the idea that climate change presented a catastrophic risk (Hill, 2017). This perspective on

climate may help explain other survey data that suggests remarkable changes in how people

view technology, progress, their society, and the future prospects for their children. A 2017

global survey found that only 13% of the public think the world is getting better, which is

major change from the ten years before (Ipsos MORI, 2017). In the USA, polls indicate that

belief in technology as a good force has been fading (Asay, 2013). This information may reflect

a wider questioning of the idea that progress is always good and possible. Such a shift in

perspective is indicated by opinion polls showing that far fewer people today than the last

decade believe their children will have a better future than themselves (Stokes, 2017).

Another indicator of whether people believe in their future is if they believe in the basis of

their society. Studies have consistently found that more people are losing faith in electoral

democracy and in the economic system (Bendell and Lopatin, 2017). The questioning of

mainstream life and of progress is also reflected in the shift away from secular-rational values

to traditional values that has been occurring worldwide since 2010 (World Values Survey,

2016). How do children feel about their futures? I have not found a large or longitudinal study

on children's views of the future, but one journalist who asked children from 6 to 12 years old

to paint what they expect the world in 50 years to be like generated mostly apocalyptic

Deep Adaptation

A Map for Navigating Climate Tragedy

Jem Bendell

July 27, 2018; Revised 2nd Edition Released July 27th 2020.

of solving deforestation through innovative partnerships remained. If the

employees of the world's leading environmental groups were on performance related pay,

they would probably owe their members and donors money by now. The fact that some

readers may find such a comment to be rude and unhelpful highlights how our interests in

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language that emphasizes power and supremacy

civility, praise and belonging within a professional community can censor those of us who seek

to communicate uncomfortable truths in memorable ways (like that journalist in the New York

Magazine).

These personal and institutional factors mean that environmental professionals may be some

of the slowest to process the implications of the latest climate information. In 2017, a survey

of more than 8,000 people across 8 different countries – Australia, Brazil, China, Germany,

India, South Africa, the UK, and the US – asked respondents to gauge their perceived level of

security as compared to two years ago in regards to global risks. A total of 61% said they felt

more insecure, while only 18% said they felt more secure. On climate change, 48% of

respondents strongly agreed that it is a global catastrophic risk, with an additional 36% of

people tending to agree with that. Only 14% of respondents disagreed to some degree with

identity and self-worth is dependent on the perspective that progress on sustainability is
possible and that we are part of that progressive process.

The third factor influencing denial is institutional. I have worked for over 20 years within or
with organisations working on the sustainability agenda, in non-profit, private and
governmental sectors. In none of these sectors is there an obvious institutional self-interest in
articulating the probability or inevitability of societal collapse. Not to members of your charity,
not to consumers of your product, not to voters for your party. There are a few niche
companies that benefit from a collapse discourse leading some people to seek to prepare by
buying their products. This field may expand in future, at various scales of preparedness,
which I return to below. But the internal culture of environmental groups remains strongly in
favour of appearing effective, even when decades of investment and campaigning have not
produced a net positive outcome on climate, ecosystems or many specific species.

Let us look at the largest environmental charity, WWF, as an example of this process of
organisational drivers of implicative denial. I worked for them when we were striving towards
all UK wood product imports being from sustainable forests by 1995. Then it became "well-
managed" forests by 2000. Then targets were quietly forgotten while the potensiphonic
language
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Contents

attention to information that reminds us of that. According to anthropologist Ernest Becker

(1973): "A fear of death lies at the centre of all human belief." Marshall explains: "The denial

of death is a 'vital lie' that leads us to invest our efforts into our cultures and social groups to

obtain a sense of permanence and survival beyond our death. Thus, [Becker] argued, when we

receive reminders of our death – what he calls death salience – we respond by defending

those values and cultures." This view was recently expounded as part of the "terror

management theory" proposed by Jeff Greenberg, Sheldon Solomon, and Tom Pyszczynski

(2015). Although Marshall does not consider it directly, these processes would apply more so

to "collapse denial" than to climate denial, as the death involves not only oneself but all of

what one could contribute to.

