

100 Summary and Results: Facing Global Environmental Change and Sectorialization of Security

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The previous 99 chapters contain diverse theoretical and conceptual approaches and empirical results that are briefly summarized below following the ten parts of the book. Given the diversity of the theoretical and empirical approaches from many different disciplines, regions, and countries addressing global environmental change as one of three crucial factors contributing to a reconceptualization of security in the early 21st century, no effort will be made to reduce this complexity and to synthesize these chapters into a few key messages. Rather, this concluding chapter will provide an overview of major arguments made and topics addressed in these chapters. The three general messages of this book are:

- *Global environmental change* and especially global anthropogenic climate change, water scarcity, degradation and stress, as well as soil erosion and desertification have gradually been *securitized* since the year 2000 and become major security dangers and concerns for the environmental dimension of international, national, and human and gender security in the Anthropocene era of earth history (parts I–III).
- Besides the *widening* (environmental dimension, part VIII) and *deepening* (human and gender referent objects, part IX) of security concepts a *sectorialization* of security were conceptually mapped for energy, food, livelihood and health, as well as for water security (parts IV–VII).
- *Facing Global Environmental Change* requires multi-, inter-, and transdisciplinary research programmes (chap. 98) that address the linkages between earth and human systems (figure 99.1) but also new policies for coping with GEC that are based on the four goals of the conceptual quartet (peace, security, development, environ-

ment) and that should aim at strategies of sustainable peace with sustainable development (chap. 99).

The book started with a contextualization of *Global Environmental Change* (GEC) (100.1) that was followed by a securitization of GEC (100.2), and a securitization of extreme natural and societal outcomes (100.3). The next four parts introduced four sectoral security concepts focusing on energy security (100.4), food security (100.5), livelihood and health security (100.6), and water security (100.7). The last three parts reviewed the debates on environmental security (100.8), and human security (100.9), and the concluding section offered conceptual considerations for moving from knowledge to action (100.10).

100.1 Contextualization of Global Environmental Change

Part I provides a conceptual and political, a historical and systematic context for the analysis of GEC. In the introduction, *Hans Günter Brauch* distinguished three stages in the evolution of the GEC agenda: from *scientific agenda setting* (since 1970's), to a *politicization* (since 1992) and *securitization* (since 2000). He reviewed the global policy debate on environmental (UN, OSCE, NATO, ENVSEC, OECD, EU) and human security (UNDP, UNESCO, UNU) concepts and issues, before he mapped the global reconceptualization of security and environmental linkages and addressed several sectoral security concepts.

In looking backward to the 20th *John McNeill* argued that “our politics and institutions are ill-adapted to the complex demands of ecological prudence” and that “the international security anxiety of the 20th century selected for states and societies that emphasized military power and industrial strength over all else: survival of the dirtiest.” In many wars environmental

1 The author is grateful to three reviewers for their very useful and critical comments.

concerns were dropped and active ecological change was encouraged by the military (chap. 2).

From a systemic perspective, *Rik Leemans* in his review of the UN's *Millennium Ecosystem Assessment* (2001–2005) argued that the anthropogenic changes to ecosystems “have contributed to substantial net gains in human well-being (including many aspects of security) and economic development,” but they have also resulted in “growing costs in the form of degradation of ecosystem services, increased risks of nonlinear changes, and the exacerbation of poverty and security for some groups of people.” In his view, “the MA shows that these problems could grow much more serious in the coming decades. At the same time, the assessment shows that the future really is in our hands. People can reverse the degradation of many ecosystem services and improve human well-being further over the next 50 years, but the changes in policy and practice required are substantial and not currently under way” (chap. 3).

100.2 Securitization of Global Environmental Change

The eleven chapters in part II offer an overview on the environment – human interactions, reviewed climate history, climate change impacts for small island states, security aspects of desertification, discussed water as a security issue, assessed demographic trends as a security concern, and discussed linkages between urbanization and security.

Influenced by the Copenhagen school, *Hans Günter Brauch* reviewed the *securitization* of GEC (water, desertification, global climate change (GCC)). He outlined a new security policy for the Anthropocene, introduced the *securitization* approach and offered an overview of several models on nature and human interactions (OECD, UNCSD, EEA), discussed the approaches of the Toronto and Swiss schools on environmental security, outlined his own PEISOR model before he noted several vulnerability frameworks on natural hazards and disasters and a model for analysing causal linkages between climate change and conflicts. The empirical part provided an overview of the many *securitization moves* on international, national, and human security where the IPCC was perceived as an undeclared *securitizing actor* that put climate change on the top of several policy agendas (UNSC, UNGA, G-8, EU, World Bank, OECD et al.): He offered a brief assessment of the impact of GCC on the audience as reflected in public opinion polls. The

chapter concluded that three EU countries took the lead during their presidencies of the UNSC (UK), of G-8 and EU (Germany), and of the Human Security Network (Greece) while in the US the debate in the strategic community focused exclusively on the impacts on US national security.

Wolf Dieter Blümel (chap. 5) argued that “natural climatic fluctuations and variations were quite common during the past millennia. Humankind has definitely been influenced in its cultural development, regardless of the type of political regime.” This natural warming was further enhanced by human activities, especially during the past 150 years through the burning of fossil energy and changes in the earth's surface. He argued that climate history can help “understanding the natural system, for prognostic, modelling purposes, and even for the comprehension of social behaviour or reactions.” *Arie S. Issar* and *Mattanyah Zohar* (chap. 6) showed that these changes “were concurrent with major transformations in the history of the people” in the Near East during the past ten millennia. *Yannis Kinnas* (chap. 7) argued that climate change affects human security with a particular impact on the SIDS.

Rajeb Boulharouf and *Douglas Pattie* (chap. 8) claimed that “the relationship between environmental degradation and migration is important, complex, and yet little understood.” *Andreas Rechkemmer* (chap. 9) described the various aspects of the interaction between desertification and the people, and reviewed recent efforts at the multilateral level to identify effective mitigation measures. *Ali Ghazi* (chap. 10) argued that the Algerian government with its many technocratic programmes that often excluded the people has failed to reverse the trend towards soil degradation. He concluded that “a situation of continued degradation of the country's natural resources will only cause famine, which in turn will generate social conflicts, and consequently insecurity.”

Úrsula Oswald Spring and *Hans Günter Brauch* (chap. 11) reviewed the securitization of water since 2000 and the linkage between the sectoral water security concept and other new concepts. They reviewed the evolution of water security as a political concept and its use in scientific analyses, they discussed five dimensions of water security as an issue of environmental, social and societal as well as economic, political and military security, and four referent objects reflected in concepts of human, gender, national, and international security. Water security is also closely related to food and health security. In conclu-

sion they discussed both scientific and political tasks for achieving water security.

Wolfgang Lutz (chap. 12) assessed the “Changing Population Size and Distribution as a Security Concern” in terms of different security concepts, from the narrow national military security, to societal and environmental security. The key message is that “world population is likely to level off at around 9 billion during the second half of this century and then possibly start a declining tendency.” With population ageing and shrinking, the focus of the security attention is moving from total size to the distribution of the population, what is “largely a human security concern challenging the viability of established social security systems and creating fears about who will care for the rapidly increasing number of elderly in the societies concerned. There are also concerns that population ageing will result in lower economic growth.”

Ben Wisner and *Juha I. Uitto* (chap. 13) argued for Tokyo, Los Angeles, Manila and Mexico City that “urban social vulnerability remains a serious problem as yet insufficiently faced by municipal, metropolitan, or other higher levels of government.” They concluded that “the social basis for disaster-resilient cities is continued generalized capacity building across the whole of these heterogeneous populations. Revitalized democratic participation in the governance of cities, better education systems, employment generation, broader inclusion of women, minorities, and youth all contribute.”

Isabelle Milbert (chap. 14) concentrated her discussion of the policy dimensions of human security and vulnerability challenges “on Indian cities, which appear relatively ‘at peace’, and on the issues of urban dwellers’ security and vulnerability.” She concluded that “Indian cities and urban dwellers, even in a context of rapid economic growth, remain vulnerable to industrial, infrastructural, natural and social risks.” Due to the lack of local government activities the vulnerabilities for informal sector workers have accumulated. For several Indian cities “security in all its senses has become a key element in the fierce international competition for foreign investment and industries location.”

100.3 Securitization of Extreme Natural and Societal Outcomes

The eight chapters in part III discuss selected natural hazards and extreme societal outcomes. They focused on HIV/AIDS (chap. 16, 17), dealt with natural haz-

ards (chap. 18) and environment-induced migration (chap. 19), summarized the results of the Toronto and the Swiss schools on environmental security (chap. 20, 21), and dealt with environmental conflict resolution (chap. 22).

Ben Wisner (chap. 15) suggested a cooperation between the peace and conflict research and the hazard communities in addressing the “interactions between conflict and natural hazards.” He concluded that “war and violent conflict complicate the challenges of integrated disaster management.” Furthermore, “integrated disaster management can help to reduce the social and economic disparities ... that divides people in fragile societies and can lead to violent conflict.” He further argued that “disaster reduction work in the 21st century should not lose its ability to be inspired by such large visions, nor should practitioners lose the courage to speak truth to power in pursuit of the vision of a peaceful, just, and sustainable world.”

Nana K. Poku and *Bjorg Sandkjaer* (chap. 16) argued that “the full implications of the HIV/AIDS epidemic in Africa” are now being understood. This endemic often became “an add-on to other ‘more urgent’ demands.” They claimed that “until poverty is reduced there will be little progress with either reducing transmission of the virus or creating an enhanced capacity to cope with its socio-economic consequences.” This requires “the development of policies and programmes that address the interrelationships between poverty and development.” They stated that “the political energies required for overcoming the epidemic can be drawn from these other, longer-established social agendas. A symbiosis between longstanding demands such as education, food security or local democracy and HIV/AIDS will enable both aims to be met.”

