# Index

Accountability, 25  
Action Aid, 19  
ADRA, 19  
Africa Regional Strategy for Disaster Risk Reduction, 19  
African nations, 5  
African Science and Technology Advisory Group (Af-STAG), 100  
African Union (AU), 19  
Agile and lean-based strategies for reverse logistics, 84  
Agile supply chain, 49–50  
Agile supply networks, 3  
Agility, 52–54, 75  
Aid organisations, 3, 23  
Aidmatrix, 3  
Air cargo supply chain, 64  
Airbnb, 103  
American logistics aid networks, 3  
Appointments, 104  
Armed conflict, 5–6  
AU regional strategy, 32  
Avoidance, 81  
Basic humanitarian operations, 8  
Beneficiaries, 3  
Biodiesel, 80  
Bioenergy products, 80  
Bioethanol, 80  
Biogas, 80  
Biomasses, 80  
Blockchains  
   basics, 114–115  
   in humanitarian logistics and SCM, 115–116  
in logistics and supply chain management, 113–114  
prospects of blockchain in logistics and SCM, 119–120  
Boards, 25  
Bosch, 122  
Build-to-order supply chains, 22  
Building Disaster Resilience to Natural Hazards in Sub-Saharan African Regions, Countries and Communities’ programme, 33  
Business planning policy, 65  
Calls, 104  
Carbon credits, 115  
Carbon dioxide, 80  
CARE, 3  
Care International, 19  
Cargo security, 76  
Caribbean region, 40  
Cash and voucher aid (C&V aid), 111  
Cashless payment systems, 113  
Centralised structures, 20  
Certificates, 104–105  
Chartered Institute of Logistics and Transport, 24  
Clever transportation systems, 101–102  
Clients (see Victims)  
Climate change, 7–8, 31, 38  
Climate variability, 7–8  
Closed loop strategies, 85  
CMR1 consignment note, 104
Collaboration, 22–23, 67
  in humanitarian logistics, 137
  in supply chain management, 75
Commercial logistics, 1, 47
Commercial supply chains, 4
Commodity procurement, 13
Communication, 23, 67
  theory, 10
Communities, 3
Competing values theory, 10
Computations, 65
Consolidation, 21
Contingency planning in Africa, 11–12
Continuous replenishment supply chain, 49
Contract negotiation, 106
Cooperation, 21
  issues, 76
Coordination, 21–23, 53, 67
  issues, 76
  of research activities, 139–140
Corporate donors, 45
Counterfeit products, 117
Crisis management, 4
Critical success factors (CSFs), 129
Cross-country comparison, 33
Customers, 3
  service packaging, 46
Cyclical models, 70

Data collection in humanitarian logistics, 137–138
Data governance, 123
Data innovation, 91–92
DB Schenker, 122
De-centralised structures, 20
Decentralised value chain operations, 123
Delivery coordination, 95
Dependability, 51
Developing nations, 40
Developing World, 3, 12
DFID, 3
Digests, 80

Digital currency, 115
Digitalisation of humanitarian aid and logistics, 111–112
Digitalised communication, 103–104
Digitalised logistics, 112–113
Digitised supply chains, 120–122
Dineo cyclone, 7–8
Disaster appeals, 60
Disaster management, 47–48, 59
  cycle, 57–59
  policies for training in, 23–24
Disaster Management Act 57 of 2002, 11, 24
Disaster Management Authority of Mozambique, 12
Disaster Management Institute of South Africa, 24
Disaster relief and management, 21
  recommendations for investment in, 61
  theoretical model of, 70–71
Disaster risk management, 11–12, 58
Disaster Risk Management Training and Education Centre for Africa, 24
Disaster risk reduction (DRR), 100
  science and technology in, 100
Disasters, 4–5, 31, 46, 57
  AU regional strategy, 32
  climate change, 38
  economic and social impacts of disasters in emerging economies, 38–39
  efficiency of disaster response, 9
  failure to recover, 43
  across globe, 39–41
  population growth in hazard-prone urban areas, 37
  recovering from, 42
  sub-Saharan Africa’s disaster profile, 32–35
  success and failure in recovery outcomes, 42
Flexibility, 51, 53–54
Flooding, 7
Floods, 4
Forecasting, 93–94
Foreign donors, 13–14
Foreigners, 6–7
Forward logistics, 81–82
Four-stage standard process model for disaster assistance, 70
Fourth Industrial Revolution, 2
Framework agreements, 105
Fraunhofer Institute, 121–122
Freight exchanges, 106
Fritz Institute, 3, 92
Fully flexible supply chain, 50
Gatekeeping, 81
General climate models (GCMs), 38
Generic humanitarian supply chains, 48–51
Generic supply chain, 51–52
Geographic information systems (GISs), 70, 129
Global Impact, 60
Global sourcing trends, 54
Governmental institutions, 61
Governments, 3, 22
donors, 45
regulations, 26
Graphical Evaluation and Review Technique (GERT), 69–70
Green logistics, 2
Gross domestic product (GDP), 36
GSCM compliance-centred strategies for reverse logistics, 83–84
High abstraction model, 22
Horizontal coordination, 20, 22
Horn of Africa, 5
Human capacity building for disaster risk management in Africa, 23
Human Development Index, 5
Human resources, 61
Humanitarian appeal, 4–5

