

## **Surviving Climate Chaos** by Strengthening Communities and Ecosystems

Surviving climate chaos needs communities and ecosystems that are strong enough to cope with near-random environmental impacts. Their strength depends upon their integrity, so preserving and restoring this is essential. Total climate breakdown might be postponed by extreme efforts to conserve carbon and recapture pollutants, but climate chaos everywhere is now inevitable. Adaptation efforts by Paris Agreement countries are converging on community-based and ecosystem-based strategies, and case studies in Bolivia, Nepal and Tanzania confirm that these are the best ways forward. But success depends on local empowerment through forums, ecosystem tenure security and environmental education. When replicated, networked and nurtured by governments, they can strengthen societies against climate chaos while achieving sustainable development. These vital messages are highlighted for all those who seek a role in promoting adaptation: students, researchers and teachers; government officials and aid professionals; and everyone now living under threat of climate chaos.

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# Surviving Climate Chaos

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and Ecosystems

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CAMBRIDGE  
UNIVERSITY PRESS

Cambridge University Press  
978-1-108-84012-5 — Surviving Climate Chaos by Strengthening Communities and Ecosystems  
Julian Caldecott  
Frontmatter  
[More Information](#)

## CAMBRIDGE UNIVERSITY PRESS

University Printing House, Cambridge CB2 8BS, United Kingdom

One Liberty Plaza, 20th Floor, New York, NY 10006, USA

477 Williamstown Road, Port Melbourne, VIC 3207, Australia

314–321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre,  
New Delhi – 110025, India

103 Penang Road, #05–06/07, Visioncrest Commercial, Singapore 238467

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of education, learning, and research at the highest international levels of excellence.

[www.cambridge.org](http://www.cambridge.org)

Information on this title: [www.cambridge.org/9781108840125](http://www.cambridge.org/9781108840125)

DOI: 10.1017/9781108878982

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First published 2021

Printed in the United Kingdom by TJ Books Limited, Padstow Cornwall

*A catalogue record for this publication is available from the British Library.*

ISBN 978-1-108-84012-5 Hardback

ISBN 978-1-108-79378-0 Paperback

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Cambridge University Press  
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This is for my son Ben, who is promoting climate action in realms that were beyond our dreams in 1996, when I last dedicated a book to him; and in loving memory of Dean, who was taken by the sea at the start of a brilliant design career, a reminder of human frailty in the face of nature.

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## Preface

*Surviving Climate Chaos by Strengthening Communities and Ecosystems* explains why it is important to distinguish between the effects of climate change at large and small scale, and why and how to build survival strategies that are appropriate to each. At the continental and global scale climate change is directional and predictable, with rising temperatures and sea levels, melting ice, changing seasons and regional trends in droughts, floods and storminess. This is the level at which national and international responses are focused, and where the interests of governments tend to be concentrated. But the story is very different at the local and landscape level, where people actually live, since here the same effects are experienced as chaotic and unpredictable. Little is certain at this level except that risks will increase in novelty, frequency and intensity. Surviving climate chaos is therefore something that every community on Earth must do in its own way, each in their own circumstances and dependent upon their own local ecosystems.

Surviving climate chaos requires communities and ecosystems to be strong enough to cope with whatever a changing climate throws at them. This depends upon their resilience, resistance and flexibility – three dimensions of strength that are properties of all systems, and that depend on the integrity of those systems. Adapting to climate chaos is therefore the process of preserving and restoring the integrity of communities and ecosystems. Because climate change and chaos now reach into every corner of the world, this must be done everywhere if no one is to be left behind. The usefulness of this approach is highlighted here for all those with key roles in promoting adaptation, including staff of the UNFCCC Secretariat, national and local government officials in developing countries, aid professionals,

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students, researchers and teachers, and indeed all people who live under threat of climate chaos.

The global context is one of dire urgency. Climate and ecological emergencies have now been declared by thousands of nations and public institutions worldwide, and UN Secretary General António Guterres has called for all countries to join them, both in declaring an emergency and in seeking peace with nature. They are supported by the scientific community and tens of millions of concerned citizens, whose emotions are engaged and whose reasons are convincing: that the beauty and integrity of nature are being destroyed, that human progress is being undermined and reversed and that Arctic, equatorial and oceanic tipping points threaten a ‘perfect storm’ of runaway climate breakdown in mid-century. That is, the middle of *this* century. And once that happens, the process will be driven by its own internal feedbacks – one change automatically amplifying another change – so that any opportunity for further human influence will be lost.

This schedule has powerful implications for what humanity should now be doing. Since climate change is well underway, and climate chaos is already eroding and at times devastating localities and landscapes, we have to adapt and be prepared to adapt further. Nowhere will be safe for long, so this means everyone and everywhere. The sooner we start to strengthen our systems against chaos, the better for now, and the better for our prospects later. By doing so we will be building a world in which much of what we hold dear might survive a period of severe climate instability. But there are some extremes that we cannot survive, so we must try to avoid them, and this means we are in a race against the unknown calamity of mid-century climate breakdown. This we must delay if we can, while we strengthen our systems and bring the causes of climate change under control. This in turn requires net greenhouse gas emissions to be slashed immediately and quickly reversed, at any cost and with maximum effectiveness, while ecosystems and communities are strengthened against mounting chaos.

