The rationale behind the choice of migrant communities to get involved or not is often complex and contradictory, whereby some members within the same group may support and promote conflicts, while others may work for peace, development, and democracy in their homelands. Moreover, the role of peace-maker or conflict creator can be swapped in different circumstances. In conflict situations, migrant groups can secure tangible and intangible resources to fuel armed

conflicts, and they can provide opaque institutional and network structures that enable the transfer of arms and money to terrorist groups (Bercovitch 2007).

Furthermore, migrant groups are not only actively involved in the conflict or post-conflict phase, but also help to prevent conflicts in their homelands by contributing to the development process. Granted, it's difficult to asess the wide-spread effects migrant groups have on the development of their homelands, their role has been characterized by the four “Ts”: money transfer, transportation, telecommunication, and nostalgic trade (Orozco 2005). Migrants’ relations with their countries of origin are based on remittances, direct and indirect political support, investment in economic activities, integration into international networks, education and training, and the exchange of experiences.

Homeland and host-land governments are important actors that can influence the behavior of migrant groups, with implications for political decision-making processes, affecting both countries. Perhaps maintaining a keen interest in issues affecting their country of origin is a way for diasporic communities to reinforce their core values and beliefs, as well as preserve their identity amidst the shadow of globalization. Migrant groups aim to create opportunities and foster cooperation between their homeland and host country. In other words, “diasporas are in fact increasingly building bridges between their home and host societies,” or “often play a role as a distinct third level between interstate and domestic peacemaking” (Baser & Swain 2008: 12).

Billions of dollars of remittances, generally considered the flow of funds from migrant workers, especially diaspora communities, back to their home countries, have been sent over the decades. Recent World Bank reports (World Bank 2008a, 2008b) claim that they are not only an important source of income in many developing economies, but also a critical element for development, with increasingly enormous aggregate cash flows and numbers of participants. Moreover, remittances sent by many immigrant communities have contributed significantly to the peace-building process in their homelands. Although these huge international flows of remittances have significantly increased in recent years, their impact is “only beginning to be understood” (Terry, Wilson, & Steven 2005).

According to the World Bank's estimation officially recorded remittance flows to developing countries totalled US$ 325 billion in 2010 (World Bank

2011a: 20). Remittances are an important source of both family and national income in many developing countries, representing in some cases up to a third of GDP for recipient countries and accounting for about a third of the total global external finance. Moreover, surveys indicate that the flow of remittances constitutes a higher percentage of national income in poorer countries (35 percent of GDP in Tajikistan, 27.7 percent in Tonga, 23.1 percent in Moldova, and 22.9 percent in Nepal in 2009) (World Bank 2011a: 19), and is more stable than other forms of external finance, for instance, developing countries in total receive one and a half times more money in the form of registered remittances than they do in official development assistance (World Bank 2004).

Monetary remittances are sent many different ways, depending on cost, speed, and convenience. Some are sent by individuals, the migrants themselves or their descendants, mostly either as small or regular financial transfers to support their relatives or friends in their country of origin or to finance economic investment. Others are transferred by individuals, or as collective philanthropic support, to development projects. However, remittances can also be considered to cover money, value transfer services, or domestic financial transfers (in case of internal migration) as well as financial flows to developed economies. They are typically transmitted within the global financial system, in the form of cheques or money transfers by banks or other financial service providers such as Western Union, MoneyGram, and Vigo (IFAD 2006: 14).

It is not negligible that millions of migrants communities are connected to their homelands and are influencing local economies and communities. Interestingly, migrants interact in complex global networks with mixed identities and loyalties with their country of origin, while also adapting and identifying to varying degrees with their host country. Remittances are considered the tool of choice by which most migrants assist the peace and development process in their homelands. Some have argued that “migrants and especially migrant diasporas are the motor forces driving remittances” (Fagen & Bump 2006: 6). The effectiveness of remittances as a tool in peace-building is due in part to the fact that they are stable and augment the recipient's income more directly than official aid could.

Despite the fact that migrants have always transferred remittances to their homelands, their contributions have largely been ignored by donors and international finance agencies, until the last decade. Evidence showing the

role of remittances in stimulating the economies of developing countries has catapulted their relevance to the forefront and caught the attention of the international community. Fragile democracies susceptible to conflict situations and crisis management are especially dependent on remittances as a tool to resolve conflicts, build infrastructure, reduce poverty, and promote broad-based economic development. In countries emerging from or still experiencing conflicts (e.g. Bosnia and Herzegovina, Sri Lanka, Afghanistan, Somali, Liberia, and others), remittances can be seen as a *sine qua non* for peace-building and reconstruction (Fagen & Bump 2006: 1).

During the post-conflict phase, migrant groups can play a major economic role in the reconstruction, by offering financial support, especially those from rich countries, to rectify the effects of a conflict and to help bring about a process of disarmament and demobilization. Remittances can help to promote economic recovery and thus consolidate the foundations of durable peace. Private sector investments through remittances have made serious contributions to building the kinds of institutional mechanisms and services needed to support sustainable post-conflict rebuilding and the reintegration of the war-affected populations (Fagen & Bump 2006: 8).

Many of the migrant groups have substantial potential to positively influence negotiations and mediation efforts in their homeland conflicts. Originating from the country of conflict, they understand the nature of the conflict better than outside mediators. In addition, migrants can provide better insight into how to maintain a dialog process between conflicting parties and differentiate between the needs and demands of the actors. As Cochrane highlights, "being from outside the conflict zone but having a connection to it, might provide diaspora groups with specific abilities as third party actors in pre-negotiations or even in formal talks over a political settlement" (Cochrane 2007b: 72). The migrant group is emerging as a very important political factor providing expertise to all groups and factions and functioning as a bridge between international actors supporting the peace process and rival factions in the homelands (Zunzer 2004: 33).

Migrants Contribution to Conflict Mediation

Territorial disputes, internal conflicts, and militarized ethnic problems are some of the main conflict areas which receive attention from the international community. There is an abundance of literature on international community intervention, how its methods affect the peace process, and the

modes of developing sustainable settlement plans, etc. All of those aspects of third party intervention-mediation have an importance of their own.

