

# Contents

## Forewords

*Rajendra K. Pachauri,*  
*Director-General of TERI, chairman of the Intergovernmental Panel on*  
*Climate Change (IPCC)* V

*Achim Steiner,*  
*Executive Director of the United Nations Environment*  
*Programme (UNEP) and Under-Secretary General of the*  
*United Nations* VII

*Joy Ogwu,*  
*Permanent Representative of the Federal Republic of Nigeria*  
*to the United Nations in New York* IX

*Stavros Dimas,*  
*European Commissioner for the Environment* XI

**Dedication** XII

**Acknowledgements** XXI

**Permissions and Credits** XXIV

**Prefaces** 1

Facing Global Environment Change 3  
*Luc Gnacadja,*  
*Executive Secretary, Secretariat,*  
*United Nations Convention to Combat Desertification*

Facing Global Environment Change and Disaster Risk Reduction 9  
*Sálvano Briceño,*  
*Director, Secretariat of the International Strategy for*  
*Disaster Reduction (UN/ISDR)*

Climate Change and Security: A Destablizing Fact of Life 11  
*Michael Zammit Cutajar,*  
*Former Executive Secretary, UNFCCC*  
*Honorary Ambassador for Climate Change, Malta*

Facing and Coping with Globalization: How Ten Years of WTO have Created  
an Agrarian Crisis in India 13  
*Vandana Shiva,*  
*recipient of the Right Livelihood Award (Alternate Nobel Prize) in 1993*

<b>Part I</b>	<b>Contextualization of Global Environmental Change</b>	<b>19</b>
<b>1</b>	Introduction: Facing Global Environmental Change and Sectorialization of Security <i>Hans Günter Brauch</i>	21
<b>2</b>	The International System, Great Powers, and Environmental Change since 1900 <i>J.R. McNeill</i>	43
<b>3</b>	The Millennium Ecosystem Assessment: Securing Interactions between Ecosystems, Ecosystem Services and Human Well-being <i>Rik Leemans</i>	53
<b>Part II</b>	<b>Securitization of Global Environmental Change</b>	<b>63</b>
<b>4</b>	Securitizing Global Environmental Change <i>Hans Günter Brauch</i>	65
<b>5</b>	Natural Climatic Variations in the Holocene: Past Impacts on Cultural History, Human Welfare and Crisis <i>Wolf Dieter Blümel</i>	103
<b>6</b>	Climate Change Impacts on the Environment and Civilization in the Near East <i>Arie S. Issar and Mattanyah Zohar</i>	119
<b>7</b>	Human Security, Climate Change and Small Islands <i>Yannis N. Kinnas</i>	131
<b>8</b>	Redefining Sustainability: A Policy Tool for Environmental Security and Desertification <i>Rajeb Boulharouf and Douglas Pattie</i>	141
<b>9</b>	Societal Impacts of Desertification: Migration and Environmental Refugees? <i>Andreas Rechkemmer</i>	151
<b>10</b>	Desertification in Algeria: Policies and Measures for the Protection of Natural Resources <i>Ghazi Ali</i>	159
<b>11</b>	Securitizing Water <i>Úrsula Oswald Spring and Hans Günter Brauch</i>	175
<b>12</b>	Changing Population Size and Distribution as a Security Concern <i>Wolfgang Lutz</i>	203
<b>13</b>	Life on the Edge: Urban Social Vulnerability and Decentralized, Citizen-Based Disaster Risk Reduction in Four Large Cities of the Pacific Rim <i>Ben Wisner and Juha Uitto</i>	215
<b>14</b>	Policy Dimensions of Human Security and Vulnerability Challenges. The Case of Urban India <i>Isabelle Milbert</i>	233