Sophia Benz (chap. 17) illustrated “how HIV/AIDS as a health issue interacts with conflict or war experience. Recognizing the HIV/AIDS epidemic as a non-traditional threat to security highlights the importance of a widened and deepened definition of security.” She argued that “the results of the quantitative analysis indicate that countries’ prior conflict involvement significantly correlates with higher HIV-prevalence,” but also “that peace initiatives have a vital role in promoting health and indirectly contribute to stop the HIV virus from spreading.”

Janos J. Bogardi, *Jörn Birkmann*, *Niklas Gebert* and *Neysa Jacqueline Setiadi* (chap. 18) examined extreme hazard events as a major challenge and outlined new approaches how natural hazards and global environmental change can be analysed with concepts of

human security. A case study of Padang in Sumatra assessing community preparedness to tsunami showed that even communities which have not experienced any major tsunami event for decades are now getting prepared. This included knowledge and attitude (awareness), policy and guidelines, emergency planning, warning system and capacity mobilizing resources. The assessment approach also provided “insights for measuring preparedness even in regions which have not experienced a major hazard event for decades.”

Imtiaz Ahmed (chap. 19) showed for India and Bangladesh how environmental refugees “contribute to distress migration,” discussing the fate of environmental refugees as ‘stateless persons’ in Bangladesh and India, as well as India’s policy of fencing the borders to stop the flow of ‘illegal’ migrants from Bangladesh. He concluded that “for distress migration ‘security’ can no longer be defined in military terms, not even within the familiar ‘realist’ notion of national security.” He argued that ‘environmental’, ‘human’, ‘social’, and ‘gender security’ have influenced the “understanding of security not only within the national domain but also regionally and internationally.” He suggested a comprehensive security approach and “an innovation in policy-making in the age of environmental insecurity and post-nationality. Indeed, nothing short of creative and bold interventions would stop the reproduction of environmental refugees and the state of insecurity arising out of it.”

Thomas Homer-Dixon and *Tom Deligiannis* (chap. 20) provided a summary of the results of the Toronto group on environmental scarcities and civil violence. They argued how demand, supply, and distributional dimensions of human interaction with renewable resources can lead to scarcity and social effects from environmental scarcity, such as resource capture, and ecological marginalization, and highly contextual and interactive environmental scarcity-conflict linkages. Societies often overcome them through technological or social change, but many societies lack the capacity to alleviate its impacts, what can undermine a society’s ability to apply needed ingenuity. Many policy choices made today will have future consequences for the young generation. They are affected by ingenuity leading to ideas for new technologies and reformed institutions to overcome the impacts and effects of environmental scarcities. They concluded that there is no single solution, earlier interventions are better than late ones, policy responses do not have to be capital-intensive, and effec-

tive policy interventions will not necessarily be unique or special.

Simon A. Mason, Tobias Hagmann, Christine Bichsel, Eva Ludi, and Yacob Arsano (chap. 21) analysed the linkages between sub-national and international water conflicts for The Eastern Nile Basin by both continuing and refocusing the research of the Swiss group on environment and conflicts since 1992. They introduced a “conceptual model with its *physical* water linkages between the sub-national, national, and inter-national systems of an international river basin, and its *political* conflict/cooperation linkages between the same levels.” They concluded with this hypothesis: “If water is taken out of a system (physical linkage) without compensation and without the participation of the people directly affected (economic and political linkage), conflict escalates or is transferred across the systems. Inversely, water conflicts are transformed or cooperation is transferred across systems, when water is brought into a system or is withdrawn and compensated, and this compensation happens with the participation of the people affected.”

Finally, *Saleem Ali* (chap. 22) identified the fault lines among communities that are grappling with extractive industry projects, and he discussed how an environmental analysis of the issues can inform discussions of local, national, and regional security. After a definition of ‘security’ in environmental narratives he discussed the relevance of international security for the analysis of extractive industries.

100.4 Energy Security for the 21st Century

Eleven chapters in part IV discuss conceptual aspects and concrete policy problems of energy security. *Klaus-Dietmar Jacoby* (chap. 23) reviewed the history and development of the IEA’s energy security programme since 1974 and subsequent modifications in the response mechanism enabling more flexible *coordinated emergency response measures*, the IEA’s coordinated actions during the oil supply disruptions of the 1991 Gulf War and in response to Hurricane Katrina (2005). Changes in energy markets have led to broadening the scope of the IEA’s energy security programme to the security of gas supplies and electricity.

Leo Schrattenholzer (chap. 24) combined two discussions on environmentally compatible energy supply in the framework of sustainable development in the scenario community with the security discourse in

the social sciences and the policy debate on energy security. He reviewed sustainable energy scenarios, explained specific indicators, discussed their significance and typical scenario results from the perspective of energy security, and assessed the implications of energy scenarios on international, regional, national security.

Jörg Schindler and Werner Zittel (chap. 25) argued that “world oil production is nearing its peak”, what “will have great implications on the availability of energy sources in the coming decades.” After a review of the imminent peak oil production, of future natural gas supply, and the future supply potential of coal, nuclear, and renewable energy technologies, *fuel supply scenarios* were offered for the most probable energy supply to sketch the major trends and challenges during the next decades. They concluded that the imminent peak of oil will cause an energy supply gap which cannot be filled by any other energy source. The oil peak will lead “to structural changes which will enforce changes in the lifestyle of industrialized countries.” Enhancing energy efficiency and promoting the rapid transition towards renewables is essential. Securing future energy supplies by military force will cause more problems than it solves.

Different answers to this challenge were offered in three chapters on renewable energy sources. André Faaj (chap. 26) explored “bio-energy market developments, resource potentials, and links between developing bioenergy markets, trade and socio-economic development, and how sustainable bio-energy production could be realized.” He discussed drivers, barriers, and future potentials for international bio-energy markets and identified socio-economic implications for possible exporting countries, and raised several key opportunities and issues for the developing international bio-energy markets and their possible impacts of relevance for policy-makers, market parties, international stakeholders, and other key stakeholders. He concluded that “biomass may be able to play a crucial role in enhancing diversity of energy supplies and energy security, as well as reducing greenhouse gas emissions and supporting rural development.” He also showed “that a gradual and sustainable development is necessary to develop the biomass resource base and infrastructure over time. Securing sustainability, e.g. by means of well established and credible certification schemes, is essential to avoid conflicts with food production and sustainable development.”

David Faiman (chap. 27) argued that “low-cost electricity from renewable energy could essentially decouple the security issue from that of energy.” He dis-

cussed the potential for *concentrator photovoltaic* (CPV) technology for the large-scale generation of solar electricity at low cost. He illustrated his thesis for seven of the world’s larger electricity producers (Mexico, Chile, Spain, South Africa, Saudi Arabia, India, Australia), and showed that it would be both technically and economically feasible to freeze their fossil fuel consumption at the 2012 level by a massive construction programme of CPV solar power plants. He argued that using solar to freeze the fossil requirements for electricity production and using low-cost solar electricity to generate transportation fuel would promote security. Low-loss transmission and efficient storage would enable other renewables, such as wind and wave power, to make their respective contributions to a world electricity grid, and hence to greater security by reducing the dependence on fossil fuels.

Franz Trieb, Wolfram Krewitt, and Nadine May (chap. 28) argued that “a strategy for energy and water security in the Southern European Union, the *Middle East, and North Africa* (MENA) can be based on a combination of rational use of energy, renewable energy sources, and international cooperation.” They concluded that “renewable energies can relieve Europe and the quickly growing economies of the ... MENA from increasing subsidies for their energy and water sector, and from overloading their environment and natural resources.” In the authors’ view “a strategy for energy sustainability must include three components: a) the rational use of energy, b) renewable energies, and c) a Trans-Mediterranean Partnership for Energy and Development.” They suggested that “the challenges of the 21st century must be tackled in a joint EU-MENA effort rather than lost through separatism and wishful thinking of national energy autonomy.” This requires a cooperative policy framework to implement this vision that will be beneficial for both regions.

A different perspective related to oil in the Middle East was offered by Mohammad El-Sayed Selim and Abdullah Sahar Mohammad (chap. 29) who reviewed the integration of energy security into the Arab conceptualization of security, the main substantive issues being debated, “the main energy-related threats to Arab security, the main strategies pursued by the Arab countries to achieve energy security, and the interlinkages between energy and conflicts in the Arab world.” They concluded that “the Arabs need to develop an ‘Arab energy security’ concept which should be integrated into the overall conceptualization of security. Such a concept would include elements of the use of the available energy and diversifying energy sources,

and partners, and building new strategic relations with oil customers.”

Gareth Winrow (chap. 30) analysed energy supply security within the economic and geopolitical dimension of security for the transportation of crude oil and natural gas from Central Asia through Russia and Turkey to outside markets. Due to its energy dependence on Russia, Turkey has diversified its oil and gas imports to Azerbaijan and Central Asian suppliers with new pipelines that avoid a sole reliance on the Russian system. From the Turkish perspective “major economic, political, and strategic issues are closely interlinked. Turkey has been a key player in the Great Game since the 1990’s and will remain so, given its sensitivities to developments in the neighbouring volatile Caucasus and the wider Caspian region.”

Nogoye Thiam (chap. 31) argued that *Sub-Saharan African* (SSA) countries experience an extreme lack of energy, a low level of energy consumption per inhabitant, and a dual structure which highly depends on oil imports and on biomass (60 per cent) which makes the energy system highly vulnerable. Most SSA countries lack a sustainable, affordable and environmentally sound modern energy supply, what is a key requirement for most *Millennium Development Goals* and *Poverty Reduction Strategies*. Thus, a transition towards sustainable energy sources is needed that relies on natural gas and renewables that has been constrained “by the high costs for importing equipment and the lack of information on the latest technologies used to generate electricity.” This requires a reduction of energy losses, higher energy efficiency, and new consumptive behaviour.