Once a conflict becomes open to mediation, many actors may aspire to play a role in that initiative. However, one critical point is whether or not the warring parties agree on who will be responsible for managing the conflict. In order to start negotiations a mediator needs to be accepted by both parties. Who will be accepted as the mediator by the warring parties depends on the many different variables in a conflict. Nevertheless, the basic requirements of an acceptable mediator are the possession of an ability to offer a resolution that is more favorable than the ongoing conflict situation and potential for finding a mutually acceptable solution (Touval & Zartman 1989: 117). Besides having noble intentions of ending violence, finding a way to resettle the refugees and to stabilize the region and humanitarian concern, mediators, in most cases, have a stake in the conflict they try to resolve and act out of self-interest as much as altruism (Jönsson 2000: 23). Although the debate on impartiality is ongoing, experience proves that there is no doubt mediators bring their self-interest and motives to the conflict resolution process.

Occasionally, self-interest prevents a mediator from resolving a conflict. There is a possibility that resolution of a dispute might not benefit the mediating third party. In that case, the mediator may inhibit or undercut the opportunities for a settlement. A third party may also obstruct paths to the successful mediation because he/she prefers the status quo to an outcome that would require a friend or an ally to make significant concessions in a negotiation (Crocker, Hampson, & Aall 2004: 25). Thus, as long as mediators act according to their own interests and do not give priority to ending the conflict, intractability increases.

Mediators' bias is traditionally considered to be one of the most common obstacles to conflict resolution. However, the notion of a disinterested impartial mediator becomes difficult to uphold in an increasingly independent world (Jönsson 2000: 23). The frequency of instances where a biased mediator has been accepted and considered successful is increasing. There are more reasons nowadays for the mediators to have strong ties or alliances with one of the parties. It is increasingly accepted that the mediator's resources and ability to impose a change in the conflict situation, rather than neutrality, affect their acceptability or effectiveness. Zartman and Touval argue that biased mediators who have close ties with one of the

disputants could be more effective as they are more motivated than other mediation actors (Touval & Zartman 2001).

The discussion on impartiality is usually intertwined with the issue of acceptability. For the conflicting parties, a biased mediator may be a desirable preference as long as the mediator has robust connections to one party, with strong control over the result and enforcement of the dispute. The mediator's larger capability to persuade that party compensates for their partiality handicap. The party who lacks good relations with the mediator accepts his/her service in expectation of his/her capability to influence the adversary (Kleiboer 1998: 370). Svensson argues further that primarily with interested and biased intermediaries, there is an increased likelihood of a settlement (Svensson 2006: 20).

A migrant group's role as a contributor and/or facilitator to the third party mediation efforts, particularly by the host land government or organizations, completely ignores the traditional definition of the mediators as neutral non-partisan actors without an interest in the conflict. Nevertheless, migrants' involvement may provide much needed trust and assurance to both the warring parties and also to the third party mediators to engage in the peace process. Giving insights into the local issues, historical complexities, and personal characteristics of the group leaders, the migrant community can really assist the mediators in making correct and appropriate decisions before and during the negotiations (Hall & Swain 2007). As seen in the case of the Irish diaspora, inclusion of migrants in supporting and influencing third-party mediation has become more common. It greatly influenced the settlement of the conflict in Northern Ireland since its lobbying was successful in the mid-1990s recruiting the support of then President Bill Clinton, which helped in the achievement of the Good Friday Agreement (Cochrane 2007b: 72).

Somalia has also witnessed a migrant-supported mediation effort. The composition of the Somali groups in the peace talks, which started in 2002 in Nairobi, demonstrates the diaspora's role and contribution to third party mediation. All the major internal parties to the Somali conflict participated in several rounds of deliberations. The international community supported these meetings. In attendance were Somali participants from the Western diaspora communities in Australia, Canada, England, Italy, and the United States (Zunzer 2004: 33). Substantial involvement of the Afghan migrants in the Petersburg talks for a peaceful transition in post-war Afghanistan in 2002

is another example. Under the UN initiative, a pluralistic spectrum of Afghans from major factional groups, both from Afghanistan and from different Afghan diaspora communities, were present at the talks, and the series of meetings resulted in the formation of a trans-national government (Zunzer 2004: 34).

It is the responsibility of the mediator during the negotiations to sustain communication, reduce mistrust, and, moreover, to change the perceptions of the warring parties from perceiving the negotiations as a zero-sum game to a win-win solution, and to convince them to embrace conflict resolution. Migrants as an empowered group, and a powerful force in their home country affairs, can strongly influence the course of the conflict managed by the third party mediator. They can be important as agents of pressure or as an advocacy group for conflict resolution. Lastly, they can be extremely useful in assisting mediators to bring the parties to the negotiating table and enhance the communication between the conflicting parties. Diaspora groups can assist international mediators in establishing contact with the warring group leaders in order to start the peace process.

Collier argues that migrant groups are much richer than the people in their country of origin and therefore can afford to finance vengeance without suffering any of the awful consequences of renewed conflict because they are not living in the country (Collier 2007). However, others disagree. As Purdy suggests, migrants might have a wider and more objective perspective, and they are less influenced by simple emotions and anger (Purdy 2003). Since the migrant group members are usually not at the forefront of the conflict, they have the luxury of being more objective with their views of the events in their homeland. In availing themselves of the opportunities of free information flow in host lands, migrants may change their perceptions about the conflict and acquire different and more positive perspectives. The new situation may encourage migrants to act as communicators between the conflicting parties and facilitators of the peace process. In the case of Uganda, the members of the Acholi diaspora in London successfully worked to bring together representatives from the government of Uganda, the government of Sudan, and the main rebel group (the Lords Resistance Army) (Spear 2006: 7).