These personal processes are likely made worse for sustainability experts than the general

public, given the typical allegiance of professionals to incumbent social structures. Research

has revealed that people who have a higher level of formal education are more supportive of

the existing social and economic systems that those that have less education (Schmidt, 2000).

The argument is that people who have invested time and money in progressing to a higher

status within existing social structures are more naturally inclined to imagine reform of those

systems than their upending. This situation is accentuated if we assume our livelihood,

public (Hansen, 2007). A more detailed study of this process across issues and institutions

found that climate-change scientists routinely underestimate impacts "by erring on the side of

least drama" — (Brysse et al, 2013). Combined with the norms of scientific analysis and

reporting to be cautious and avoid bombast, and the time it takes to fund, research, produce

and publish peer-reviewed scientific studies, this means that the information available to

environmental professionals about the state of the climate is not as frightening as it could be.

In this paper I have had to mix information from peer-reviewed articles with recent data from

individual scientists and their research institutions to provide the evidence which suggests we

are now in a non-linear situation of climatic changes and effects.

A second set of factors influencing denial may be personal. George Marshall summarised the

insights from psychology on climate denial, including the interpretive and implicative denial of

those who are aware but have not prioritised it. In particular, we are social beings and our

assessment of what to do about information is influenced by our culture. Therefore, people

often avoid voicing certain thoughts when they go against the social norm around them

and/or their social identity. Especially in situations of shared powerlessness, it can be

perceived as safer to hide one's views and do nothing if it goes against the status quo.

Marshall also explains how our typical fear of death means that we do not give our full

Author's note on this updated version:

Two years after its first release, this paper has influenced hundreds of thousands of people to

reconsider their lives and work in the face of dangerous climate change. A new agenda,

community and movement for Deep Adaptation to our predicament has been borne. It is

comprised of people who believe that a climate-influenced collapse of societies in most parts

of the world in the coming decades is either likely, inevitable or already unfolding. They are

organising a diversity of activities to help reduce harm, save what we can, and create

possibilities for the future while experiencing meaning and joy in the process. This movement

has grown through word-of-mouth, as I did not actively seek to promote Deep Adaptation

through the mass media, and instead focused on enabling peer-to-peer support.

Outside of management studies, there is a wide field of scholarship on the experience and

possibility of societal collapse, which I did not know about when we released this paper from

the Institute in July 2018. In addition, over the last two years many scientists have concluded

that societal collapse is the most likely scenario. However, this paper appears to have an iconic

status amongst some people who criticise others for anticipating societal collapse. Therefore,

two years on from initial publication, I am releasing this update.

The update involves a light edit, not seeking to incorporate the range of scholarship that is
relevant to societal collapse over the past two years. Instead, I focus on making specific
clarifications and corrections to the original text. The paper therefore remains focused on its
originally intended audience – people in the corporate sustainability field. Therefore, the
paper does not address the many important issues of poverty, rights, humanitarian action,
public policy, re-localisation, monetary policy, anti-patriarchy, racial justice and
decolonisation. Those subjects were important to me before this paper and remain so, with
various contributions on those topics at www.jembendell.com

As I am not a climate scientist or Earth systems scientist and wish to focus on other activities,
if you have a view on any aspect of this paper then I invite you to engage each other by
commenting on a google document version here.
[[http://www.jembendell.com/][
]][[https://docs.google.com/document/d/10wWF94aQEmZF12IwK6H1ig edit?usp=sharing][
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Occasional Papers