and sustainable development in Africa, 8–9
systematic risk reduction recommendations, 37
vulnerability and systematic risk, 35–37
Dispersion, 81
Distributed system, 115
Distributed transactions, 110
Documents, 104
Domain-specific descriptions, 108
Domestic funding, 61
Domestic non-governmental organisations, 22
Donations, 63
Donors, 3
Droughts, 5
Dual-cycle model, 70–71
E-cash programmes, 112–113
E-vouchers programmes, 112–113
Earthquakes, 4
Effective resource allocation, 9
Efficiency of disaster response, 9
El Nino Southern Oscillation phenomenon, 34
Eline of 2000 in Southern Africa, 12
Emergency Events Database, 7
Emerging economies, economic and social impacts of disasters in, 38–39
Enterprise resource planning, 99
Epidemics, 4
European Union (EU), 107
Event management, 112–113
Ex ante public investments, 35
Extended point of delivery and relief to beneficiaries, 66–67
Extreme events, 34
Extreme hydro-meteorological events, 31
Favio hit Mozambique, 12
FESTO, 122
Fleet Forum, 139–140
Humanitarian calamities, 3
Humanitarian logistics, 1, 19, 45, 129
academia, humanitarian
organisations, and
competition, 134–135
access to research issues, 134
analysis and review, 12
background review, 1–2
blockchains in, 115–116
building theory of HSC policy,
19–20
characteristics, 3, 46
collaboration in humanitarian
logistics, 137
commercial logistics vs., 47
communication issues, 134
contextualisation issues, 132
coordination and frameworks,
21–22
data collection in humanitarian
logistics, 137–138
difficult data collection, 132–133
digitised supply chains and,
120–122
frameworks and policy, 20–21
impact of humanitarian logistics
research, 130–131
i-cargo ontologies, 107–108
in industry 4.0 literature, 122–123
key humanitarian logistics
challenges, 130
knowledge base, 106–108
multiplicity of actors, 22–23
need to avoid fixed and irrelevant
logistics networks, 10–11
and open agendas, 136–137
operations and IoT in, 118–119
opportunities and challenges for
humanitarian logistics in
growing consumer markets,
140–141
and performance metrics, 136
policies for training in disaster
management, 23–24
policy and framework challenges
of humanitarian logistics in
Africa, 24–26
poorly defined problems, 131–132
and relief supply chain steps, 76–77
research, and relevance for
practice, 131–136
research work on, 13–14
routeing, 118
security, 118
tracking, 118
trust issues, 134
validation issues, 133
web of needs, 106–107
Humanitarian operations, 47
Humanitarian policy, 26
Humanitarian relief, 19
Humanitarian response operations, 8
Humanitarian supply chains, 2–4, 48, 69
agility, 75
applying proper supply chain
strategy, 74
collaboration in supply chain
management, 75
coordination and cooperation
issues, 76
creating supply chain resilience,
73–74
humanitarian logistics and relief
supply chain steps, 76–77
linear sequence models vs. cyclical
models, 70
mapping supply chain, 74
model-based strategy for
simulation, 71–73
new culture, 75
reconsidering supply approach for
HL, 74
relief supply chain management
challenges, 76
supply chain reconfiguration, 74
supply chain structure, 76
theoretical model of disaster relief,
70–71
Hydro-meteorological services, 37
IBM, 116
Imbawula heating stoves, 7
Immutability quality, 107
Industrial Data Space (IDS), 118
Industrial Data Space Association, 122
Industry 4.0, 99
  basics of blockchains, 114–115
  blockchains in humanitarian logistics and SCM, 115–116
  decentralised value chain operations, 123