If migrant groups do not participate directly as the facilitators between the conflicting parties, they may attempt to influence the perceptions of the political elite in both home and host countries. As in the Eritrea case, in the

aftermath of the liberation struggle, a group of diaspora intellectuals wrote to the President of Eritrea, criticizing the government's unlawful practices and demanding democratic reforms (Spear 2006: 7). Those kinds of instances are many, such as the Greek Lobby in the US House of Representatives which has actively lobbied the US government to be proactive in its stance towards conflict resolution in Cyprus, and the German–Cypriot Forum which has lobbied the German and EU Parliament to continue the momentum of recent resolution efforts (Zunzer 2004: 30–32).

Because of their close ties with the conflicting parties, migrant groups can be more serious about conflict resolution than the third party mediators. Global networks of diaspora associations sometimes engage in mass protests to raise consciousness about homeland related issues. Their motivation may also push the third party mediators to expedite the peace process. The ability to persuade conflicting parties to follow an intended direction is not easy, but one can argue that in many cases it may be easier for the migrant groups rather than any other external actor to achieve this objective. Migrants potentially possess the leverage to manipulate the conflicting situation to pave the way towards a peaceful resolution. Besides playing the role of a communicator or facilitator, they have the possibility to get involved in the persuasion process as well. Threat of withdrawal of their support from the homeland politics or economy sometimes gives the migrant groups more leverage than any third party mediator could have. This is particularly the case if the homeland country and the regime suffer politically from a lack of legitimacy; the governments then need outside support to survive and the support they seek usually comes from the diaspora. Withdrawal of remittances and investment is another strong card migrant groups hold. A diaspora's financial support is extremely important to the homeland country's economy, particularly if the country is a developing one. The power of pressure on political and economic fronts provides the migrants in the negotiation process with a strong hand.

In many instances, the political elite at home go to great lengths to keep the migrants politically and financially interested in home country matters. Particularly when a country faces a difficult situation, they make various efforts to call upon solidarity among the diaspora members. Former Irish President Mary Robinson's proclaiming herself to be the leader of the extended Irish family abroad is a good example of how leaders try to strengthen their relations with the diaspora (Vertovec 2005: 4). The present

Afghan government makes repeated overtures to the Afghan diaspora all around the world. Opening a seminar on trade and investment in July 2002, President Hamid Karzai appealed to Afghans who were living abroad and investing in other countries to instead invest in Afghanistan (Van Hear 2003).

It is true that there are more examples of migrant groups utilizing leverage for exactly opposite purposes such as conflict promotion and escalation. The Armenian diaspora is one of these groups. Armenia is extremely dependent on diasporic support and thus more impressionable to the preferences of overseas Armenians (Shain & Barth 2003: 471). When Armenia's economy experienced a rapid collapse after independence, the Armenian diaspora's financial and political support became crucial for Armenia's survival. The policy-makers in Armenia tended to follow a foreign and domestic policy line drawn by the Armenian diaspora since they could not afford to do the opposite. If one observes the party agendas of Armenian political parties, it is noteworthy that "strengthening relations with the diaspora" hit the top three aims of the party agenda (Baser 2009). In the Armenian case, the migrant groups have used their leverage to move the political parties towards perpetuating the conflict. However, a migrant group's leverage could also be used to move the parties towards a more positive approach in search of conflict resolution. A diaspora that uses the threat of withdrawal of support can potentially move the hardliners in the homeland to soften their views and opt for a negotiated settlement. The Sri Lankan Tamil diaspora used its leverage to convince the Liberation Tigers of Tamil Eelam (LTTE) to participate in negotiations with the government in the immediate aftermath of 9/11.

A migrant group's positive influence can also come from their decision to support the pro-peace political parties in the homeland. There are many examples of migrants' intervention in homeland politics where they provide support to their favorite political organizations. In Armenia there are various political parties, which are imported from the diaspora or founded by the diaspora members. The Croatian migrants provided enormous financial support (US$ 4 million) to Franjo Tudjman for his electoral campaign. In return, they were rewarded with representation in parliament: 12 out of 120 seats were allotted to the diaspora Croats, more than those allotted to Croatia's own ethnic minorities (Djuric 2003). Migrant groups' support has a significant influence on the actions and agenda of major political parties in

many countries. However, only if they channel support to political parties supporting peace rather than conflict will there be greater opportunity for the dynamics of conflicts to create a democratic country.

The international community as well as home and host countries share a strong interest in understanding how migrants may be encouraged to support peace and development and positively contribute to a secure world rather than foment violent separatism and war. For homelands, moderating key migrant groups and supporting their peace-making and developmental assistance efforts may help to prevent the development of transnational insurgencies and terrorist networks that might otherwise prove difficult and costly to counter. For host countries, it is important to prevent, or avoid inadvertently fuelling, conflicts that lead to humanitarian crises, deteriorating relations with homelands, and greater externalized costs paid for by the international community (e.g., accommodating refugee outflows and subsequent repatriation endeavors, demand for humanitarian aid and development assistance, and trans-national terrorism) (Swain 2007b).

While some migrant groups have supported war efforts, others have promoted peace and development. The characteristics of a migrant group are in general not static, but rather change over time in response to particular circumstances. Migrants not only respond to the changing dynamics of conflicts in their homelands, they also initiate and lead insurgencies or peace-building efforts. Thus, the international community and home and host states need to adopt policies and strategies to influence migrant groups' interests and behavior in a positive and constructive manner. Migration, if properly managed, has the potential to generate significant gains not only for migrants but also for host and home countries and societies.