Occasional Papers are released by the Institute of Leadership and Sustainability (IFLAS) at the
University of Cumbria in the UK to promote discussion amongst scholars and practitioners on
themes that matter to our staff and students. Typically, an Occasional Paper is released prior

management studies. It is to help break this semi-censorship of our own community of inquiry
on sustainability that motivated me to write this article. Some scholarship has looked at the
process of denial more closely. Drawing on sociologist Stanley Cohen, Foster (2015) identifies
two subtle forms of denial – interpretative and implicative. If we accept certain facts but
interpret them in a way that makes them "safer" to our personal psychology, it is a form of
"interpretative denial". If we recognise the troubling implications of these facts but respond
by busying ourselves on activities that do not arise from a full assessment of the situation,
then that is "implicative denial". Foster argues that implicative denial is rife within the
environmental movement, from dipping into a local Transition Towns initiative, signing online
petitions, or renouncing flying, there are endless ways for people to be "doing something"
without seriously confronting the reality of climate change.

There are three main factors that could be encouraging professional environmentalists in their
denial that our societies will collapse in the near-term. The first is the way the natural
scientific community operates. Eminent climate scientist James Hansen has always been
ahead of the conservative consensus in his analyses and predictions. Using the case study of
sea level rise, he threw light on processes that lead to "scientific reticence" to conclude and
communicate scenarios that would be disturbing to employers, funders, governments and the

could learn from other cultures that have faced catastrophe. Examining the way Native

American Indians coped with being moved on to reservations, Lear (2008) looked at what he

calls the "blind spot" of any culture: the inability to conceive of its own destruction and

possible extinction. He explored the role of forms of hope that involved neither denial or blind

optimism. "What makes this hope radical, is that it is directed toward a future goodness that

transcends the current ability to understand what it is" (ibid). He explains how some of the

Native American chiefs had a form of "imaginative excellence" by trying to imagine what

ethical values would be needed in their new lifestyle on the reservation. He suggests that

besides the standard alternatives of freedom or death (in service of one's culture) there is

another way, less grand yet demanding just as much courage: the way of "creative

adaptation." This form of creatively constructed hope may be relevant to our Western

civilisation as we confront disruptive climate change (Gosling and Case, 2013). It should be

obvious to the reader that indigenous peoples today should be supported to fight such

oppression and so not be forced to discover 'radical hope' in the same way. Quite the

contrary, the coming collapse of industrial consumer societies means they can and must be

both supported and learned about by people in modern urban cultures (Whyte et al, 2019).

Such deliberations are few and far between in either the fields of environmental studies or

to submission to an academic journal, as a method for receiving feedback. For instance, the

first Occasional Paper, by Professor Jem Bendell and Professor Richard Little, was

subsequently published in the Journal of Corporate Citizenship. However, this paper was

rejected for publication by reviewers of Sustainability Accounting, Management and Policy

Journal (SAMPJ), as reviewers made requests for major changes which were considered by the

author as either impossible or inappropriate to undertake. Impossible, as the request to build

off existing scholarship on this topic would require there to be publications on the implications

of ecologically-induced societal collapse, globally, upon which to build. A literature review

indicated that there is not such scholarship in management studies. Inappropriate, as a

reviewer's request not to dishearten readers by sharing my opinion we face "inevitable near-

term societal collapse" reflects a form of censure found amongst people working on

sustainable business and discussed in the paper. The letter from the author to the Editor of

the Journal, with some feedback for the anonymous reviewers, is appended at the end of this

Occasional Paper.

Acknowledgments from the Author

To write this paper, I had to block out time to review climate science for the first time since I

was at Cambridge University in 1994 and to analyse implications in a rigorous way. I would

probably not have done that without the encouragement of the following people for me to

prioritise the issue: Chris Erskine, Dougald Hine, Jonathan Gosling, Camm Webb and Katie

Carr. I thank Dorian Cave for research assistance and Zori Tomova for helping me to prioritise

my truth. I also thank Professor Carol Adams for finding reviewers for this paper, and the two

anonymous reviewers who provided some useable feedback despite requiring such major

revisions that conflicted with the aim of the paper. I also thank Carol for involving me in the

SAMPJ as a Guest Editor in the past. Some funding for my focus on deep adaptation during my

sabbatical was provided by Seedbed. Since this paper came out in 2018 and went viral, being

downloaded over half a million times in the following year, I have met so many people who I

am grateful to for helping to hold us all in this difficult awareness (you know who you are). I

would also like to thank all the volunteers who have translated the first version of this paper

into many languages. If you edit an open access peer-reviewed academic journal and would

like this paper to be submitted, please contact the author.