Rolf Linkohr (chap. 32) discussed two key questions whether a North-South energy partnership will contribute to energy security and whether we can avoid conflicts by exploiting exclusively renewable energy sources. His response to the first question is positive, “if we extend the partnership to all categories of life – environment, human rights, democracy, and good governance”, but he doubts that this can be achieved. In his view “the best approximation is probably a market-driven approach including all technologies and greenhouse gas abatement costs. The *European Neighbourhood Policy* (ENP) [may] ... develop into such a new relationship between North and South and deserves sympathy and political backing.”

100.5 Food Security for the 21st Century

This part provides three analyses on food security from Latin American, African, and Asian perspectives. *Úrsula Oswald Spring* (chap. 33) started with a critical analysis on: “Food as a new human and livelihood security challenge.” In her perspective, “food represents not only a security issue of intake of nutrients, but it forms part of a holistic understanding of life and a constituting element of any civilization.” She linked the concept of food security with food sovereignty. After an introduction of basic concepts such as food security, food sovereignty, survival strategies, self-sufficiency and livelihood, she scrutinized the contradiction that in a world with increasing production and a diverse offer of food, hunger is still a major cause of illness and death. She analysed three global models of food production: the productive paradigm of the ‘green revolution’; the new paradigm of the ‘life sciences’; and the paradigm of ‘organic agriculture’. In the concluding part she compared these three models and discussed their impacts for environmental, gender, and human security.

Mohamed Salih (chap. 34) argued that the conceptualization of security in the domain of globalized food production and food products, implies certain risks emanating from the intensification of food production through the use of new biotechnologies. By contrasting the governance of food security as food safety in developed countries with food scarcity and famine in developing countries, he argued that the former are “by necessity informed by the democratic dispensations which characterized the late 20th and early 21st century, whereby governance involves state and non-state actors as well as multilateral, corporate, private and global social movements, social justice networks, and NGOs.” In his assessment, “food governance regimes are more proactive in old democracies than new democracies and authoritarian regimes.” This implies that “reconceptualizing food security governance means giving ‘voice’ to those forces which could contribute effectively to an efficient and effective integrated governance regime duly conscious of the global-local nexus in the important sphere of human existence.”

Finally, *Selim Kapur*, *Burçak Kapur*, *Erhan Akça*, *Mustafa Aydın*, and *Hari Eswaran* (chap. 35) argued that “the security complex of energy, water, and food could be achieved, or at least enhanced, by improvement of integrated programmes for the sustainable management of land, water, and energy resources.” As an energy-scarce country with less than self-sufficiency

in food production, and an unequal distribution of water, Turkey launched the GAP project (South-eastern Anatolian Irrigation Development Project) with the aim: “to develop a strategy for a sustainable and secure production of energy and food.” They suggested a combined research programme via a *sustainable land and water management* (SLWM) strategy that called for a holistic and systems-based approach in a basin context without which the “long-term survival and short-to-mid-term development would be at risk. This eventuality would inevitably create security problems for regional as well as international levels. To deal with these, the starting point should be the development of a successful SLWM research strategy.”

100.6 Livelihood and Health Security for the 21st Century

Hans-Georg Bohle (chap. 36) reviewed the concept of sustainable livelihood security in geography and development studies against the background of the human security discourse by analysing “the academic and political context in which the livelihoods approach has emerged and became popular and asks how the concept was utilized by both researchers and practitioners and to what effect.” He focused “on the normative base and the discursive context of the concept,” and argued “that the new approach on sustainable livelihood security has emerged as an influential way of thinking on how the rural and urban poor can be identified and targeted, how pro-poor interventions can be planned, and how policy-relevant analysis on local levels can guide research on vulnerability, poverty and development.” This approach is “closely connected with the concept of human security, putting people at the centre and taking equity, human rights, capabilities and sustainability as its normative basis.”

Then, *Guénaél Rodier* and *Mary Kay Kindhauser* (chap. 37) reviewed: “Global Health Security: The WHO Response to Outbreaks Past and Future.” After a brief introduction of the evolution of the health security concept within the WHO, they discussed three health security issues for the outbreaks of anthrax, SARS, and H5N1 avian influenza, and how they have altered perceptions of the infectious disease threat. These changes were then placed in the context of concerns that had been mounting during the last decades of the previous century. Changes in concepts of national and international security were then discussed in terms of their increased ability to accommodate infectious disease threats and the operational

framework was explained that was put in place by WHO to defend global health security.

Jennifer Leaning (chap. 38) argued that future dramatic global threats will impact on human and health security that is advanced by more specific health system elements of what the medical and public health community consider as ‘health security’. She claimed that the term ‘health security’ in response to international threats of bioterrorism and pandemic disease is an enhancement of the ‘national security’ concept where the resources of the state are used to protect its citizens against external threats. But the near-term risks to human societies in the 21st century may be far more disruptive and widespread to our individual and collective well-being. In conclusion she assessed the relevance of the human security framework for these global threats, suggesting that this framework requires a most robust and creative application on a scale that could only be described as a truly comprehensive international security strategy to withstand what lies ahead and not to lose past collective achievements.

After this conceptual analysis a team of junior researchers offered four case studies on Africa and Asia. *Fred Eboko* and *Teresa Nemeckova* (chap. 39) argued that HIV/AIDS has increasingly been interpreted by international organizations as a challenge to world order, and as a threat to the national security for the most affected states in Africa, and also for Western states which perceive it as a threat to their security. They analysed its implication for the security of African states and the dynamics of the expansion of AIDS in Sub-Saharan Africa, and they showed how ‘the security’ theme was applied to this challenge. The case study on Botswana, a country with the highest HIV/AIDS prevalence, documented that AIDS is not only a threat for the poorest countries and that a sound national multi-sectoral approach to the national security threat is needed to combat the pandemic. The conclusions place the AIDS challenge into a broader global context of the security debate.

Isabel Fischer and *Mohammad Musfequs Salehin* (chap. 40) applied the concepts of human, livelihood, and health security to current debates in South and Southeast Asia, discussed the linkages of poverty, health, and human security, and presented empirical evidence based on two case studies on Vietnam and Bangladesh before they summarized the lessons learned and offered conclusions. Empirical results from Vietnam showed that the government’s efforts to reach the MDGs have improved the ‘human security’ of its people but that vulnerable groups still face poverty and health constraints. In Bangladesh the lack

of education reduces health and increases human insecurity. Spread of knowledge on basic health care and reproductive health among vulnerable groups is as important as the political will to change the cultural bias which avoids efficient prevention programmes.

100.7 Water Security for the 21st Century

This part with 18 chapters starts with a theoretical analysis, eight empirical chapters deal with water security issues in the international river basins of the Mekong, Euphrates and Tigris, Jordan and Nile, Senegal, Volta and Zambezi, four chapters examine water resource management and conflicts in Central Asia, while two review water security issues in India and Jordan, and one offers a theoretical analysis for the Middle East, one on Sub-Sahara Africa, and the last chapter offers a legal analysis of water security in armed conflicts.

J. A. [Tony] Allan (chap. 41) evaluated “the extent to which the well established international ‘virtual water’ trade will continue to mobilize the ‘soil water’ and freshwater in the global system to meet future local water needs.” He examined the contexts and driving forces (demography, water reuse, water efficiency in industry and services, poverty reduction) that have and will determine whether peoples and nations enjoy water security. He stressed “the need to conceptualize water security by accounting for all the types of water that meet the gross water requirements of societies, economies and environments.” He addressed two types of water security: “the water security of communities, economies and regions” that can be achieved by importing ‘virtual water’, and the water security at the global level. He pointed to “the importance of economic processes beyond the water sector in the achievement of a form of water security by the water scarce. This form of water security is heavily dependent of orderly international relations.”

Vandana Shiva (chap. 42) argued from an ecofeminist perspective that “water has already become blue oil - commodified, dwindling, yet overused and abused. ... The transformation of water into a commodity to be traded for profit is also leading to its overexploitation and its long distance transport. ... And as water is diverted, rerouted, mined and privatized, water conflicts and water wars are an inevitable result.” She developed her argument for river valley projects and large dams and a river linking project in India, discussed water disputes due to privatization

that “transfers water from where it flows to where there is money - cities and industrial areas.” She discussed two examples for the diversion of the Ganga waters to Delhi, and of the Banas River in Rajasthan to Ajmer and Jaipur that resulted in violent conflicts.

Bastien Affeltranger (chap. 43) analysed flood and drought hazards in the Mekong River Basin and details related to data needs for forecasting activities. He presented research results on the status of the Mekong Commission, reviewed the concept of the “value(s) of hydrological data” and discussed the recruitment of the *Chief Executive Officer* at the MRC, an environmental regime to establish a basin organization for the Lower Mekong that was created in 1995 by the Lao PDR, the kingdoms of Thailand, Cambodia, and the SR Vietnam under the auspices of the United Nations. He reviewed “the circulation and exchange patterns of environmental information as an analytical tool to understand and assess the day-to-day operation and effectiveness of an environmental regime such as the MRC.”

Mustafa Aydn and *Fulya Ereker* (chap. 44) analysed “the tension between the three riparian states: Turkey, Syria and Iraq.” They reviewed the “technical data about the available water resources, water use and demands of the riparian countries and the underlying reasons of the tension between them, as well as their conflicting arguments and initiatives for cooperation.” They argued that the dispute among the riparians “over water has a clear connection with the level of overall relationship between them.” They also showed “that ... for positive-sum results the actions of the downstream states serve a critical function, where uncompromising and unreasoned rhetoric against the upstream states leaves no room for further steps towards an agreement.” In their view “water is first of all a vital resource for human security, as well as for the socio-economic development of states. Thus, water scarcity makes it instantly a ‘national security’ issue, as in the case of Euphrates-Tigris Basin.” They concluded that “the improvement of the overall relationship and an effective cooperation between Turkey, Iraq and Syria to a level to conclude a comprehensive agreement would be the most appropriate expectation to solve the water-related disputes among the three countries.”