8Conclusion

Encountering Emerging Security Challenges

Pursuing "Freedom from Want"

The United Nations Development Programme's 1994 *Human Development Report* (UNDP 1994) introduced the concept of "human security" that focused not only on the safety of the individual but also on human economic, health, food, social, and environmental needs. The primary premise of the Report was "the world can never be at peace unless people have security in their daily lives." It argued that attention to both "freedom from fear" and "freedom from want" are needed for human security, which holds the key to national, regional, and global security and stability. "Freedom from fear" involves the protection of human beings, which includes threats that are directed towards individual safety, like armed conflict, terrorism, ethnic expulsion, illegal arms trade, and political and criminal violence. These forms of threats are violent in nature and easy to identify and securitize. However, "freedom from want" broadens the human security agenda further to include poverty, hunger, disease, natural disasters, and displacement. It goes beyond direct violence and emphasizes linking development with security. This definition of human security has been further expanded by the Commission on Human Security as it reasons that "freedom from want, freedom from fear, and the freedom of future generations to inherit a healthy natural environment – these are the interrelated building blocks of human – and therefore national – security" (The Commission on Human Security 2003: 4).[1] As for the wider meaning of human security, it embraces all sources of not only present but also future insecurity towards the individual, ranging from lack of development

to increasing resource scarcity. The Commission advocated not only protection but also empowerment of people to promote human security.

During the last two decades our planet has undergone a great many fundamental changes. All of these changes have led to a world that is much more complex and interconnected than ever before. These changes have also affected the way we look upon security. Newly emerging threats have forced us to change our conceptions, and have led policy-makers and academic scholars to reassess existing security agendas. Thus, in recent years, discussions to expand the traditional concept of security beyond violent threats have become highly intensified. The end of the Cold War and the rise of globalization have provided the opportunity to attain an effective integrated and sustainable security system that can address the broader needs of security for the human population and the planet.

The World Commission on the Social Dimension of Globalization in its report in February 2004 praises globalization for promoting open societies, open economies, and better exchange of goods and ideas. At the same time, the Commission finds the current working of global economy "ethically unacceptable and politically unsustainable." Globalization has some winners and many losers. It is generating new wealth but so far, it has had a largely negative impact on the poor and underprivileged sections of society. The debt burden of developing countries has multiplied. The gap between the ratio of per capita income in the developed and the developing countries has widened further. The number of poor and unemployed people is at its highest level ever. There is no doubt that the benefit of globalization has failed to reach the majority of the poor.

In the last two decades, the world has witnessed a reduction in extreme poverty in some parts of the world. Rapid economic growth in a few developing countries, particularly China and India, has improved access to food, health care, education, and housing for many. At the same time, a number of countries have become poorer, and are also facing the economic crises which have pushed millions of families into poverty. Currently, nearly a billion people suffer from chronic hunger. The UN Millennium Summit set out a series of time-bound targets for shared development priorities, known as the Millennium Development Goals with a deadline of 2015. Progress in achieving these has been far from satisfactory, particularly Sub-Saharan Africa has fallen seriously behind. Each developing country is responsible for its development. However, their

pursuit of development needs to be given financial and technological support and knowledge sharing by the international community. Equitable development will not be possible if, at the country level, national development strategies fail to make the structural changes required for environmental and social sustainability. Without appropriate and effective regional and global efforts, many environmental and social issues cannot be managed. One of the greatest development challenges in this century will be that of coping with global climate change.

Environmental stress coupled with climate change adversely affects livelihoods, food production, and clean water, and increases the risk of natural disasters. To meet these basic survival challenges, countries need to make serious efforts individually and collectively. Many infectious diseases also pose severe dangers for the entire world. The overall response has not been up to the mark as it requires a concerted international and national response. There is a need for determined collaborative efforts at various levels. The world is also experiencing unprecedented movement of people from their countries of origin. Migration offers many opportunities, to the migrants themselves, to their host country, as well as their countries of origin. However, it also involves many complex challenges and, if not carefully managed by international and national actors, it can also provoke acute social and political tensions.

If all these serious, inter-linked, but not so outrightly violent in nature security challenges are not addressed prudently, the world will increasingly become a more dangerous and volatile one. These fast developing threats need to be carefully monitored and assessed. Academic and policy communities must identify the ways and means to attend them in an increasingly interdependent world. Our ability to recognize the serious security implications of these challenges becomes increasingly important. These rapidly emerging threats to the global security are all interconnected. Solutions to challenges such as climate change, resource scarcity, poverty and hunger, infectious diseases, and large population migration cannot be found in isolation. The strategy to achieve sustainable security must be a comprehensive one, particularly in adopting an appropriate meaning within the development discourse. There is no doubt that the security and development issues are critical for the human race. Traditionally, both matters have been considered the primary responsibility of the nation-state.

However, in a rapidly globalizing world, that division of responsibility is no longer possible.

Linking Development with Security

In recent years, a lot of rethinking has been done (and certainly will be done) on the causes of violence in the global system. In this context, the relationship between development and security (and vice versa) became unavoidable, particularly as the definition of human security put the focus on the need for "freedom from want." The nexus between security and development only got onto policy agenda explicitly after 9/11, although the idea has been influencing international development policy for some time. Even the Marshall Plan and Truman Doctrine were a product of this. Duffield (2010) places the security-development nexus in a historical context and finds that though the nexus has long been associated with liberalism, it now operates the radical interconnectivity of life itself. One of the changes is the shift in the focus of security from states to the people living within them. Consequently, the policy discourse regards (under)development biopolitically, i. e. how life is to be supported and maintained and how people are expected to live, rather than according to economic and state-based models (Duffield 2010: 53).

In the last decade, the issue of security and development has been one of the more prominent issues on the international agenda, primarily in the context of the work of the UN. In various international policy documents (e.g. DFID 2005; European Council 2003, 2008; OECD 2007; UN 2004; UNDP 2005). The " security-development nexus" has been coined as a concept and emerged as a hotly discussed topic. The international community has jumped to "new solutions," and its focus is increasingly on how conflicts of various sorts can be prevented through greater focus on "development." In 2005, the UN Secretary-General, Kofi Annan in his report, *In Larger Freedom: Towards Development, Security and Human Rights for All*, argued that security and development and human rights are interdependent and mutually reinforcing. To achieve "freedom from want," he asked the developing countries to adopt a comprehensive national strategy to achieve the Millennium Development Goals by 2015, and developed countries to support those strategies with the help of aid, debt relief, and trade, while stressing that development must be sustainable.