If you wish to see the changes made, for instance, to update a translated version, you can

download a word doc showing tracked changes.

[[http://www.lifeworth.com/DeepAdaptation2020UpdateTrackedChange

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A fourth insight is that "hopelessness" and its related emotions of dismay and despair are

understandably feared but wrongly assumed to be entirely negative and to be avoided

whatever the situation. Alex Steffen warned that "Despair is never helpful" (2017). However,

the range of ancient wisdom traditions see a significant place for hopelessness and despair.

Contemporary reflections on people's emotional and even spiritual growth as a result of their

hopelessness and despair align with these ancient ideas. The loss of a capability, a loved one

or a way of life, or the receipt of a terminal diagnosis have all been reported, or personally

experienced, as a trigger for a new way of perceiving self and world, with hopelessness and

despair being a necessary step in the process (Matousek, 2008). In such contexts "hope" is not

a good thing to maintain, as it depends on what one is hoping for. When the debate raged

about the value of the New York Magazine article, some commentators picked up on this

theme. "In abandoning hope that one way of life will continue, we open up a space for

alternative hopes," wrote Tommy Lynch (2017).

This question of valid and useful hope is something that we must explore much further.

Leadership theorist Jonathan Gosling has raised the question of whether we, in modern

industrial consumer societies, need a more "radical hope" in the context of climate change

and a growing sense of "things falling apart" (Gosling, 2016). He invites us to explore what we

when facing major risks. Second, bad news and extreme scenarios impact on human
psychology. We sometimes overlook that the question of how they impact is a matter for
informed discussion that can draw upon psychology and communications theories. Indeed,
there are journals dedicated to environmental psychology. There is some evidence from social
psychology to suggest that by focusing on impacts now, it makes climate change more
proximate, which increases support for mitigation (McDonald et al, 2015). That is not
conclusive, and this field is one for further exploration. That serious scholars or activists would
make a claim about impacts of communication without specific theory or evidence suggests
that they are not actually motivated to know the effect on the public but are attracted to a
certain argument that explains their view.

A third insight from the debates about whether to publish information on the probable
collapse of our societies is that sometimes people can express a paternalistic relationship
between themselves as environmental experts and other people whom they categorise as
"the public". That is related to the non-populist anti-politics technocratic attitude that has
pervaded contemporary environmentalism. It is a perspective that frames the challenges as
one of encouraging people to try harder to be nicer and better rather than coming together in
solidarity to either undermine or overthrow a system that demands we participate in
environmental degradation.

Abstract

The purpose of this conceptual paper is to provide readers with an opportunity to reassess
their work and life in the face of what I believe to be an inevitable near-term societal collapse
due to climate change.

The approach of the paper is to analyse recent studies on climate change and its implications
for our ecosystems, economies and societies, as provided by academic journals and
publications direct from research institutes.

That synthesis leads to my conclusion there will be a near-term collapse in society with serious
ramifications for the lives of readers. The paper does not prove the inevitability of such
collapse, which would involve further discussion of social, economic, political and cultural
factors, but it proves that such a topic is of urgent importance. The paper reviews some of the
reasons why collapse-denial may exist, in particular, in the professions of sustainability
research and practice, therefore leading to these arguments having been absent from these
fields until now.

The paper offers a new meta-framing of the implications for research, organisational practice,
personal development and public policy, called the Deep Adaptation Agenda. Its key aspects
of resilience, relinquishment, restoration and reconciliation are explained. This agenda does

not seek to build on existing scholarship on “climate adaptation” as it is premised on the view

that societal collapse is now likely, inevitable or already unfolding.