Finding ways to induce such major efforts at a global level is hard, and they cannot be imposed so must happen through the sharing of knowledge, voluntary compliance and common purpose. Local people and institutions are responding to their direct experience of climate chaos at the micro level, but to ramp up the overall effort quickly enough at the macro level requires governments and major financial institutions to help. Under pressure of evidence, reason and public alarm, however, these are also starting to react with a new degree of realism, offering hope that decisive breakthroughs are becoming possible. This story is also important, since the micro and macro levels are just as connected for the climate response as they are for climate change itself. So here I explore the role of the 2015 Paris Agreement in mobilising knowledge, political will and useful investment in mitigating and adapting to climate change.

The agreement is an experimentalist treaty that depends upon overarching goals, autonomous actors and iterative learning processes. To explore its influence I analyse official adaptation communications submitted in 2015–20 by 158 countries to the UNFCCC Secretariat – the knowledge hub of the agreement. Based on these I describe how governments see climate change and what to do about it, and how they are increasingly recognising diverse benefits from ecosystem-based and community-based adaptation, and the synergies between them. I highlight themes from countries in Europe, the small-islands group, Africa and the Americas. Seeking practical details, I explore these issues through case studies in Nepal, Bolivia and Tanzania, all involving the strengthening of local social and ecological systems. And I report on adaptation in urban environments, particularly the role of self-organising neighbourhood networks and their value to local governments and their members in making cities stronger and more sustainable.

These observations all support the case that complex systems can be strengthened in certain specific ways, based on how systems work and what harms them, and this can guide the design and evaluation of all adaptation investments. Entire aid portfolios can be

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designed to deliver progress both on adaptation and on all the Sustainable Development Goals, for these aims are now effectively the same. To join them fully it needs to be recognised that communities and ecosystems are mutually dependent, and that in the face of climate chaos a local empowerment and environmental education package is required everywhere. Where this is applied then systems will be strengthened, regardless of whatever else is done; where it is not, then systems will continue to weaken, and nothing else will compensate for its lack. Larger aid programmes can be built using this package, through replication, networking, technical additions and the shielding of local community–ecosystem units by higher authorities. Getting this mixture right for every locality on Earth is the essence of surviving climate chaos, and this book is part of the search for the best and cheapest ways to achieve it.

## Acknowledgements

My special thanks go to Mary Monro for sharing our move to a new country, for keeping me well during the Covid lockdowns, and for many new ideas and perspectives. Also to Mike Speirs of Danida for the initial spark for the book, to Jenneth Parker and Ian Roderick of the Schumacher Institute for Sustainable Systems, to Dominic Lewis and Aleksandra Serocka of Cambridge University Press and to three anonymous peer reviewers.

The insights of many others enriched this book, whether they know it or not, and to whom thanks are due: Akililu Amsalu, Kasper Thede Anderskov, Abubakar Diwani Bakar, Carmen Barragan, Govinda Basnet, Laxmi Kumari Basnet, Getachew Eshete Beyene, Ananta Bhandari, Neil Maclean Bird, Mary Bolingbroke, Ben Caldecott, Susan Canney, Molly Scott Cato, Muita Chacha, Henrik Chart, Bennett Collins, Elizabeth Colwell, Sue Cormack, Ingrid Dahl-Madsen, Thinh Quan Dang, Resham Bahadur Danghi, Abhoy Kumar Das, Sonya Dewi, Sindhu Prasad Dhugana, Martin Dickler, Jane Dunn, Anton Adriaan Eberhard, Aino Efraimsson, Andree Ekadinata, Anna Filipova, Shehana Gomez, Andy Green, Helene Rask Grøn, Helena Haakana, Sheha Hamdan, Finn Hansen, Minna Hares, Chris Jordan, Chudamani Joshi, Ali Amin Omar Juma, Mohammed Juma, Vuokko Jutila, Annika Kaipola, Minna Kallio, Jens Holm Kanstrup, Ganesh Bahadur Karki, Ville Karvinen, Mikhail Kavanagh, Niina Käyhkö, Manohara Khadka, Mgeni M. Khamis, Surya Khanal, Bernadeta Killian, Miriam Koenig, Rajan Kotru, Jakob Kronik, Yki Laine, Ram Prasad Lamsal, Juho Lappalainen, Kari Leppänen, Adam Ley-Lange, Olivia Lousada, Edmund Mabhuye, Machindranath, Alastair Macrae, Avi Mahaningtyas, Bustar Maitar, Makame Omar Makame, Ibrahim Khalid Mambo, Maulid Masud, Magnus Merkle, Sheha Mjaja, Musa Mkubwa, Hashim Muumin, William Nambiza,

## xvi ACKNOWLEDGEMENTS

Santosh Mani Nepal, Saroj Nepal, Tung Lam Nguyen, Thomas Nielsen, Pentti Niemistö, Mila Nuh, Jonathan Oates, Bishwa Nath Oli, Saida Omar, Nicholas Ostler, Bharati Pathak, Riikka Raatikainen, Aayush Rai, Andy Lee Robinson, Jack Ruitenbeek, Jenny Ruskin, Sadan of the Nepal Scouts, Omar Saif, Sanjaya Shah, Markku Siltanen, Lorna Slade, Ron Smit, Peter Birch Sørensen, Sam Staddon, Mauri Starckman, Keshar Man Sthapit, Suyanto, Olivia Tanujaya, Riitta Teiniranta, Ali Thani, Ida Theilade, Tea Törnroos, Sue Turner, Sauli Valkonen, Caroline VanderSluys, Gwen Vaughan, Markku Viitasalo, Mette Vinqvist, Elina Virtanen, Muriel Visser, John Waters, Pamela White, Melissa Wilson, Pius Yanda and Dan Zevin.