The evolvement of UN peacekeeping in recent years constitutes a practical example of how security and development concerns in post-conflict developing countries have come to be treated as interdependent and mutually reinforcing. Peacekeeping has become the most expensive, most visible, and riskiest ongoing activity of the UN. The peacekeeping budget has dramatically risen from US$ 1.4 billion in 2000 to US$ 8 billion in 2010 with 110,000 personnel involved in peace operations. In addition, another 100,000 at other peace operations are run by the African Union (AU), Economic Community of Central African States (ECCAS), European Union (EU), North Atlantic Treaty Organization (NATO), Commonwealth of Independent State (CIS), and Organization for Security and Co-operation in Europe (OSCE) (GCSP 2010). UN peacekeeping operations have adopted a larger strategy than only focusing on the military aspects of peace agreement or on the organization of elections. There are planned endeavors to engage the "development actors" while conducting peacekeeping operations and establishing a "national ownership," essential for the long-term success of a country to establish peace, security, economic development, respect for human rights, etc. The importance of the participation of the civil society in the context of security and development has been an issue to which international NGOs have been devoting much effort as well.

Peace-building Projects and Their Sustainability

In the last two decades, a lot of attention has been directed at developing support for fragile and conflict affected states but there is still not enough knowledge about how to design the most efficient support for a particular situation. In the absence of an agreed stocktaking, it seems clear that the ambitions and objectives of a united vision among the national and international partners are of utmost importance. Since the early 1990s the international community has been increasingly adopting a peace-building approach to addressing the plethora of problems facing conflict affected societies (Chandler 2006; Chesterman 2005; Kostic 2007; Mac Ginty 2006; Paris 2004). Even after two decades, peace-building projects still remain a fragile undertaking with mixed results. Especially since 9/11,

> peacebuilding has increasingly been taken over by a new discourse on 'nation-building,' 'regime change,' and 'stabilization and

> reconstruction,' which is predicated on the necessity of securing the stability of weak or failing states to avoid the negative external fallout from state failure.
>
> (Tschirgi 2004: ii)[2]

One of the most important macro level shifts in the peace-building strategy occurred when major international agencies began emphasizing the construction or strengthening of legitimate governmental institutions in fragile and conflict affected states. In that sense, state-building is viewed as a peace-building measure with the aim of constructing or reconstructing the institutions of governance capable of providing citizens with physical and economic security (cf. Paris 2004; Richmond 2007). The focus on state-building as a specific approach to peace-building means recognizing that achieving security and development partly depends on the existence of capable, autonomous, and legitimate governmental institutions (Paris & Sisk 2009). Newman, Paris, and Richmond (2009) argue that contemporary peace-building is oftentimes described as "liberal peacebuilding" because of the emphasis on building institutions based upon market economies and democracy. One of the guiding assumptions has been that the presence of strong state institutions would facilitate macro-economic growth and would provide economic security for its citizens (Paris 2004).[3] Such measures, in combination with strong state institutions and functioning infrastructure, are supposed to bring economic well-being that would in turn strengthen the legitimacy of the state among its citizens by means of democratic elections, thus bringing about political moderation and national integration in previously fragmented societies (Paris 2004).

As some argue, it was the post-Cold War confidence in the Western liberal model as the ultimate form of human government that has led to its adoption as the optimal way of reconstructing societies that have fallen victims to the perils of internal strife and intolerance (Atwood 1994; Mac Ginty 2006; Mandelbaum 2002). Accordingly, the attempts to create durable peace[4] include measures to create a particular type of government based on the liberal norms of democracy, market economy, and the Western concept of the civic nation-state.

Focus on Economics: Not on Environment and Society

In spite of some criticisms and challenges, the liberal state-building/peace-building still continues to be the dominant strategy of the international community towards conflict prevention or post-conflict reconstruction. However, this strategy not only falls short of bringing societal integration in segmented societies (Kostic 2007, 2008), but it also does not include in its framework of analysis environmental and social problems. The state-building/peace-building projects commonly omit to take into account the environmental limits and societal exclusivity in the reconstruction phase of the fragile societies. Many have raised their concerns about this lack of attention to natural resource issues in the state-building strategies (Conca & Dabelko 2002; R. Matthew, Brown, & Jensen 2008; UN Peace-building Commission 2008b). For peace to endure and mature, it is vital to balance economic, social, and environmental factors in development policies with particular focus on sustainable development (Adams 2006; Ott 2003).

Sambanis (2008) argues that economic factors and growth are more significant than other factors in preventing the resumption of war, e.g. financial assistance to rebuild political institutions and implement complex peace agreements. This is especially important over time as "the international community would benefit from an evolution that uses economic reform to plug the gap between peacekeeping and humanitarian assistance on the one hand and development on the other" (Sambanis 2008: 31). However, economic development projects such as large hydro projects in Nepal or open cast mining for lignite in Kosovo, as an element of broader state-building exercise, lead to environmental and societal stress for the communities, and can further exacerbate inter-communal incompatibilities (Swain et al. 2011). Thus, it has been argued that a "failure to respond to the environmental needs of war-torn societies can greatly complicate the already difficult tasks of peace, reconciliation, political institutionalization and economic reconstruction" (Conca & Wallace 2009: 486). Conca and Wallace further investigate the environmental stakes in war-torn societies and argue strongly that violent conflict damages the environment on which people depend for their health and livelihoods; "human insecurities in such settings have a strong, immediate ecological component as people struggle for clean water, sanitation, food, and fuel in a context of war-ravaged infrastructure, lost livelihoods, and disrupted institutions" (2009: 485). They argue, "environmental issues create high-stake choices in post-conflict settings. Handled effectively, they may create a solid foundation for peace

and sustainable development; handled poorly, they risk undercutting an already tenuous peace" (2009: 485).