The author believes this is one of the first papers in the sustainability management field to

conclude that climate-induced near-term societal collapse should now be a central concern for

everyone, and therefore to invite scholars to explore the implications.

Reader Support

A list of readings, podcasts, videos and networks to support us in our emotional responses to

the information contained in this paper is available at www.jembendell.com and at

www.deepadaptation.info

Introduction

Can professionals in sustainability management, policy and research – myself included —

continue to work with the assumption or hope that we can slow down climate change, or

respond to it sufficiently to sustain our civilisation? As disturbing information on climate

change passed across my screen, this was the question I could no longer ignore, and therefore

decided to take a couple of months to analyse the latest climate science. As I began to

conclude that we can no longer work with that assumption or hope, I asked a second

such ideas should be communicated to the general public. Climate scientist Michael Mann

warned against presenting “the problem as unsolvable, and feed[ing] a sense of doom,

inevitability and hopelessness” (in Becker, 2017). Environmental journalist Alex Steffen (2017)

tweeted that “Dropping the dire truth… on unsupported readers does not produce action, but

fear.” In a blog post, Daniel Aldana Cohen (2017) an assistant sociology professor working on

climate politics, called the piece “climate disaster porn.” Their reactions reflect what some

people have said to me in professional environmental circles. The argument made is that to

discuss the likelihood and nature of societal collapse due to climate change is irresponsible

because it might trigger hopelessness amongst the general public. I always thought it odd to

restrict our own exploration of reality and censor our own sensemaking due to our ideas

about how our conclusions might come across to others. Given that this attempt at censoring

was so widely shared in the environmental field in 2017, it deserves some closer attention.

I see four particular insights about what is happening when people argue we should not

communicate to the public the likelihood and nature of the catastrophe we face. First, it is not

untypical for people to respond to data in terms of what perspectives we wish for ourselves

and others to have, rather than what the data may suggest is happening. That reflects an

approach to reality and society that may be tolerable in times of plenty but counterproductive

Systems of Denial

It would not be unusual to feel a bit affronted, disturbed, or saddened by the information and arguments I have just shared. In the past few years, many people have said to me that "it can't be too late to stop climate change, because if it was, how would we find the energy to keep on striving for change?" With such views, a possible reality is denied because people want to continue their striving. What does that tell us? The "striving" is based in a rationale of maintaining self-identities related to espoused values. It is understandable why that happens.

If one has always thought of oneself as having self-worth through promoting the public good, then information that initially appears to take away that self-image is difficult to assimilate.

That process of strategic denial to maintain striving and identity is easily seen in online debates about the latest climate science. One particular case is illustrative. In 2017 the New York Magazine published an article that drew together the latest data and analysis of what the implications of rapid climatic warming would be on ecosystems and humanity. Unlike the many dry academic articles on these subjects, this popular article sought to describe these processes in visceral ways (Wallace-Wells, 2017). The reaction of some environmentalists to this article did not focus on the accuracy of the descriptions or what might be done to reduce some of the worst effects that were identified in the article. Instead, they focused on whether

question. Have professionals in the sustainability field discussed the possibility that it is too late to avert an environmental catastrophe and the implications for their work? A quick literature review revealed that my fellow professionals have not been publishing work that explores, or starts from, that perspective. That led to a third question, on why sustainability professionals are not exploring this fundamentally important issue to our whole field as well as our personal lives. To explore that, I drew on psychological analyses, conversations with colleagues, reviews of debates amongst environmentalists in social media and self-reflection on my own reticence. Concluding that there is a need to promote discussion about the implications of a societal collapse triggered by an environmental catastrophe, I asked my fourth question on what are the ways that people are talking about collapse on social media. I identified a variety of conceptualisations and from that asked myself what could provide a map for people to navigate this extremely difficult issue. For that, I drew on a range of reading and experiences over my 25 years in the sustainability field to outline an agenda for what I have termed "deep adaptation" to climate change.