  digitalisation of humanitarian aid and logistics, 111–112
  digitalised logistics, 112–113
  digitised supply chains and humanitarian logistics, 120–122
  distributed transactions and long-running work, 110
ease of paperwork processing freight transportation, 116–117
expressing technology user agreement, 111
humanitarian logistics in industry 4.0 literature, 122–123
humanitarian logistics knowledge base, 106–108
identifying counterfeit products, 117
logistics information requirements, 109–110
message retraction, 110
multi-modal routeing algorithms, 123–124
operations and IoT in humanitarian logistics, 118–119
prospects of blockchain in logistics and SCM, 119–120
science and technology in disaster risk reduction, 100
supply chain service descriptions, 108–109
TMS, 101–106
and tracking, 117–118
Information and communication technologies (ICT), 99
Information technology (IT), 2, 89
applications for relief organisations, 91–92
drivers for IT use in SCM, 93
effectiveness of IT on relief logistics, 92
forecasting and quantification, 93–94
HSC and, 95
order tracking and delivery coordination, 95
procurement, 94
recommendations, 95–96
research constructs, 89–90
supply chain planning and collaboration, 94–95
technological shortage, 90
transaction processing, 94
usage level, 90–91
Innovation-centred strategies for reverse logistics, 84–85
Integrated development plan (IDP), 24
Integrated supply chains, 22
Intelligent transportation systems (ITS), 99
Inter-governmental Panel on Climate Change (IPCC), 34
International NGOs, 22
Internet of Things (IoT), 99
Inventory consolidation, 21
Inventory control, 46
Inventory holding, 62–63
Inventory management approaches for humanitarian logisticians, 63
Irpinia earthquake (1980), 43
Kamchatka earthquake in Russia (1952), 43
Kanbans, 63
Knowledge chain, 75
Landslides, 4
Language, 11
usage and translation, 138
Lean supply chain, 49
Linear sequence models, 70
Loading ramps, 65
LogiCo, 107
LogiServ, 107
Logistics, 22, 81 (see also Humanitarian logistics)
and environment, 83
information requirements, 109–110
logistics 4.0, 101–102
service providers, 3
Long-running work, 110
Man-made disasters, 3
Manufacturing companies, 45
Material handling, 46
Maule catastrophe, 42
Message retraction, 110
Military, 45
organisations, 22
service providers, 3
Milk runs, 63
Mitigation, 48, 59
Model-based strategy for simulation, 71–73
Mount Karthala in Comoros, 34
Mount Nyiragongo in Democratic Republic of the Congo, 34
Multi-modal routeing algorithms, 123–124
Municipal Systems Act, 24
National Disaster Management Organization, 23–24
Natural catastrophes, 35
Natural disasters, 3, 7, 39
Non-governmental organisations (NGOs), 2–3, 45, 61, 111
Non-logistics programme units, 2
Open agendas, 136–137
Open Logistics Networks, 108
Operation excellence, 112
Operational bottlenecks, 65
Operations Research (OR), 70, 129
Order management, 46
Order tracking, 95
Overseas Development Institute (ODI), 111
Ownership documents, 115
Oxfam, 3, 19
Peer-to-peer network (P2P network), 114, 121
Performance measurement, 52
Performance metrics, 136
Permanent networks, 20
Photosynthesis, 80
Planning, 59–60
Population growth in hazard-prone urban areas, 37
Positioning, 62
Postponement, 53
Pre-positioning of stocks, 12
Preparation, 47
Preparedness, 47, 59–60
Price bargaining, 105
Price negotiation, 105
Price sensitivity, 105
Privacy, 104
Probabilistic risk assessments, 33
Problem-solving, 72
Index