The section on water security issues in the Near East starts with a country study on Jordan by *Bassam Ossama Hayek* (chap. 45) that analysed its water and food situation, linked its water status to demographic change, presented water uses and future needs, summarized official plans for meeting the future water de-

mand based on comprehensive studies. He discussed the question “how Jordan will be able to adjust its economic practices to cope with this challenge, what the role of policy-makers will be, and which contributions will be needed from the international community.” Based on available data and scenarios he compared “present water uses with future water needs and the projected supply, taking current and future national plans, the role of institutions and the international community into consideration.”

Jan Selby (chap. 46), analysing the impacts of new security thinking on Israeli-Palestinian water politics, pointed to two sub-issues: “firstly, the impacts of post-Cold War reconceptualizations on the two main parties’ approaches to water issues during the course of their peace process; and secondly, the impacts of these reconceptualizations on external actors’ approaches to and involvement in these water issues.” He discussed “the impacts of new security thinking within Israeli-Palestinian relations at large,” as a necessary context “for analysing the specificities of their water relations.” He argued that “the practical influence of new security thinking on Israeli-Palestinian relations and their water politics has been at best negligible, at worst politically regressive.” He concluded that in the contested geopolitical contexts traditional security logics have predominated in Israel, Palestine, and in the USA.

Anders Jägerskog (chap. 47) argued that “in spite of fears of water-related violence and conflict, Israelis, Jordanians, and Palestinians have maintained a basic level of cooperation over their shared waters.” He analysed “prospects and potential avenues for increased coherence between different issues, in this case predominantly between conflict prevention and security issues and the sustainable use of natural resources.” He discussed “whether the actual water cooperation and coordination that takes place within the water sector ... could be further utilized as a conflict prevention and cooperation enhancement mechanism in other sectors.” He concluded “while the cooperation on water is rather strong and robust it has not been shown to promote cooperation in other political sectors.”

Two chapters deal with the Nile River Basin from the perspective of a downstream and upstream country. *Emad Adly* and *Tarek Abdallah Ahmed* (chap. 48) argued that “Egypt faces the pressing challenge of closing the gap between its limited water resources and the increasing water demand.” They reviewed Egypt’s views “on water and food security challenges from both governmental and non-governmental per-

spectives.” They analysed Egypt’s policies to reconcile traditionally opposed and diverging approaches. They argued that “collaboration and complementarity should shift from the traditional unilateral supply-driven centralized approach to a more effective participatory, demand-driven and consultative policies and action in the framework of a continued regional dialogue.” They suggested that “this complex and challenging relationship should be extended from the national to the regional level, allowing countries of the Nile Basin to share their concerns, responsibilities and visions.”

Patricia Kameri-Mbote and *Kithure Kindiki* (chap. 49) offered a legal view on “the perspectives of governments and NGOs of upstream countries regarding the consumptive utilization of the Nile River resources in the pursuit for water and food security within the basin states.” They reviewed the relationship between water scarcity and interstate armed conflict; and the status of bilateral treaties on the consumptive uses of the Nile between Egypt, Britain, and other powers before and during the colonial period. Water and food scarcity nurtured political tensions among basin states. They contended “that the current state of affairs whereby riparian states’ interests in the Nile Basin are diametrically opposed, coupled with the strong foundation in international law for the claims of upstream states, suggests that the traditional political methods of settling disputes like negotiation or conciliation are unlikely to yield results in the foreseeable future.” They concluded that “downstream states, notably Egypt, will continue to delay or complicate political dispute settlement mechanisms.” They recommended “a change in diplomacy by upstream states to one of convincing downstream states to submit the Nile question to some international judicial process.”

Two senior water specialists from South Africa, *Peter Ashton* and *Antony Turton* (chap. 50), offered a theory-guided analysis on: “Water Security in Sub-Saharan Africa: Emerging Concepts and their Implications for Effective Water Resource Management in the Southern African Region.” They argued that “in the post Cold War Sub-Saharan Africa, more and more countries are engaging with their neighbours to share their common water resources,” and that “this process is taking place through sets of negotiated water-sharing regimes that are most easily understood within the framework of a *Hydropolitical Complex*.” In their views it became “a prominent feature of the international relations of the *Southern African Development Community* (SADC) region.” They argued

that the answer to this dilemma “requires an understanding of two critical elements relating to the strategic access to water. ... The first element concerns security of supply (of water) ... the second element relates to the need for each state to choose an appropriate strategy ... that will achieve and sustain a high level of security of supply.” They explored “the relevance of the Southern African Hydropolitical Complex, both as an analytical concept and as a possible mechanism for building and sustaining inter-state cooperation, and thereby avoiding possible conflicts over water.” They concluded “that, in terms of water security in sub-Saharan Africa, the future trajectory of the various states in the Southern African Hydropolitical Complex will most likely be based on mutual cooperation, where the management of transboundary water resources will become a driver of regional integration in its own right.”

Martin Kipping (chap. 51) distinguished among three schools on ‘water security’, the Neo-Malthusian, the Cornucopian, and the political approach. He refined “the debate on water conflicts and water cooperation by investigating a case that constitutes a puzzle for the Neo-Malthusian discourse: the Senegal River in West Africa,” by identifying “causal mechanisms that will help generating better hypotheses for future comparative analyses and large-N studies.” He concluded that “growing water scarcity was a necessary condition for the intensification of international cooperation on the Senegal River,” but also “that the dam-induced increase in water availability was at least a reinforcing factor, if not surely a necessary condition” for conflict.

In a case study on the water regime formation in West Africa since 1990, *Maëlis Borghese* (chap. 52) addressed the question: “What realities, actors and mechanisms do encourage states to cooperate on international basins?” Based on regime theory she explored “the drivers for international cooperation... [and] the ongoing negotiation process in the Volta River Basin.” She argued that the “formation of local water institutions ... have convinced governments of the advantages of cooperation”, what supported “the *cognitivist* with *neo-liberal* views of cooperation theories.” While “the role of ideas and knowledge is essential to comprehend the realities of the formation of environmental cooperation in developing countries, ... their impact depends on their linkage with funding enabling them to effectively spread and shape states’ preferences.”

Stefan Lindemann (chap. 53) distinguished two approaches for resolving water-related conflicts in in-

ternational river basins through: general principles of international water law, and ‘horizontal’ initiatives for international river management between two or more riparian states. He developed the theoretical and methodological framework for a systematic and theoretically guided comparison and methodological considerations he applied to four case studies on the effectiveness of water regimes in South Eastern Africa where he identified the political determinants of water regime formation and effectiveness.

Four chapters deal with water problems in Central Asia. *Martin Kipping* (chap. 54) discussed the question: “Can ‘Integrated Water Resources Management’ Silence Malthusian Concerns? – The Case of Central Asia.” He explored how separate spheres of *International Relations* (IR) and problem-solving contributions in the natural sciences “can link up productively to ease solving international water problems.” He showed how most problems “could effectively be handled by adopting IWRM principles for water management, ... could largely reduce overall pressure on water resources; and decentralized management structures would mitigate local water conflicts.” He stated that “The Malthus-inspired, social science discourse on resource conflicts is able to adequately describe Central Asia’s main water conflicts: the international upstream-downstream conflict over relative water distribution, the international upstream-downstream conflicts over absolute water distribution as well as the diverse local scarcity conflicts.” He argued that “the prescriptive concept of IWRM is complementary to the social science analyses” suggesting “promising ways for managing the conflicts in question: Basin-wide integrated management and resulting intersectoral reallocation of water resources would create win-win solutions to the relative distribution conflict.”

Eva Patricia Rakel (chap. 55) identified the main environmental risks in Central Asia for potential or existing conflicts. She addressed social, political, and economic developments in *Central Eurasia* (CE) and national, regional, and transnational policy measures to counter these risks. She reviewed the prospects for joint environmental management in the CE countries, with a special focus on the Aral Sea and Caspian Sea as two main ecological systems at risk. She concluded that: “the CE region is confronted with many environmental problems with decisive implications for the region’s future. It is unlikely that environmental problems could lead directly to violent confrontations within and between the CE states. Environmentally-related conflicts in CE are related to other factors such as ethnicity, political instability, and declining and/or

diverging economic and living standards.” She claimed that “environmental issues in CE could act as major catalysts in intensifying already existing divisions, as well as having serious ecological, developmental, and health implications.”

Julia Wunderer (chap. 56) noted that while “the Central Asian states have signed numerous agreements concerning water issues at both the bilateral and regional levels” and established several water management institutions, their effectiveness remained limited. She discussed the question about “the conflict regulating effects of the regional water regime in Central Asia to resolve the environmental, economic and socio-political water-related problems,” and on the obstacles to regime implementation. She identified the “dimensions of conflicts over water in a politically instable environment and their correlations to the assumptions of the conflict-centred regime theory”, developed “a framework of conflict dimensions ... to analyse the multidimensional factors” relying on regime theory with which she analysed “the Central Asian water regime ... with a focus on transboundary river systems” and evaluated “the status of its implementation and success.” In the conclusions she confirmed “the assumption of the conflict proneness of the Central Asian societies ..., explaining the interdependencies between the environmental, economic, and political conflict dimensions.” In her assessment, “regime success is already limited by their failure to reach fundamental changes of behaviour, so that water-related security risks in Central Asia continue to exist.”

In an empirical study, *Christopher Martius, Jochen Froebrich* and *Ernst-August Nuppenau* (chap. 57) argued that “the Amu Darya River Basin in Central Asia is one of these crisis regions where management of water resources is unsustainable and uneconomic, bearing great potential for social conflicts.” Four factors drive the environmental and economic development in the irrigated lands of Central Asia: demography, climate change, increased water demand, and land degradation. They described the region and its specific problems, and then outlined a scenario of how to achieve IWRM in the specific situation of the ADL. They concluded that while “the declared Uzbek development policy of gradual change does not make this country a member of the so-called ‘fast-track countries’ among the CA states ..., security should centre on people – not on states, and ... for security and humanitarian reasons, the international community should not write off countries like Uzbekistan.” They suggested a pragmatic and stepwise “implemen-

tation of key activities and technologies ... to produce visible results that help to provide the ground for reaching acceptance for more advanced, institutional changes which must be considered as a prerequisite for implementing IWRM.”