A major challenge for state-building/peace-building strategy is thus how to manage the natural resource base and plan and pursue sustainable economic growth. In any state-building/peace-building project, there is a need for sustainable economic policy, which seriously takes serious account of environmental and social factors. Traditionally these systems are based on situational values which are closely related to the political paradigm that fragile states' economic development is important for the stability of the country (Paris 2004). While these considerations are important it is also necessary that this growth be based upon sustainable values. A sustainable economic policy has hence the potential inherent of protecting the environment and social cohesion. Such an approach is capable of stabilizing the country, while simultaneously delivering a sustainable solution to conflict resolution and making peace potentially sustainable.

Under the liberal economic doctrine, states take over common property resources, such as forests, rivers, and agricultural and grazing land, to create space for new industrial and mining projects. The same is also true of stabilizing politics adopted in many fragile and conflict affected states, persuaded by inter-national state-building/peace-building operations. Peasant, pastoral, and tribal communities are displaced by force in the name of economic growth, under the guise of achieving stability. However, this approach ignores the serious adverse effects for the socio-cultural environment of the displaced people. In many cases, development-induced displacement is not, or is insufficiently, compensated and creates fruitful conditions for the formation of new social conflicts.

Taking into account the urgency of economic problems faced by fragile conflict affected societies, the type of policies which are frequently promoted include privatization of the industrial sector, creation of conditions for external investments, and urbanization. Such measures, in combinations with strong state institutions and functioning infrastructure, are supposed to bring economic well-being that would in turn create legitimacy of the state with its citizens, thus eventually bringing about political stability and societal unity (Paris 2004). Nevertheless, these promoted policies such as privatization of the industrial sector, external investments, and urbanization are likely to affect the natural resource base and social fabric in an adverse manner. Thus, the current strategy for state-

building/ peace-building increases environmental and societal insecurity in the long run, because the focus is invariably on bringing together humanitarian and economic security, while ignoring environmental and societal security.

Environmental and socio-cultural protection should not be skimmed over in a superficial manner; there is a serious need for sustainable economic policy as a systemic approach in state-building/peace-building projects. Sustainable economic policies can unite humanitarian and environmental factors and, thus, make a crucial contribution to protecting the environment. Therefore any state-building/ peace-building policy should be guided by sustainable values, such as a long-term planning of development strategies, which provide sustainable economic policies. Instead international policies are dominated by a neoliberal agenda favoring situational short-term solutions, which sacrifice long-term environmental and societal concerns. In some cases, the state-building/peace-building projects may not be directly polluting the environment or forcing the people to move out, but they fail to respect the local needs and capitulate to the demands of powerful external groups and actors.

A number of Western industrialized countries have established strategies, policies, and/or guidelines for their own engagement in poor conflict affected countries or regions. The recent political priority in emphasizing the nexus has led to the securitization of development policy, and rich countries allocate a large portion of their aid to countries and regions perceived as a risk to their own national security interests. In the post 9/11 period, the US aid policy has been open and obvious in this regard, but EU donors have also increasingly joined the trend to allocate most of their aid strategically. There is no doubt that this securitization trend of the aid policy has further reduced the already limited resources available for the socio-economic development of poor countries. However, the predicament is much more complex than this.

China: The New Challenger

Since the beginning of this century, China has begun to emerge as a rising superpower primarily defined by its economic development and influence. To sustain and stabilize this growth China has expanded and diversified its trade and investment in various regions and economic markets. One region of particular importance to China has been Africa. China's investment in

Africa was close to US$ 5 million annually in 1991, but by 2006 it jumped up to US$ 1.25 billion. According to the Heritage Foundation, in the last five years (2005–10), nearly 14 percent of Chinese investment abroad reached Sub-Saharan Africa. Africa's trade with China is also growing with equally phenomenal speed. In the 1980s trade between China and Africa totaled US$ 12 million per year, by 2000, it had reached US$ 10 billion, and by 2006 it had risen to a staggering US$ 55 billion (Amosu 2007). In 2010, the trade between the two reached US$ 120 billion. Most of the African countries have abundant natural resources but lack the capacity to process and market these resources, which provides a perfect opportunity for China. The trends suggest that Africa and China will continue to grow as trade partners, especially with respect to the import of natural resources, which are critical to the sustainability of China's economic growth. Economic motivations seem to represent the catalyst (and a primary motivation) for the emerging role that China has begun to play in African peace-building and peacekeeping operations.

Since the early 2000s China's role in peace-building (mainly peacekeeping operations) has significantly expanded. Between 2000 and 2008 China's financial contribution has climbed from 1.5 percent to 3 percent of the total UN peacekeeping budget, ranked as the seventh highest contributor. Its personnel (military and police) contribution has also expanded, from forty-fourth place in 2003 to fourteenth place in 2009, eclipsing all of the other P-5 members. According to Zhao Lei (2011), the Chinese motivations for its increasing role in UN peacekeeping operations are:

(1)To raise and cultivate China's international profile and reputation to project a more benign and positive image;
(2)To augment relations with the United States and other Western governments and;
(3)To protect Chinese interests (primarily economic) abroad, to ensure greater overseas market stability to help ensure its economic growth.

However, he makes a distinction between China's strong support for peacekeeping operations compared to its cautious participation and approach to peace-building. This caution is based primarily on the inherent political nature of state-building initiatives, which are a strong component

of liberal peace-building operations. China is particularly weary of state-building initiatives because it perceives them as Western normative products of the "liberal peace" agenda that runs counter to China's more Westphalian system (Hellström 2009). China's Westphalian position enshrines the principles of state sovereignty and non-intervention, instead seeking to remedy underdevelopment (poverty and social inequality) with development measures that are implemented with the consent and whole-hearted cooperation of the host country government. Thus, China is reluctant to support stronger UN mandates, which often lead to weak and often incoherent peace-building mandates that generally won't optimize the full range of benefits for the host state (International Crisis Group 2009).