<b>Part III</b>	<b>Securitization of Extreme Natural and Societal Outcomes</b>	<b>243</b>
<b>15</b>	Interactions between Conflict and Natural Hazards: Swords, Ploughshares, Earthquakes, Floods and Storms <i>Ben Wisner</i>	245
<b>16</b>	AIDS as a Human Security Challenge <i>Nana K. Poku and Bjorg Sandkjaer</i>	257
<b>17</b>	Conflict and HIV/AIDS: Quantitative Analysis <i>Sophia Benz</i>	269
<b>18</b>	Preparing for Low-Frequency, Extreme Natural Hazards: Contributing to Human Security by Enhancing 'Freedom from Hazard Impact' <i>Janos J. Bogardi, Jörn Birkmann, Niklas Gebert and Neysa J. Setiadi</i>	283
<b>19</b>	Environmental Refugees and Environmental Distress Migration as a Security Challenge for India and Bangladesh <i>Imtiaz Ahmed</i>	295
<b>20</b>	Environmental Scarcities and Civil Violence <i>Thomas Homer-Dixon and Tom Deligiannis</i>	309
<b>21</b>	Linkages Between Sub-national and International Water Conflicts: The Eastern Nile Basin <i>Simon A Mason, Tobias Hagmann, Christine Bichsel, Eva Ludi and Yacob Arsano</i>	325
<b>22</b>	Extractive Industries and the Environmental Aspects of International Security <i>Saleem H. Ali</i>	335
<b>Part IV</b>	<b>Energy Security for the 21st Century</b>	<b>343</b>
<b>23</b>	Energy Security: Conceptualization of the International Energy Agency (IEA) <i>Klaus-Dietmar Jacoby</i>	345
<b>24</b>	Scenarios of Energy Demand and Supply until 2100: Implications for Energy Security <i>Leo Schrattenholzer</i>	355
<b>25</b>	Projections of Fossil Energy Reserves and Supply until 2050 (2100): Implications for Longer-term Energy Supply Security <i>Werner Zittel and Joerg Schindler</i>	365
<b>26</b>	Technical and Economic Potentials of Biomass until 2050: Regional Relevance for Energy Security <i>André P.C. Faaij</i>	379
<b>27</b>	Solar Energy on a Global Scale: Its Impact on Security <i>David Faiman</i>	395
<b>28</b>	Solar Energy as a Key for Power and Water in the Middle East and North Africa <i>Franz Trieb, Wolfram Krewitt and Nadine May</i>	411
<b>29</b>	Energy Security in the Arab World <i>Mohammad Selim and Abdullah Sahar</i>	427

<b>30</b>	Turkey: Energy Security and Central Asia: The Politics and Economics of the So-called Great Game <i>Gareth M. Winrow</i>	437
<b>31</b>	Towards a Sustainable Energy System for Africa: An African Perspective on Energy Security <i>Nogoye Thiam</i>	445
<b>32</b>	Energy Security: Economic, Environmental, and Societal Opportunity for the North – Potential of Renewables to Avoid Conflicts? <i>Rolf Linkohr</i>	457
<b>Part V</b>	<b>Food Security for the 21st Century</b>	<b>469</b>
<b>33</b>	Food as a New Human and Livelihood Security Challenge <i>Úrsula Oswald Spring</i>	471
<b>34</b>	Governance of Food Security in the 21st Century <i>M. A. Mohamed Salih</i>	501
<b>35</b>	A Research Strategy to Secure Energy, Water, and Food via Developing Sustainable Land and Water Management in Turkey <i>Selim Kapur, Burcak Kapur, Erhan Akca, Hari Eswaran and Mustafa Aydin</i>	509
<b>Part VI</b>	<b>Livelihood and Health Security for the 21st Century</b>	<b>519</b>
<b>36</b>	Sustainable Livelihood Security. Evolution and Application <i>Hans-Georg Bohle</i>	521
<b>37</b>	Global Health Security: The WHO Response to Outbreaks Past and Future <i>Guénaél Rodier and Mary Kay Kindhauser</i>	529
<b>38</b>	Health and Human Security in the 21st Century <i>Jennifer Leaning</i>	541
<b>39</b>	AIDS – Challenge to Health Security in Africa: Politics in Africa and Case Study on Botswana <i>Fred Eboko and Tereza Nemeckova</i>	553
<b>40</b>	Health and Poverty as Challenges for Human Security: Two Case Studies on Northern Vietnam and Bangladesh <i>Isabel Fischer and Mohammad Musfequs Salehin</i>	563
<b>Part VII</b>	<b>Water Security for the 21st Century</b>	<b>573</b>
<b>41</b>	Global Trade: Balancing Existing and Future Regional Water Resource Deficits <i>Tony Allan</i>	575
<b>42</b>	Water Wars in India <i>Vandana Shiva</i>	589
<b>43</b>	Sustainability of Environmental Regimes: The Mekong River Commission <i>Bastien Affeltranger</i>	593