Last but not least, *Mara Tignino* (chap. 58) pointed to water as a source of conflict and as a catalyst for cooperation. She focused “on the consequences of armed conflicts on water and water installations,” by dealing “with the legal framework provided by *ius in bello* or International Humanitarian Law (IHL) regarding water.” She argued that “the regime on water security built up by the IHL does not address water security as an autonomous issue. The IHL deals with water through its objectives, namely the protection of the victims of war and the regulation of the conduct of hostilities. Thus, water is dealt with as a basic need of people, as a weapon or as an objective of military activities.” She outlined some of the main rules provided by the IHL dealing with water and suggested the need for a comprehensive protection of water security in times of armed conflict.

100.8 Environmental Security Concepts and Debates

Fifteen chapters offer an overview of the environmental security discourse and on environmental security debates in North America, Russia, Belarus and Ukraine, in India and in the Far East, in the Arab World, on Israel and Palestine, on Uganda, Rwanda, Ethiopia and Burundi and in Sub-Sahara Africa, on Amazonia, the Caucasus region, on the Asia Pacific, as well as on the Arctic and Antarctic region.

Simon Dalby, Hans Günter Brauch, and Úrsula Oswald Spring (chap. 59) assessed the first three phases of research on environmental security, discussing their main achievements and the lessons learned and yet to be learned on the contexts of insecurity and the pillars of human security. They reviewed the major critiques of the environmental security debate and of the policy activities since 1990, translating research into action. In conclusion, they argued that “while the first phase of environmental security research focused on concepts and on their legitimization and critique, the second phase has been theory-oriented and empirically-based with a strong emphasis on case studies. In the third phase a plurality of methods have been applied: from qualitative case studies, to syndromes of global change and scientific approaches to mitigate them, to quantitative analyses

of state failures, and quantitative analyses of the causes of violent conflicts, to assessments of cooperative efforts in trans-boundary fresh water dispute resolution, to simulations of the interdependence between water availability and food crises.” In these three phases they noted “a lack of research on hazards and disasters, gender sensitivity, social vulnerability, bottom-up resilience as well as peace-building.”

Richard Matthew and *Bryan McDonald* (chap. 60) argued that the “sceptical, obstructionist mindset of the Reagan and Bush presidencies was swept away by the science-based environmentalism of Clinton and Gore.” The Clinton administration argued that “the environment ... could be saved without sacrificing human development, and the United States would lead this effort through the example of its own behaviour and through the authority attached to being the world’s only remaining superpower.” Within the “North American security community ... the process of rethinking security soon became intertwined with the process of environmental rescue.” While some believed “that in our degraded global environment, natural resource scarcity was rapidly becoming a significant contributor to violent conflict. Others looked at the sheer size of the world’s militaries, and their ugly Cold War footprints, and concluded it was time for these powerful entities to be greened and harnessed to an environmental agenda. Still others sought to integrate environmental issues into the larger project of complementing the concept of national security with the concept of human security.”

Alexander Sergunin (chap. 61) noted that “ecological security was nearly a taboo in the Soviet era.” He argued that “environmental issues reached the national agenda when Gorbachev (1987, 1988) introduced the idea of ecological security in his book on *perestroika*.” But on the practical level the debate mostly focused on “the implications of the Chernobyl catastrophe (1986).” He stated that “the broader debate on numerous environmental problems was at an embryonic phase, public attention was preoccupied with the political cataclysms of the early 1990’s. Only in the 1990’s the environmental security debate emerged.” He explored “how environmental problems have affected the CIS security discourse, including threat perceptions and national security doctrines and it examines how different national schools (Russian, Belorussian and Ukrainian) identify their approaches to the solution of the ecological problems.”

P.S. Ramakrishnan (chap. 62) started “with a discussion on our present state of understanding of ‘knowledge systems’, ... two case studies are used as il-

lustrative examples of the role of knowledge systems for linking ecological conservation with sustainable livelihood/development of traditional mountain societies - one from the north-eastern hill region of India ..., and another from the Garhwal and Kumaon region of the Central Himalayan mountain region.” In this review he concluded “with a brief discussion on such an approach to empower these marginalized sections of mountain societies by providing them with a better quality of life, as part of a short-term developmental strategy. This approach is critical for ‘environmental security’ linked with ‘human security’.”

Miranda Schreurs (chap. 63) focused on China, Japan, the Korean Peninsula, Mongolia, and the Russian Far East. She argued that due to the low status of environmental protection in this region until 1990, “‘environmental security’ as a concept is relatively new to both the scholarly and political debate. ... Rapid industrialization, however, has resulted in such serious pollution and natural resource degradation that governments are being forced to pay more attention.” She noted a “growing awareness among policy-makers that the region’s environmental degradation is causing human health problems, worsening the quality of life, threatening long-term economic growth potential, contributing to political instability, and in some cases contributing to regional frictions and even deadly conflict.” This shift has led “to changes in environmental laws and programmes” and to a “greater discussion of environmental degradation as a threat to national well-being.” She considered the specific “environmental challenges confronting Northeast Asia and the ways these have been linked to environmental security debates.” She briefly reviewed “the growing environmental awareness and its implications for the environmental security debates”, and discussed “the role of NGOs and environmental scientific communities and the implications for environmental security debates.” She addressed “the international dimensions of Northeast Asia’s environmental security problems as well as the regional cooperation for environmental security, linking environmental and human security concerns to official development assistance, assessing the regionalization of environmental protection and drawing general conclusions.”

Mohamad El-Sayed Selim (chap. 64) distinguished between two traditions of environmental security where the first referred to “that area where environmental concerns and security strategies interact,” and the second viewed “environmental security as ‘securing the environment’, which means taking a series of steps to ensure that the ecosystem will be preserved.”

In the Arab world environmental awareness began in the early 1980's, and since the early 1990's environmental issues have been linked with security. He reviewed Arab "approaches of environmental security by assessing the extent to which this concept has been integrated into Arab discourses on environment and security." He argued that environmental questions related to water "are highly politicized and closely linked to security issues," and that during the Middle Eastern multilateral negotiations a special working group dealt with the environment.

David Newman (chap. 65) focused on the "relationship between the military and environmental dimensions of the security discourse in Israel and Palestine" that lagged behind the environmental discourse in the industrialized world. He argued that "the reconceptualization of the security debate" has not impacted on Israel and Palestine. "For Israelis, security means safety from suicide bombers (for the individual) and from an existential threat to the State as a whole (for the collective), while for Palestinians, security is safety from Israeli soldiers and roadblocks (for the individual) and from the ongoing process of Occupation (for the collective). The fact that the environment in this region is undergoing a constant process of degradation is, at the most, of concern to aware citizens but is not defined in terms of security. For both Israelis and Palestinians, 'security' still belongs to another realm of discourse." He addressed "the notion of environmental security in Israel/Palestine from two, interlinked, perspectives," by dealing *firstly* with the "environmental and ecological threat faced by societies who do not undertake actions aimed at preserving and replenishing scarce resources within the context of a growing population and a semi-arid and arid environment," and *secondly* by examining "the way in which the existence of the political and military conflict impacts, both directly and indirectly, on environmental management." He concluded "with a brief discussion of the implications of conflict resolution and a peace agreement on the environment. While peace is obviously a positive development, the hasty implementation of development projects 'in the name of peace' without due recourse to the necessary environmental checks and balances, could result in substantial and irreversible damage to the environment."

Robin Twite (chap. 66) argued that "the long conflict between Israelis and Palestinians is fuelled by ... the memory of past violence, disputes over land, opposing historical narratives, religious dogmatism, demographic fears about the increasing number of the

'other' ... At the heart of the conflict is the struggle over land, which in its turn relates to security since each community wishes to ensure its safety by ensuring that it controls a viable geographic area and has access to natural assets such as water. On each side are those who believe that only by controlling as much land as possible can their future be secure." He stated that "extremists on both sides have made use of the environmental argument to persuade the wider public that they must avoid compromise and that their security ... is threatened by making concessions. Mutual suspicion is at the heart of these arguments and conflicting claims are purposely fuelled by statements in the media which serve to promote fear and hostility." He concluded that "environmental security is a necessity for Israel, Palestine, and the neighbouring countries," and that "obtaining environmental security implies trust. ... What is needed now is an equally clear concept as to what needs to be done in order to secure security and trust for the peoples of the region."

From a Palestinian perspective, *Mohammed S. Dajani Daoudi* (chap. 67) argued that environment and security issues were not yet seriously addressed. While the Palestine National Authority claimed that "environmental problems are primarily 'due to violent Israeli occupation practices on the ground, including the confiscation of land, illegal settlement activities, the uprooting of trees, the destruction of Palestinian agricultural land,'" in his view, "the PNA also bears a heavy responsibility for the poor environmental conditions in the Palestinian Territories." He concluded that "occupation, policies of closure and curfews, lack of awareness on the Palestinian side, and many other factors all have had significant negative environmental impacts. In the current phase of the conflict, the absence of even minimal cooperation is worsening the situation on a daily basis, with impacts not only on the environment but also on human health. Hence, both parties should pursue parallel attempts to address environmental protection along with reaching a peaceful resolution to the conflict."