Procurement, 12–13, 94
Product recovery, 81
Projects, 3
Provincial Disaster Management Centre of Western Cape, 24
Public government donors, 3
Purchasing, 62
Purchasing consolidation, 21
Quality dimensions, 105–106
Quality trends, 54
Quantification, 93–94
Quinscape, 122
Rain-fed agriculture, 31
Real-time rerouting, 118
Reconstruction, 47
Recourse mobilisation, 60–61
Recovery, 48, 59
Recycling, 79
Red Cross, 2
Reduce/reuse/recycle processes (R3 processes), 51–52
Relationship management theory, 10, 22
Reliability, 51
Relief operations, 59
Relief organisations, 39
importance of validating findings with, 138
Relief supply chain management challenges, 76
umbrella, 67
Resilience, 40
Resource-based view of firm, 10
Resource description framework (RDF), 106–107
Response, 47, 59
Results sharing and dissemination, importance of, 138–139
Return freight, 105
Returns management, 81
Reverse logistics, 2–3, 46, 79–80
agile and lean-based strategies for reverse logistics, 84
barriers to good, 84
challenges for, 86
closed loop strategies, 85
cost implications, 82
and environment, 86
GSCM compliance-centred strategies for reverse logistics, 83–84
impacts, 82
innovation-centred strategies for reverse logistics, 84–85
logistics and environment, 83
product recovery and waste management, 81
returns management, 81
Risk profiles, 33
Salzgitter, 122
Schaeffler, 122
Science and technology in disaster risk reduction, 100
Sequencing supplies in line (SILS), 63
Setlog, 122
SHACL, 109–110
Short-term management, 4
SICK, 122
Simulation model-based strategy for, 71–73
models, 65, 69
Smart contracts, 115
SmartLog, 123
Sourcing, 62
Stakeholders, 3
groupings of, 45–46
Stock asset management, 66
Storms, 4, 34
Sub-Saharan Africa’s disaster profile, 32–35
Suplier subassembly, 63
Supply chain, 71
  agility trends, 54
  analytical frameworks, 22
  channels and network design, 45
  disaster management, 47–48
  flexibility, 51
  future research, 54
  generic humanitarian supply chains, 48–51
  generic supply chain, 51–52
  groupings of stakeholders, 45–46
  humanitarian operations, 47
  humanitarian supply chains, 48
  mapping, 74
  performance measurement, 52
  planning and collaboration, 94–95
  reconfiguration, 74
  resilience, 73–74
  service descriptions, 108–109
  structure, 76
  supply chain management practices applicable during humanitarian relief operations, 52–54
  supply network components of humanitarian aid, 46
  systems, 2, 57
  vulnerability, 22
Supply chain management (SCM), 1, 93, 101, 129
  blockchains in, 115–116
  drivers for IT use in, 93
  prospects of blockchain in logistics and SCM, 119–120
Supply network components of humanitarian aid, 46
Supply network management (SNM), 129
Sustainable development in Africa, 8–9
Systematic risk, 35–37
  reduction recommendations, 37
Technology readiness level (TRL), 123
Temporary networks, 20
ThyssenKrupp, 122
Tracing, 65
Tracking, 65
Transaction processing, 94
Transition phase, 47
Transparency, 25
Transport and execution system, 64
Transport ontologies, 108
Transportation, 46
  consolidation, 21
  system management, 64–65
Transportation management systems (TMS), 99, 101–106
Transporters, 46
Tropical storms and cyclones, 34
Trust, 103
Tsunami risk, 35
Uber, 103
United Nations (UN), 4–5, 57
  agencies, 3
  relief agencies, 45
  relief organisations, 22
United Nations International Children’s Emergency Fund (UNICEF), 2
United Nations Office for Disaster Risk Reduction (UNDRR), 31
Unmanned aerial vehicle systems (UAVs), 129
Unpredictable demand and supply, 9
Urban dwellers, 32
Urgent reaction, 47
USAID, 3
Vajont Dam (1963), 43
Vertical coordination, 20, 22
Victims, 46
Virtual integration, 53
Virtual technology integration, 102
Volcanic eruptions, 4
Volcanoes, 34
Vulnerability, 35–37
of people and economies of Sub-Saharan Africa, 31

Walmart, 117
Warehouse management systems, 99
Warehousing, 46
Waste management, 81

Web of needs (WoN), 102, 106–107
Wildfires, 4, 7
World Food Programme (WFP), 2
World Vision, 3
World Vision International, 19
Wrong assumptions, 106
WS-Business Activity (WS-BA), 110

Xenophobia, 6–7