<b>44</b>	Water Scarcity and Political Wrangling: Security in the Euphrates and Tigris Basin <i>Mustafa Aydin and Fulya Ereker</i>	603
<b>45</b>	Water Resources in the Arab World: A Case Study on Jordan <i>Bassam Ossama Hayek</i>	615
<b>46</b>	‘New Security Thinking’ in Israeli-Palestinian Water Relations <i>Jan Selby</i>	623
<b>47</b>	Functional Water Cooperation in the Jordan River Basin: Spillover or Spillback for Political Security? <i>Anders Jägerskog</i>	633
<b>48</b>	Water and Food Security in the River Nile Basin: Perspectives of the Government and NGOs in Egypt <i>Emad Adly and Tarek Ahmed</i>	641
<b>49</b>	Water and Food Security in the Nile River Basin: Perspectives of Governments and NGOs of Upstream Countries <i>Patricia Kameri-Mbote and Kithure Kindiki</i>	651
<b>50</b>	Water and Security in Sub-Saharan Africa: Emerging Concepts and their Implications for Effective Water Resource Management in the Southern African Region <i>Peter Ashton and Anthony Turton</i>	661
<b>51</b>	Water Security in the Senegal River Basin: Water Cooperation and Water Conflicts <i>Martin Kipping</i>	675
<b>52</b>	The Centrality of Water Regime Formation for Water Security in West Africa: An Analysis of the Volta Basin <i>Maëlis Borghese</i>	685
<b>53</b>	Success and Failure in International River Basin Management – The Case of Southern Africa <i>Stefan Lindemann</i>	699
<b>54</b>	Can ‘Integrated Water Resources Management’ Silence Malthusian Concerns? The Case of Central Asia <i>Martin Kipping</i>	711
<b>55</b>	Environmental Security in Central Asia and the Caspian Region: Aral and Caspian Seas <i>Eva Rakel</i>	725
<b>56</b>	The Central Asian Water Regime as an Instrument for Crisis Prevention <i>Julia Wunderer</i>	739
<b>57</b>	Water Resource Management for Improving Environmental Security and Rural Livelihoods in the Irrigated Amu Darya Lowlands <i>Christopher Martius, Jochen Froebrich and Ernst-August Nuppenau</i>	749
<b>58</b>	Water Security in Times of Armed Conflicts <i>Mara Tignino</i>	763

<b>Part VIII</b>	<b>Environmental Security Concepts and Debates</b>	<b>779</b>
<b>59</b>	Environmental Security Concepts Revisited During the First Three Phases (1983-2006) <i>Simon Dalby, Hans Günter Brauch and Úrsula Oswald Spring</i>	781
<b>60</b>	Environmental Security: Academic and Policy Debates in North America <i>Richard A. Matthew and Bryan McDonald</i>	791
<b>61</b>	The Debate on Ecological Security in Russia, Belarus and Ukraine <i>Alexander Sergunin</i>	803
<b>62</b>	Linking Knowledge Systems for Socio-ecological Security <i>P.S. Ramakrishnan</i>	817
<b>63</b>	Environmental Security in Northeast Asia <i>Miranda A. Schreurs</i>	829
<b>64</b>	Environmental Security in the Arab World <i>Mohammad El-Sayed Selim</i>	843
<b>65</b>	In the Name of Security: In the Name of Peace – Environmental Schizophrenia and the Security Discourse in Israel / Palestine <i>David Newman</i>	855
<b>66</b>	Security and Environment and the Israel-Palestine Conflict <i>Robin Twite</i>	865
<b>67</b>	Conceptualization and Debate on Environmental and Human Security in Palestine <i>Mohammed S. Dajani Daoudi</i>	873
<b>68</b>	Environmental Scarcity, Insecurity and Conflict: The Cases of Uganda, Rwanda, Ethiopia and Burundi <i>Mersie Ejigu</i>	885
<b>69</b>	Environmental Security in Sub-Sahara Africa: Global and Regional Environmental Security Concepts and Debates Revisited <i>Sam Moyo</i>	895
<b>70</b>	The Brazilian Amazon in an Environmental Security and Social Conflict Framework <i>Alexander López</i>	915
<b>71</b>	Politics of Environment in the Caucasus Conflict Zone: From Nationalizing Politics to Conflict Resolution <i>Vicken Cheterian</i>	925
<b>72</b>	Environmental Security in the Asia-Pacific Region: Contrasting Problems, Places, and Prospects <i>Jon Barnett</i>	939
<b>73</b>	Security at the Poles: The Arctic and Antarctic <i>Gunhild Hoogensen</i>	951