The result of these five questions is an article that does not contribute to one specific set of literature or practice in the broad field of sustainability management and policy. Rather, it questions the basis for all the work in this field. It does not seek to add to the existing

research, policy and practice on climate adaptation, as I found that to be framed by the view

that we can manage the impacts of a changing climate on our physical, economic, social,

political and psychological situations. Instead, this article may contribute to future work on

sustainable management and policy as much by subtraction as by addition. By that I mean the

implication is for you to take a time to step back, to consider "what if" the analysis in these

pages is true, to allow yourself to grieve, and to overcome enough of the typical fears we all

have, to find meaning in new ways of being and acting. That may be in the fields of academia

or management — or could be in some other field that this realisation leads you to.

First, I briefly explain the paucity of research in management studies that considers or starts

from societal collapse due to environmental catastrophe and give acknowledgement to the

existing work in this field that many readers may consider relevant. I am new to the topic of

societal collapse and wish to define it as an uneven ending of our normal modes of

sustenance, shelter, security, pleasure, identity and meaning. Second, I summarise what I

consider to be the most important climate science of the last few years and how it is leading

more people to conclude that we face disruptive changes in the near-term. Third, I explain

how that perspective is marginalised within the professional environmental sector – and so

invite you to consider the value of leaving mainstream views behind. Fourth, I outline the

in our academic prose some novel ways of communicating that might create emotional

connection with the reader (Adams, et al, 2015). I chose the words above as an attempt to cut

through the sense that this topic is purely theoretical. As we are considering here a situation

where the publishers of this journal would no longer exist, the electricity to read its outputs

won't exist, and a profession to educate won't exist, I think it time we break some of the

conventions of this format.

However, some of us may take pride in upholding the norms of the current society, even

amidst collapse. Even though some of us might believe in the importance of maintaining

norms of behaviour, as indicators of shared values, others will consider that the probability of

collapse means that effort at reforming our current system is no longer the pragmatic choice.

My conclusion to this situation has been that we need to expand our work on "sustainability"

to consider how communities, countries and humanity can adapt to the coming troubles. I

have dubbed this the "Deep Adaptation Agenda," to contrast it with the limited scope of

current climate adaptation activities. My experience is that a lot of people are resistant to the

conclusions I have just shared. So before explaining the implications, let us consider some of

the emotional and psychological responses to the information I have just summarised.

international relations, social unease, crime, civil conflict, disease prevalence, financial

stability, and so on, can cascade to create a breakdown of societies. In this paper I cannot

prove the likelihood or certainty of societal collapse, and experts in the field of collapsology

say that within such complex systems any attempt to prove within modalities of modern

scholarship whether collapse will or will not happen would be futile. However, they also

conclude that this does not mean that our limits in prediction within complex systems should

not restrict us from sense-making about our predicament.

When we contemplate this possibility of 'societal collapse', it can seem abstract. The previous

paragraphs may seem, subconsciously at least, to be describing a situation to feel sorry about

as we witness scenes on TV or online. But when I say starvation, destruction, migration,

disease and war, I mean in your own life. With the power down, soon you wouldn't have

water coming out of your tap. You will depend on your neighbours for food and some warmth.

You will become malnourished. You won't know whether to stay or go. You will fear being

violently killed before starving to death.

These descriptions may seem overly dramatic. Some readers might consider them an

unacademic form of writing. Which would be an interesting comment on why we even write

at all. This is why the development of auto-ethnography within academia invites us to include

ways that people on relevant social networks are framing our situation as one of facing

collapse, catastrophe or extinction and how these views trigger different emotions and ideas.

Fifth, I outline a "Deep Adaptation Agenda" to help guide discussions on what we might do

once we recognise climate change is an unfolding tragedy. Finally, I make some suggestions

for how this agenda could influence our future research and teaching in the sustainability

field.