Although China still trails behind the United States when it comes to the financing of, and cooperation with, Africa and other fragile states and regions, its ability and activity has somewhat curbed the influence of other Western powers and norms within the UN Security Council (Large 2008; Teitt 2008). China has forced the process of shifting the direction and strength of the "liberal peace" agenda by galvanizing greater cooperation and multilateralism within the developing world. Not only China, but India, Brazil, and South Africa have got in on the act as well. In the last decade, India has quietly become a significant donor of aid to other, less developed countries in Africa and South Asia. India's aid commitments in the next five years is approximately US$ 12 billion and the current trends suggest that it could soon become a *net* exporter of aid *(The Economist* 2011). However, as a 2007 report by Canada's International Development Research Centre points out the vast bulk of India's development cooperation support goes to immediate neighbors suffering or recovering from violent conflicts, which includes Nepal, Sri Lanka, and Afghanistan. Like China, India, thanks to its colonial past, scrupulously follows the Westphalian principle while providing aid and assistance in South Asia and Sub-Saharan Africa.

Need for an Integrated Approach

The prevailing security-development approach of the international community focuses particularly on the re-creation of state capacity to govern, democratization of societies, and the generation of macro-economic growth in fragile societies. The guiding assumption has been that the presence of strong state institutions will facilitate macro-economic growth and provide the economic security of its citizens. However, in most cases

this security-development strategy fails to include in its framework of analysis social and environmental factors of post-conflict societies.

Parallel to the developments taking place in the framework of the UN and at the bilateral level, the concept of security and development also has conspicuously figured in the discussions of the academic world (Buur, Jensen, & Stepputat 2007; Chandler 2007, 2008; Duffield 2001, 2007; Paris & Sisk 2007). Critical voices of the good intentions (Duffield 2010) as well as of the clarity of the concept have emerged (Stern & Öjendal 2010). As development and security are relational concepts, many ask whose security and whose development this nexus is concerned about. To a certain extent, the security-development nexus has led to a conceptual confusion.

Human security is conceptually important in shifting the referent object state to the individual, as opposed to the state-centric conception of security. Policymakers have picked up on the concept and have tried to influence development programs in fragile states (Chetail 2009). Among the two competing visions of what contains Human Security, the components of "freedom from fear" have been considered to be analytically more coherent than the components of "freedom from want" in the context of post-conflict peace-building and reconstruction. The policies of "freedom from fear" are considered as part of an overall package that is coherent and mutually reinforcing and easier to act upon. Due to the advantages of the "freedom from fear" vision, this idea has been supported and promoted more than the "freedom from want" conception of human security. Nevertheless, there is no doubt that policies towards "freedom from want" are equally important for the long-term security and stability of fragile and conflict prone countries.

In 2005 the UN took an important step by accentuating the importance of " freedom from want" when it established the Peacebuilding Commission (S/RES/1645 and A/RES/60/180). The Peacebuilding Commission was established with a view to resolving the institutional deficit that had long prevailed in efforts to ensure effective coordination between various agencies and their policies for peace-building (Chetail 2009). The Peacebuilding Commission is a special UN body since it belongs both to the General Assembly as well as the Security Council. However, it serves only as an advisory body to support the existing UN institutions. Also, it cooperates closely with a wide range of agencies, from the World Bank to (sub)regional organizations. The Peacebuilding Commission created a

"Working Group on Lessons Learned," which also evaluated the role of natural resources and the environment in peace-building. The report recognizes in its synthesis the "interplay between conflict, environment and natural resources" and emphasizes that peace-building must pay more attention to the environment (UN Peacebuilding Commission 2008a). However, like many other reports of UN agencies, it lacked concrete suggestions of how to include specific sustainable policies within peace-building projects.

To fill this policy gap, the UN Peacebuilding Commission appointed the United Nations Environment Programme (UNEP) to provide another report, titled, "From Conflict to Peacebuilding – The Role of Natural Resources and the Environment". This UNEP report has covered some ground that the earlier report had overlooked on the policy front. The report argues for the need for an equal and sustainable utilization of natural resources and suggests addressing the issue in the peace-building process by recommending "[capitalizing] on the potential for environmental cooperation to contribute to peacebuilding" (Matthew et al. 2008: 5). It particularly emphasizes capacity development of the UN and calls for the development of early warning and early action mechanisms.

The security-development initiatives of the international community are needed to seriously consider the possible impact of global climate change on the fragile societies and undertake projects for addressing both mitigation of and adaption to the new challenges. Thus, its effort should also be directed towards the development and improvement of early warning indicators to forewarn climate or natural resource related challenges. The promotion of such indicators for and within development strategy is crucial in order to maintain peace and security in the long run. The argument for improved early warning capabilities is based upon the understanding that climate change related impact in general in the future will pose specific demands on the local context rather than on state entities as a whole. It is essential to monitor these indicators at various levels in a coordinated manner and to report changes to the development actors. Making the regional and international actors in the security-development initiatives aware of the indicators and evaluate and further develop these in a joint effort is one of the most essential activities if we are to be able not only to prevent the reoccurrence of conflicts but also to generate prospects for cooperation.

The importance of smart management of social and environmental factors in achieving not only stable but also sustainable peace is well understood. However, there is a wide gap between understanding and application. Due to political and economic considerations, security-development policies do not adopt a long-term strategy of economic development and progress in their target areas. Their quest for quick economic recovery and political stability not only marginalizes social and environmental concerns, but on many occasions makes them the sacrificial lamb. This haste in implementing policy to bring stability in turn creates serious challenges for sustainable peace in the long run and accelerates the potential for conflict to ferment. Thus, the international community engaged in security-development projects must plan, think, and execute with a long-term perspective that sets the conditions for sustainable peace.

Short-term security considerations increasingly override the long-term developmental challenges. For peace to endure and mature, it is vital to balance social, economic, and environmental factors in development policies with particular focus on sustainable development. Narrow security considerations of some rich and powerful countries take precedence over the long-term developmental challenges of poor regions. This approach also poses challenges for the long-term engagements necessary for sustainable peace. There is also a huge coordination gap between different international agencies and their policies in connecting development and security. Though there is certainly a move towards policy standardization, as Chandler (2006) and Paris (2004) argue that coordination is in most cases limited to rhetoric only. Besides lack of coordination among the relevant agencies, the policy driven by the nexus approach also suffers from a huge disparity between policy and implementation, absence of real local involvement, and scarcity of resources.