Then, two authors from Africa reviewed international and national environmental security issues in Eastern Africa. *Mersie Ejigu* (chap. 68) analysing problems of environmental scarcity, insecurity, and conflict for Uganda, Rwanda, Ethiopia, and Burundi, pointed to the increase in intra-state conflicts in Africa since the end of the colonial period that are driven by "ideology, access to resources, deprivation, ethnicity, religion, greed, political power, etc" where "many of these conflicts are related to the use and

management of natural resources, in particular land.” He argued that “environmental insecurity arises not from the loss of extreme scarcity of environmental resources but more from the perceived and actual threat ... arising from that scarcity.” Among the many factors contributing to environmental insecurity and armed conflict: governance, socio-economic situation, culture, level of technology, and property rights, he considered governance as “the most vital factor because government policies and institutions heavily influence the behaviour of resource users and determines how, when, and why a natural resource is used.” He concluded based on several case studies that “environmental insecurity plays a significant role in causing, triggering, and aggravating armed conflicts”, and that “the probability of conflict increases, where environmental insecurity induces population mobility particularly towards heterogeneous communities (e.g. ethnic, culture, etc.); and where these migrants tend to dominate economic and political spheres, the recipient communities become aggravated and propensity to conflict mounts. Conflicts are almost certain where a weak state fails to deliver law and order, provide transparent and accountable administration, implement unbiased and fair policy, and institute effective mechanisms to address and resolve grievances and disputes.”

Sam Moyo (chap. 69) defined environmental security as related to “two central concepts: repairing damage to the environment for human life support and for the moral value of the environment itself; and preventing damage to the environment from attacks and other forms of human abuse.” He argued that “environmental insecurity generally occurs as a cumulative result of high population growth, decline in quantity and quality of renewable resources and the lack or unequal access to these resources.” He referred “to the capacity of individuals and groups to meet their basic needs from a sustainable environment,” involving “serious consequences for social, economic, political and physical security.” He suggested a widened security concept including “non-military threats, such as human rights abuses, outbreaks of diseases, resource scarcity and environmental degradation.” He also conceived “Environmental security [as] an integral part of human security.” He concluded that “without greater measures to insure environmental security, continued population and economic growth will diminish natural life support systems leading to migration and conflict. With half the world clustering into urban environments, natural disasters and global environmental change affect greater num-

bers of people who are dependent on civil systems for water, power, transportation, food, and other manufactured systems.” In his view, “the environment is now considered in terms of human security and viewed much more urgent and important a future challenge than conventional and nuclear war.”

Turning from Africa to Latin America, *Alexander Lopez* (chap. 70) analysed “the dynamic link between environmental factors and security and social conflicts as a result of continuous interactions between systemic (Amazon) and supra-systemic factor”, that “explain why environmental matters have been politicized and to a certain extent militarized.” He tried to explain “why social conflicts are mainly a product of two systemic constraints of a misallocation of resources and of skewed land distribution.” He stressed that in “most cases environmental change is no direct source of social conflicts, but an important aggravating factor through its side-effect,” arguing that “in the Brazilian Amazon in most situations environmental scarcity is no key factor for social conflicts, rather in the northern state of Roraima abundance is crucial.” He concluded that “the contribution of environmental change to social conflicts in the Brazilian Amazon may be understood as indirect and/or interactive This means that social conflicts are understood partially as the outcome of the social and environmental side effects of environmental change.” This implies “that deforestation, pollution from mining activities, and flooding in connection with other sources will produce social conflicts and/or contribute to social conflicts by introducing more entropy to a system that is already in turbulence. ... As a trigger environmental change basically releases accumulated non-environmental social pressures, and as an aggravating factor environmental change adds to other factors producing conflicts.”

Vicken Cheterian (chap. 71) argued that “the past two decades of environmental politics was part of a nationalizing project in the Caucasus.” He reviewed “the conditions for the emergence of environmentalist movements in the Soviet Union, and why they lost the leadership of independent politics to nationalist forces.” He argued “that environmental politics continues to remain expressions of national projects, and as such unsuitable neither for addressing regional environmental concerns, nor for solving complex security problems.” He looked “at newly emerging environmental movements that carry the potential of separating environmental politics from nationalizing projects, and create the necessary conditions for environmental cooperation on the regional level.” He

concluded that “the rise and fall of environmentalist movements in the Caucasus and other post-Soviet republics should make international organizations highly cautious about rapid transplantation of value-charged projects.”

Jon Barnett (chap. 72) offered a brief background to the Asia-Pacific region he reviewed several major regional environmental security issues and discussed two key case studies of environmental insecurity for Kiribati, the Marshall Islands, Tokelau and Tuvalu, and China. He argued that these cases “provide a useful contrast and reveal much about the diverse nature of environmental insecurity in the region,” and he claimed “that environmental insecurity in the region is caused by economic rather than demographic changes.” He stated that due to the different socio-ecological contexts, the environmental security issues differ widely throughout the region. He claimed that “environmental insecurity in the region is caused by economic rather than demographic changes; ... that lead to ... greenhouse gas emissions, overuse and pollution of water, deforestation, and air pollution.” This calls for “constraining the externalities of economic development, through ... improved land use planning at national and local levels, reducing the rate of greenhouse gas emissions through the use of sustainable energy technologies, adoption of cleaner production technologies, adoption of sustainable harvest targets, and reducing consumption in developed countries. Failure to address environmental problems through these and other methods may, and in some cases is already causing widespread and significant impacts on people’s livelihoods.”

Gunhild Hoegensen (chap. 73) discussed “the nature of environmental security, and its relevance in two regions that are relatively peaceful and pristine – the Arctic and Antarctic.” She argued “that the concept is relevant but context dependent”, and that “the security of the Arctic and Antarctic are deeply connected to the environment, both with regard to the impacts of humans on the environment, but also the subsequent impacts of the environment upon humans.” She stressed that “the environmental linkages between the polar climates and the rest of the planet are extremely complex and non-linear, and the Arctic and Antarctic influence climate over a large part of the globe.” In both regions the ‘categories’ to identify security are “very fluid, and closely linked to each other. Economic security cannot be completely isolated, for example, from environmental security or political security.” She focussed on “the impacts of climate change and how this phenomenon has and

continues to impact the many security dynamics of the Arctic and Antarctic.”

100.9 Human and Gender Security Concepts and Debate

With 23 chapters this part offers an overview of the debates on human security in the social sciences and in international organizations (chap. 74–77), it reviews human security discourses in the Arab world, in Southeast Asia, in Sub-Saharan Africa, in Central and South America (chap. 78–82) and analyses human security as ‘freedom from fear’, ‘freedom from want’ and as ‘freedom to live in dignity’ and as ‘freedom from hazard impacts’ (chap. 83–88). This is followed by a controversial discussion on human and gender security approaches (chap. 89–93) and it concludes with three case studies on Afghanistan, Guyana, and on a human security based early warning and response system (chap. 94–96).

Introducing into the scientific and political debate on human security, in chapter 74, *Hans Günter Brauch* surveyed the evolution of the human security concept in the social sciences and in international organizations. This is followed by a brief analysis by *Claudia Fuentes Julio* and *Hans Günter Brauch* (chap. 75) on the *Human Security Network* (HSN) where they analysed the objectives of the HSN and explored the reasons why its member countries have advocated these objectives at the international level. They examined the specific agenda items of the HSN and its mechanisms for coordination. They concluded that its “effectiveness is the result of three key advantages: *First*, it has developed a recognized capacity in *international agenda-setting*. ... *Second*, it has emphasized the *broad and multidimensional* nature of both the concept of human security as well as of the Network itself. ... *Third*, it has become a platform on which countries can lobby collectively for issues of common concern, thereby contributing to the *international policy-making process*.”

The next two chapters offered conceptual discussions from a South Asian and European perspective. *A.K.M. Abdus Sabur* (chap. 76) claimed that in the realist tradition national security “was achieved at the expense of the security of the individual or people in terms of their political, social, and economic rights and choices. Thus ... the state ... has served as a threat to their security.” He argued that “the end of the Cold War and the accompanying structural changes of monumental proportion introduced a revolutionary

change in security thinking,” what “has dramatically decreased the traditional security threats to the states that came out victorious in the Cold War. On the other hand, the world was confronted with a series of intra-state violent conflicts of various origins, large-scale atrocities, and even genocide.” He developed a general framework for a theoretical perspective on human security he applied to South Asia.

Sascha Werthes and *Tobias Debiel* (chap. 77) shifted the reference object from the state to the individual, and integrated elements of foreign and development policy. They argued that “the perforation of state sovereignty – resulting from the multifaceted globalization processes and the incapability of states to respond to growing non-military security threats – produced a pressure for practical solutions and strategic responses.” They briefly sketched “the horizontal and vertical extension of the security agenda”, which furthered the emergence of the human security concept. They showed “that human security not only is of political attractiveness but also has practical advantages and can be substantiated for academic purposes.” They concluded that “as a political and normative leitmotif ‘human security’ helps to clarify how to conduct, justify and sometimes legitimize policy decisions. It may also inspire decisions on policies and policy instruments. It helps to focus the (international) political agenda on the most vulnerable or most threatened individuals, too often forgotten in other security approaches. Finally it can also be substantiated for academic purposes.”

This is followed by five chapters that review the human security debate in the South. *Béchir Chourou* (chap. 78) argued that “the concept of ‘human security’ is not a common subject of research or discussion in the Middle East or in North Africa. ... In the Maghreb the topic remains largely unknown, ignored or avoided,” because the literature on human security includes components that are not open to free public discussion. By referring to the main threats to human security in the Maghreb and identifying the most serious challenges, he attempted “to show that two forms of direct violence (practices of autocratic regimes and inter-state conflicts) and a number of indirect violence (demographic growth, food insecurity, lack of education particularly among women, exposure to environmental hazards) represent major threats to human security in the Maghreb.”

Zarina Othman (chap. 79) reviewed “the dynamics, patterns, approaches and debates on the various human security concepts” and analysed “how members of the *Association of Southeast Asian Nations*

(ASEAN) have responded to this approach.” She argued that “its members believe that human security is associated more with economic development as a precondition for political stability; while human rights issues have been considered as domestic problems that are best left to the individual states to deal with, and thus should not be discussed at the regional level.” She discussed first “the Southeast Asian concept of ‘comprehensive security’, a traditional approach that has been adopted by ASEAN states for designing their respective national security policies”; then she explored “the human security approach, how it has evolved and some specific issues and policies”; and finally she suggested “what needs to be done to promote and strengthen this concept in Southeast Asia.” She concluded that “the main challenge to human security in the region remains the perceived threat to national ‘sovereignty’ and to the regime in power.” But this state security “does not necessarily guarantee the peoples’ survival.” Due to increasing interdependence Southeast Asian states adopted a comprehensive concept of security which acknowledges non-military issues as threats to national security.