<b>Part IX</b>	<b>Human and Gender Security Concepts and Debates</b>	<b>961</b>
<b>74</b>	Human Security Concepts in Policy and Science <i>Hans Günter Brauch</i>	965
<b>75</b>	The Human Security Network: A Global North-South Coalition <i>Claudia F. Fuentes Julio and Hans Günter Brauch</i>	991
<b>76</b>	Theoretical Perspective on Human Security: A South Asian View <i>A. K. M. Abdus Sabur</i>	1003
<b>77</b>	Horizontal and Vertical Extension of International Security: A Human Security Approach <i>Sascha Werthes and Tobias Debiel</i>	1013
<b>78</b>	Human Security in the Arab World: A Perspective from the Maghreb <i>Béchir Chourou</i>	1021
<b>79</b>	Human Security Concepts, Approaches and Debates in Southeast Asia <i>Zarina Othman</i>	1037
<b>80</b>	Human Security in Sub-Saharan Africa <i>Nana K. Poku and Bjorg Sandkjaer</i>	1049
<b>81</b>	Human Security in Central America <i>Philippe De Lombaerde and Matthew Norton</i>	1063
<b>82</b>	Human Security: A South American Perspective <i>Francisco Rojas Aravena</i>	1077
<b>83</b>	Human Security in North America: A Canadian Perspective <i>David R. Black and Larry A. Swatuk</i>	1087
<b>84</b>	Human Security Initiatives of Japan <i>Hideaki Shinoda</i>	1097
<b>85</b>	Human Security: International Discourses and Local Reality – Case of Mali <i>Max Schott</i>	1105
<b>86</b>	Enhancing Human Rights – A Contribution to Human Security <i>Dieter Senghaas</i>	1115
<b>87</b>	Natural Disasters, Vulnerability and Human Security <i>Fabien Nathan</i>	1121
<b>88</b>	Environment as an Element of Human Security in Southeast Asia: Case Study on the Thai Tsunami <i>Surichai Wun'Gaeo</i>	1131
<b>89</b>	The Impossibility of Securitizing Gender vis à vis 'Engendering' Security <i>Serena Eréndira Serrano Oswald</i>	1143
<b>90</b>	A HUGE Gender Security Approach: Towards Human, Gender, and Environmental Security <i>Úrsula Oswald Spring</i>	1157
<b>91</b>	Human Security and the Governmentality of Neo-liberal Mobility: A Feminist Perspective <i>Thanh-Dam Truong</i>	1183

<b>92</b>	Gender Security in South East Asia and Trafficking of Children for Sexual Exploitation in Central America: HUGE Security Challenges <i>Mary Soledad L. Perpiñan, María Eugenia Villarreal and Úrsula Oswald Spring</i>	1191
<b>93</b>	Do Disasters Discriminate? A Human Security Analysis of the Impact of the Tsunami in India, Sri Lanka and of the Kashmir Earthquake in Pakistan <i>Madhavi Malalgoda Ariyabandu and Dilrukshi Fonseka</i>	1215
<b>94</b>	Failed Narco-state or a Human Security Failure? Ethical and Methodological Ruptures with a Traditional Read of the Afghan Quagmire <i>Shahrbanou Tadjbakhsh</i>	1227
<b>95</b>	Relevance of Human and Environmental Security Concepts for the Military Services: A Perspective of a Former Chief of Staff <i>Joseph G. Singh</i>	1245
<b>96</b>	Towards a Human Security-Based Early Warning and Response System <i>Albrecht Schnabel and Heinz Krummenacher</i>	1253
<b>Part X</b>	<b>Conclusions: From Knowledge to Action and Policy Outlook</b>	<b>1265</b>
<b>97</b>	Methods and Techniques of Remote Sensing to Contribute to Security in Tropical Rain Forests <i>Dirk H. Hoekman</i>	1267
<b>98</b>	Linking Anthropocene, HUGE and HESP: Fourth Phase of Environmental Security Research <i>Úrsula Oswald Spring, Hans Günter Brauch and Simon Dalby</i>	1277
<b>99</b>	Towards Sustainable Peace for the 21st Century <i>Hans Günter Brauch and Úrsula Oswald Spring</i>	1295
<b>100</b>	Summary and Results: Facing Global Environmental Change and Sectorialization of Security <i>Hans Günter Brauch</i>	1311
	<b>Abbreviations</b>	<b>1333</b>
	<b>Bibliography</b>	<b>1347</b>
	<b>Biographies of Contributors</b>	<b>1503</b>
	<b>Index</b>	<b>1543</b>



Facing Global Environmental Change  
Environmental, Human, Energy, Food, Health and Water  
Security Concepts

Brauch, H.G.; Behera, N.C.; Kameri-Mbote, P.; Grin, J.;  
Oswald Spring, Ú.; Chourou, B.; Mesjasz, C.;  
Krummenacher, H. (Eds.)

2009, XCVI, 1544 p. With 27 Boxes. In 2 volumes, not  
available separately., Hardcover

ISBN: 978-3-540-68487-9