A major political challenge of getting the right formula for the security-development link is the internal-external disconnect of cooperation between international actors and the political dynamics of fragile societies, which manifests itself at all levels, such as conceptual, institutional, and operational (Tschirgi 2004). The sheer misgovernance through situational development policies, which ignores the inputs from the local civil society, affects the stability of fragile countries in the long run. The United States has invested US$ 53 billion in the reconstruction efforts in Iraq since 2003 (Williams 2009). However, the major problem for the Iraqis is how to

sustain the massive hospitals and schools projects, as it cannot afford the staff and equipment costs after American withdrawal. Even the industrial projects that are profit-oriented do not appear not to be maintainable and fundable by Iraq in the long run (Williams 2009). These unsustainable projects will likely go out of operation in the long run and create serious economic and social problems in the post-conflict societies. Furthermore, abandoned construction sites and equipment may pose environmental hazards.

The recent examples of development projects in fragile states clearly illustrate one serious challenge: stabilizing a country after conflict causes tremendous trials and tribulations for sustainability, not just for the society and environment, but also for peace itself. To achieve lasting peace, development policies need to take into account social and environmental stress due to conflict and conflict induced migration. To limit the possibility of the reoccurrence of the conflict and support the cooperation between adversaries, development actors should pursue a sustainable economic policy for growth and development, which not only will be sensitive to local needs and environment but will also take the support of the local resource base to promote cooperation and peace in the long run.

In order to achieve good governance in a fragile state to promote sustainable peace and prosperity, development projects should not be perceived to be planned and managed by external forces. However, following the Western models of political order leaves the target of bottom-up process of democratization, development, and local ownership neglected (Chetail 2009). The top-down process often ignores the grassroots actors, who are often politically more inclusive and moderate (Newman, Paris, & Richmond 2009). It is crucial to engage the local people and civil society in order to infuse ownership for appropriate formulation and implementation of these projects in the long run. The institutions have to be strengthened, particularly at the local level. The local governance structure (on a communal or regional level rather than on a national and global one) possesses better capability and potential to successfully manage incompatibilities that arise through development projects and initiatives. By infusing good governance at the local level, getting civil society to play an active role in policy formulation and implementation, and encouraging public and private partnership, the development initiatives undertaken by international agencies and state institutions are more likely to be

environmentally and socially sustainable and equitable projects that are less likely to displace people or adversely affect their livelihood.

The cooperation among various stakeholders over the basic survival issues like climate change adaptation and mitigation, land and water management, forest protection, food production and supply, controlling infectious diseases, or illegal migration can also have a positive diffusion effect on other more contentious areas. Establishing a commitment to sustainably and equitably share critical natural resources or jointly face common health and socio-economic challenges can help to overcome the existing mistrust or suspicion between countries or groups, and create a milieu of reciprocal gains and estimation of interest on a long-term basis. Cooperation on crucial existential concerns may also bring people together resulting in trans-border civil society linkages and build a norm of joint responsibility and multilateral cooperation. Cooperation over these critical issues bears the potential to provide opportunity for diffuse reciprocity both in time and space among the cooperating actors and enlarge the number of situations for sustained cooperation. It is also true that these forms of cooperation may shift the focus from disconnected and short-term interactions into a continuous relationship that has scope for future routine gains. However, the positive spill-over effects of these forms of cooperation are only possible if the international agencies, state institutions, and local communities are prepared and willing to take advantage of them. The emerging circumstances offer exceptional opportunities for larger and lasting cooperation, but the involved actors have to make use of them.

Notes

1Introduction

1There is also no dearth of literature suggesting these accommodative actions of the state may promote ethnic separatism.

2The ominous phrase “weapons of mass destruction” not only refers to nuclear weapons but also biological, chemical, and radiological weapons including their missile delivery systems.

3CFCs, once described as “miracle chemicals,” have been implicated in the accelerated breakdown of the ozone layer that protects the earth from the sun's ultraviolet (UV) radiation.

4More figures and examples can be seen at Krahmann (2003: 9–10).

2Resource Scarcity, Climate Change, and Environmental Security

1The doubtful exception is the Arab–Israeli War in 1967, as it is argued that the water issue was a major reason for Israeli attack (Cooley 1984).

4Protecting the Forest

1The Convention on Wetlands is called the “Ramsar Convention.” The intergovernmental treaty holds 160 contracting parties that aim “to maintain the ecological character of their Wetlands of International Importance and to plan for the ‘wise use’, or sustainable use, of all of the wetlands in their territories” (Ramsar Convention 2011).

5Achieving Food Security

1See more arguments about the trend of this time in Frankenberger & McCaston (1998).

7Migration and Conflict

1The 1951 Convention was limited to Europe and to persons whose status was determined by events proceeding January 1, 1951.

2African countries in the 1969 OAU Convention Governing the Specific Aspects of Refugee Problems in Africa recognized, in addition to fear of individual persecution as a reason for fleeing one's country and being unwilling to return to it, reasons of “external aggression, occupation, foreign domination or events seriously disturbing public order.” A similar definition was thought necessary by the Central American countries, which agreed in 1984 to the non-binding Cartagena Declaration.

8Conclusion

1The Commission on Human Security was established in January 2001 under the initiative of the United Nations Secretary-General Kofi Annan, and was co-chaired by Mrs Sadako Ogata and Professor Amartya Sen. The Commission finalized its report in February 2003.

2It is necessary to distinguish between state-building and nation-building: while the first focuses on the reconstruction of institutions, the latter is driven by the creation/ establishment of a common identity. The two processes might follow one another, happen simultaneously, or be in conflict with one another. See Kostic (2007) and Swain et al. (2011).

3Considering the urgency of economic and social problems faced by post-conflict societies, the type of economic policies which are frequently promoted include: a) privatization of the industrial sector; b) creation of conditions for external investments; and c) urbanization.

4Both Paris and Doyle tend to define durable peace in terms of a peace that lasts long after the departure of external administrators.

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