Nana Poku and *Bjorg Sandkjaer* (chap. 80) pursued a twofold aim: “to explore security from a human perspective and to illustrate this perspective [with] material from sub-Saharan Africa,” based “on the premise that for many ordinary Africans the chief security concern is often their own government, either through its pervasive power and oppressive policies, or as a result of its incapacity to sustain the infrastructure of life.” They argued that “the resulting social decay presents a dramatic picture of insecurity of ordinary people in circumstances where states ... are either unable to provide protection or are themselves the principal sources of violence.” Their key focus was “how to adequately understand and address the security concerns of a people in these circumstances.” In the first two parts they explored “what is meant by human security,” by charting its origins and outlining its significance for the study of contemporary African societies and analysing “the African state and the complexities it poses for the provision of security on the continent.” In the third and fourth part they surveyed “the extent of Africa’s human security challenges by examining the continent’s economic performance as well as development prospects.” They then examined “Africa’s progress towards the *Millennium Development Goals* (MDGs)” arguing that “the goals might not be achieved by 2015.” They suggested that “the human security framework should be conceived as emancipatory; encompassing and empower-

ing the hopes and aspirations of a group of people – individuals, civil society, development practitioners, NGOs, CBOs, donor organizations – for a better continent.” In their view “the concept is intended to evoke discussions as explicit as possible, organized as emotively as possible, while making empirical observations as compelling and practical as possible.”

Philippe De Lombaerde and *Matthew Norton* (chap. 81) assessed *human security* (HS) threats and challenges in *Central America* (CA). They evaluated “clusters of HS challenges in three major HS pillars and connect[ed] them to the emerging regional human security discourse.” The first included “social and political issues, and particularly the challenges posed by high levels of social violence, and faltering democratic consolidation processes.” The second was “related to issues of economic development and the integration of CA in the regional and global economy”, and the third dealt “with regional impacts of natural hazards and disasters.” They placed these three human security threats and challenges “in the light of regional strategies to enhance and achieve the human security agenda.” They concluded that the HS concept is well suited for the analysis of these security challenges “although its use in Central American academia and politics is only slowly gaining importance.” They argued that “from a broader and person-centred definition of HS, ... serious threats to HS, both from internal and external origins, exist and require policy responses. They are related to organized crime, poverty, low educational levels, distorting migratory flows, environmental risks, and the adjustment costs of economic liberalization.” They showed “that traditional and non-traditional HS threats are highly interlocked in CA and that due to the structural characteristics of the region (small scales, high degrees of openness, dependence vis-à-vis US, etc.), effective policy responses require (deeper) regional cooperation and integration driven by institutional and political processes with (higher) degrees of democratic participation.”

Francisco Rojas Aravena (chap. 82) argued that several structural and international factors have contributed to a reconceptualization of security: “1. end of bipolar conflict; 2. new power relationships; 3. impact of globalization ... and interdependence; 4. changes in the dimensions of time and space; 5. loss of state capabilities; 6. increase in intra-national conflicts; 7. new international actors; 8. new threats to security; and 9. development gaps.” He argued that “Latin American governments have gradually assimilated the new human security concept.” In South

America, “Chile made this concept part of its foreign policy strategy” and “Ecuador included it in its defence policy definition.” He examined “the relationship between human security and development ... and human security and its links with state security and international security.” He concluded that “South American nations face the challenge of improving policies and actions in the double triad of human security. Achieving human development is crucial. Without resolving inequity and poverty issues, the main goal in human security will be impossible to obtain. ... In addition, for South American countries conceptual development is a key tool for the consolidation of democratic regimes and to overcome the unjust situation for its people.”

David Black and *Larry Swatuk* (chap. 83) mapped “the intellectual and practical terrain of human security in North America” by comparing Canadian and US perspectives. They argued that “the Canadian turn toward ‘human security’ constitutes a logical extension of Canada’s post-World War II ‘middle power’ status and self-proclaimed ‘helpful fixer’ role in global politics. In contrast to American unilateralism, the ‘helpful fixer’ approach is based on multilateralism and consensus seeking.” They briefly examined “current debates about human security in the North American and European settings in an indicative rather than exhaustive manner,” they described “official Canadian human security policy and practice”, and they highlighted “debates among Canadian academics surrounding this approach.” They “would like to see the North American debates regarding human security engage more directly with the critiques made by critical scholars on the left. This would mean, in part, reinvigorating discussions regarding the ways in which ‘fear’ and ‘want’ are interrelated, including exploring possible causal pathways.”

Human security as ‘freedom from want’ on the human development agenda was covered by *Hideaki Shinoda* (chap. 84) who examined “the use of the concept ‘human security’ by the government of Japan and its implications”, arguing “that this concept has been favourably accepted by the Japanese government as a policy theme and it interprets how the government refers to it. While there are historical and political contexts in which Japan is naturally attracted by concepts like human security, it would be premature to assert that Japanese foreign policy as a whole is guided by this human security concept.” He claimed that “most Japanese scholars on international relations initially found the concept of human security too ambiguous. Experts on ‘traditional security’ sel-

dom speak of human security.” He analysed “where human security concerns are reflected in Japanese foreign policy, and where Japan is advancing human security as a rationale for its development policy and humanitarian aid.” He concluded that “Japan is trying to adapt itself to a world under new security conditions, while keeping its traditional ‘soft’ image”, arguing that the human security approach “does not harm the traditional orientations of Japanese foreign policy. ... Human security is expected to contribute to an advancement of the goals of Japanese foreign policy.”

Max Schott (chap. 85) presented a case study on what the people and members of the Human Security Cell in the *Ministry of Foreign Affairs and International Cooperation* in Mali consider as their key human security concerns. In the first part, he analysed “both discourses on human security ... by looking at some common rhetorical categories used to defend or criticize the human security concept.” He then discussed “the implications of the human security agenda at the policy level in Mali as Chair of the HSN and investigated its autonomy in formulating policy priorities.” Finally, he evaluated “the perceptions of human security on the ground through consultations carried out with the local populations at the rural, pre-urban and urban levels in Mali.” He proposed to link the “discourses and discussions on human security with a ‘bottom-up’ view of a local reality, with concrete inputs from its referent object, the individual.” He stressed that it might be possible ... to identify common characteristics and challenges to human security through comparative analysis of local/regional human security definitions. This would, in time, allow the development of a global human security concept, and eventually better and more efficient policy implementation.”

The third pillar of human security as ‘freedom to live in dignity’ through different human rights treaties was introduced by *Dieter Senghaas* (chap. 86) who discussed the “emergence of the concept of human rights and human security,” and the role of “human rights as the result of a cultural revolution.” He concluded that in the “worldwide cultural conflict scenario, of which the human rights discourse is currently a core element, ... its real setting is individual societies with their specific cultural cleavages.” He argued that due to the ‘clash within civilizations’ “the international dialogue is becoming easier, because the encounter is no longer between internally harmonious, rather monolithic or homogenous cultures, but between cultures that have come into conflict with themselves.” But it is uncertain “whether the idea of

human rights ... will be translated into political orders congenial to human rights.” In his view “the decisive factor will be the political power-constellations within development processes, which will either succeed or fail.” As human rights issues and the concern for human security overlap and will not counteract each other, he assumed “that with respect to both intellectual and political activities there will be a kind of mutually reinforcing feedback.”

The fourth pillar of human security as ‘freedom from hazard impacts’ is conceptually introduced by *Fabien Nathan* (chap. 87). He analysed the linkage between vulnerability and human security and offered a typology of the concepts of natural risks and disasters, of the sources of vulnerabilities and affected areas, and discussed the inclusion of hazard threats into human security. He concluded that “natural disasters constitute a very important threat for millions of people, usually poorly taken into account in security studies, even though their acuteness is constantly growing”, and that “traditional security thinking is unable to comply with the ‘requisites of an integral conception of security’ that recognizes the threats and analyses all their dimensions.” He suggested that the human security concept “could be used as a strategic means to elaborate an integral conception of security.”

Surichai Wun’Gaeo (chap. 88) addressed the question: “How do environmental resources become a key factor of human security for social groups?” He developed two hypotheses: “first, the state is both a determining and an intervening factor; and second, the affected communities are not passive actors, but are rather active partners in sustainable livelihood recovery.” For the Indian Ocean tsunami he examined “environmental resources as an element of human security by placing the ASEAN region and Thailand into a geographical context.” He outlined “a framework for human security from an environmental perspective focusing specifically on how natural disasters can threaten security and create situations of extreme vulnerability.” Based on a field study he discussed “the coping strategies in facing such extreme circumstances of vulnerability and human insecurity.” He discussed “hazard impacts and social vulnerability interpreting the event by focusing on hazards posing threats to human security in Thailand.” He concluded that “human security remains problematic in South-east Asia today. Poverty and environmental threats continue to stand as obstacles to human development. The increasing frequency of environmental threats confronting the region only serves to under-

score the notion that environmental security is a crucial element for the attainment of human security.” But this would require “the utilization of resources in a sustainable way that will maximize the potential to preserve natural resources for the protection of human security.”

The next five chapters by women from Mexico, Vietnam/Netherlands, the Philippines and Sri Lanka offer different approaches to human and gender security. *Serena Eréndira Serrano Oswald* (chap. 89) scrutinized the possibility of ‘securitizing gender’ in security studies. She suggested a paradigmatic shift for approaching security by discussing the process of identity formation. She argued “that the problem is not to ‘securitize’ gender” and she proposed “to extrapolate the lessons learnt from the developments in the feminist agenda ... in order to ‘engender’ the concept of security itself so as to make it viable for an equitable and more secure world.” This approach is framed in a discussion on social identity, the formation of representations, and societal change. She linked the concept of ‘security’ to the systemic critique of the exclusionary – dualistic western tradition. In her view “the process of engendering democracy and security, means developing gender sensitive representations in both men and women. Regarding the possibility of ‘securitizing gender’, it may be more urgent and desirable to commence ‘engendering security’ vis-à-vis the impossibility of securitizing gender.”

Úrsula Oswald Spring (chap. 90) focused “on the development and limits of the gender security concept that are imposed on gender epistemology by the prevailing patriarchal mindset in science.” She reviewed four main schools of thought: “epistemological feminism, feminist empiricism, postmodernism, and standpoint feminism.” She explored the process of identity and social representations, discussed post-modern feminism and linked it to the gift economy, ecofeminism and social movements. She combined human, environmental, and gender security for a peaceful and nonviolent livelihood with threats posed by environmental degradation and social marginalization. She argued that more cooperation reduces violence and that this could overcome hard security approaches, and that the military and police could be reassigned to civil protection and disaster management. Furthermore, she discussed gender links with human and environmental security to foster an economy of solidarity and a democratic, ‘glocal’ and participative model of governance that guarantees equity, peace with quality of life, and prospects for a future for the most vulnerable people.

ThanhDam Truong (chap. 91) argued that the regimes of international migration based on welfare and humanitarian concerns were replaced by “multilateral initiatives in migration management guided by the logic of trade and finance, foreign policy and national security,” that “opened the scope for market-based smuggling of refugees and migrants.” While “the legal view treats differing social worlds of transnational migration as mutually exclusive categories”, she addressed their reciprocal implications based on Foucault’s theory of governmentality and emphasized “the significance of thoughts underlying political discourses, practices of discipline and control over mobility.” She highlighted “the nature of intersectional domination of gender, class and race as being contingent on a one-dimensional vision of liberty in neo-liberalism as a political rationality.” She argued that a human security concept that addresses the daily security of the most vulnerable can no longer be locked in a positivist interpretation. She claimed that “exploring the notion of ‘security’ in respect to ‘freedom’ and questioning the context of, and capacity for, social transformation would bring new lights to the exercise of power in this domain.” In her view “feminist theory can contribute to an understanding that does not treat different categories of security as distinctive and self-contained, but as elements in a web of mutually implicating relationships and, also, as matters of social justice systemic to global capitalism as a whole.” She discussed the neo-liberal governmentality with regard to gender and culture and suggested human security as a political rationality for countering neo-liberalism. She concluded that “neo-liberalism has created a new style of governance”, and she suggested “as the key political question for codes of human security to include the protection of people on the move is how to address the now obsolete but still affective demarcation between the ‘domestic’ (self) and the ‘foreign’ (distant others).”

Then, *Mary Soledad L. Perpiñan, María Eugenia Villarreal* and *Úrsula Oswald Spring* (chap. 92) addressed the question how women analyse and survive in very violent situations in South East Asia and in Central America. They discussed “how threats affecting women and children are resolved collectively by women and marginalized groups, relying on their own capacities.” They reviewed two case studies on gender insecurity in South East Asia based on participative research and the trafficking in children for sexual exploitation in Central America. In their view, “both regions represented strategic zones during the Cold War where both superpowers fought proxy wars. In both

examples the fight against communism brought about environmental disaster due to chemical warfare, guerilla war, and a large number of displaced persons.” They argued that “once a peace agreement was achieved, the destruction of the social networks ... was triggered by global environmental change and increasing natural hazards, which often led to social and political disasters.”

Madhavi Malalgoda Ariyabandu and *Dilrukshi Fonseka* (chap. 93) discussed the gender dimension of natural hazards for the tsunami in India and Sri Lanka (2004), and the Kashmir earthquake in Pakistan (2005). They argued that “exposure and vulnerability to natural disasters pose a major threat to human security, by ... exposing individuals to the threats of physical, economical, social, health, personal, cultural and psychological insecurities.” While disasters kill and displace people and make them socially and economically insecure, “post-disaster contexts further threaten human security, as political and institutional structures ... are unable to deliver relief and recovery.” South Asia is one of the most hazard prone regions and “home to a very large number of resource poor people.” In addition, “poor governance, institutional and policy frameworks, weak infrastructure, lack of social protection and security all lead to high levels of disaster related insecurity.” They argued “that the degree and extent of an individual’s human security risk vis-à-vis natural disasters is ... related to the multiple ... identities ... as well as to the physical, structural and attitudinal violence that is inflicted on these identities by his/her community.” They analysed “how different groups of people in India, Sri Lanka, and Pakistan have been affected by the December 2004 Asian tsunami and the October 2005 Kashmir earthquake; unfolding vulnerabilities, the degrees of disaster risk and threat to human security from the immediate, natural hazard impact, and through disaster responses.” Both mega disasters demonstrated deep rooted problems; exposing the failure to understand and address causes and effects of vulnerability, and a recovery process devoid of risk and vulnerability reduction.

The last three chapters offer case studies on specific issues. *Shahrbanou Tadjbaksh* (chap. 94) combined the debate on human security with that of failed states and suggested “a constructivist view of the political and normative usage of these terms to see whether these two ultimately political concepts are compatible.” She reviewed “the differences between a traditional (security or institutional based) approach and a human security approach to ‘conceptualizing’ fragile states.” She scrutinized “differences

in terms of evaluations of failure, strength and weaknesses, as well as motivations for engagement from the three different points of views,” arguing “that the human security framework poses an ethical challenge to realism and institutional liberalism by introducing the element of human dignity.” Distancing herself from “traditional approaches to responses and responsibilities of the international community,” she scrutinized “questions of interventions, stabilization, aid, and a liberal approach to state-building ... from the realist, liberal and human security viewpoints ... as applied in Afghanistan,” and proposed “an alternate framework of engagement,” arguing that “the human security framework proposes different solutions to the problems of efficiency and legitimacy of states and their institutions, specifically in the cases of ‘failed states’.”

Joseph Singh (chap. 95) discussed “the relevance of human and environmental security concepts for the military services,” focusing on concepts of human and environmental security. These concepts were assessed “for the Caribbean region to determine their relevance for the military services,” arguing that “the decisions these countries make will have implications for the military services if they are to be capable of responding to such threats, challenges, vulnerabilities, and risks in the future.”

Albrecht Schnabel and *Heinz Krummenacher* (chap. 96) argued that “a human security threat constitutes an already or potentially life-threatening danger to a population in a specific geographic context. The specific source and nature of this threat depends on each situation and context – it could range from flooding to landslides to diseases or violent conflict.” They argued “that the contextualized ... nature of human security must ... be matched with an equally multifaceted monitoring, warning and response system,” and that “the monitoring and warning approach needs to differ accordingly.” In their view, “contemporary political early warning systems lack the necessary flexibility to meet this requirement. They ... suffer from two major shortcomings: *First*, their focus lies exclusively on trends leading towards or away from violent conflict. ... *Second*, early warning was targeted at ‘Third World countries’ only and the information gained was primarily used by Western states in order to enhance their country policies and development programmes.” They proposed to share early warning information with all stakeholders and that “the response to human security threats has to be found in a participatory process ... of the local/national governments and non-state actors,” based on true partner-

ship “as a prerequisite for long-term, sustainable response strategies and mechanisms to alleviate potential and emerging threats to populations’ survival and state and regional stability.” They examined “existing first- and second-generation approaches to early warning and an illumination of the factors that explain their relatively limited utility for human security early warning.” Then they discussed “the emerging concept of human security,” and concluded “by outlining how a third-generation early warning system would have to look in order to successfully address the genuine human security needs of societies.”

100.10 From Knowledge to Action and Policy Outlooks

The last part refers to the increasing role of remote sensing for environmental security analysis. *Dirk H. Hoekman* (chap. 97) argued that “remote sensing systems may play an important role in the development and implementation of such international treaties.” Therefore, “accurate mapping and monitoring is required at different scales. Severe cloud cover often prevents the acquisition of optical remote sensing data, thus making the use of satellite radar remote sensing for monitoring applications necessary.” He illustrated the “suitability of radar techniques for acquiring relevant information on rain forests ... with examples of studies conducted by the author in Indonesia.”

This is followed by a research manifesto by *Úrsula Oswald Spring*, *Hans Günter Brauch*, and *Simon Dalby* (chap. 98) in which they outlined the topics, scope, areas and methods for a fourth research phase on human, environmental and gender security, and peace research that should build on the first three phases of environmental security research while explicitly incorporating advances in earth system science and disaster research into the analysis. They distanced security analysis from traditional assumptions in international relations thinking and focusing more explicitly on the specific contexts where people, especially socially vulnerable groups and their social networks, are insecure. While the first three phases of environmental security research primarily focused on the ‘nation state’ as the key referent of environmental security concepts and policy, they suggested that during the fourth phase the referent object of securitization should be both *widened* and *deepened*. This implies that the environmental dimension of security should include both societal, human, and gender issues but

also sectoral approaches such as water, food, health, and livelihood security and ecofeminist perspectives. Furthermore, the widening of the referents of securitization should include the global, regional, societal, community, family, and human level. Thus, the state-focused approach to environmental security should be broadened to a ‘people-centred’ approach.

They introduced three conceptual components for the fourth phase: earth system research and the Anthropocene, the combined *Human, Gender and Environmental Security* (HUGE) concept, and the *Human and Environmental Security and Peace* (HESP) programme. They also addressed the study of substantive issues that need attention in the fourth phase, such as extreme weather events, social systems and gender relations, environmental, social and urban vulnerability, migration, complex emergencies, crises and conflicts, political coping strategies with human insecurities.

Finally, in chapter 99, *Hans Günter Brauch* and *Úrsula Oswald Spring* developed their conceptual perspective for a sustainable peace for the 21st century translating the conceptual and empirical results into a policy perspective that moves from scientific knowledge to political action for society, the business community in facing the new global challenges, as well as the role of the state and international organizations in responding to these new global challenges. They addressed these new challenges for international peace and security, and suggested conceptual ideas for moving towards a sustainable peace policy for the 21st century.