As researchers and reflective practitioners, we have an opportunity and obligation to not just

do what is expected by our employers and the norms of our profession, but also to reflect on

the relevance of our work within wider society. I am aware that some people consider

statements from academics that we now face inevitable near-term societal collapse to be

irresponsible due to the potential impact that may have on the motivation or mental health of

people reading such statements. My research and engagement in dialogue on this topic, some

of which I will outline in this paper, leads me to conclude the exact opposite. It is a responsible

act to communicate this analysis now and invite people to support each other, myself

included, in exploring the implications, including the psychological and spiritual implications.

Locating this Study within Academia

When discussing negative outlooks on climate change and its implications for human society,

the response is often to seek insight through placing this information in context. That context

is often assumed to be found in balancing it with other information. As the information on our

climate predicament is so negative, the balance is often found in highlighting more positive

information about progress on the sustainability agenda. This process of seeking to "balance

out" is a habit of the informed and reasoning mind. Yet that does not make it a logical means

of deliberation if positive information being shared does not relate to the situation being

described by the negative information. For instance, discussing progress in the health and

safety policies of the White Star Line with the captain of the Titanic as it sank into the icy

waters of the North Atlantic would not be a sensible use of time. Yet given that this balancing

is often the way people respond to discussion of the scale and speed of our climate tragedy,

let us first recognise the positive news from the broader sustainability agenda.

Certainly, there has been some progress on environmental issues in past decades, from

reducing pollution, to habitat preservation, to waste management. Much valiant effort has

been made to reduce carbon emissions over the last twenty years, one part of climate action

officially termed "mitigation" (Aaron-Morrison et. al. 2017). There have been many steps

forward on climate and carbon management – from awareness, to policies, to innovations

(Flannery, 2015). Larger and quicker steps must be taken. That is helped by the agreement

weight on the Earth's crust is redistributed is not likely to make a significant contribution to

earth temperatures for decades or centuries.

It is a truism that we do not know what the future will be. But we can see trends. We do not

know if the power of human ingenuity will help sufficiently to change the environmental

trajectory we are on. Unfortunately, the recent years of innovation, investment and patenting

indicate how human ingenuity has increasingly been channelled into consumerism and

financial engineering. We might pray for time. But the evidence before us suggests that we are

set for disruptive and probably uncontrollable levels of climate change, bringing starvation,

destruction, migration, disease and war (Servigne and Stevens, 2020).

It is difficult to assess how disruptive the impacts of climate change will be or where will be

most affected, especially as economic and social systems will respond in complex ways. The

evidence is mounting that the impacts will be catastrophic to our livelihoods and the societies

that we live within. Our norms of behaviour, that we call our "civilisation," may also degrade.

When I first wrote this paper in early 2018, I did not know about the fields of scholarship that

relate to catastrophic risks and what is now called 'collapsology' (Servigne and Stevens, 2020).

Those fields attempt to map how societies break down and how such collapses are likely to

occur in future. I recommend exploring that literature, to look at how impacts on agriculture,

layer has thinned enough to risk destabilising hydrates (The Arctic, 2017). That report of

subsea permafrost destabilisation in the East Siberian Arctic sea shelf, the latest

unprecedented temperatures in the Arctic, and the recent data on non-linear rises in high-

atmosphere methane levels, combine to make it feel like we might be about to play Russian

Roulette with the entire human race, with already two bullets loaded. Nothing is certain. But it

is sobering that humanity has arrived at a situation of our own making where we now debate

the strength of analyses of our near-term extinction.

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www.esrl.noaa.gov
[[https://www.esrl.noaa.gov/gmd/ccgg/trends_ch4/][
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Apocalypse Uncertain

The truly shocking information on the trends in climate change and its impacts on ecology and

society are leading some to call for us to experiment with geoengineering the climate, from

fertilizing the oceans so they photosynthesize more CO2, to releasing chemicals in the upper

atmosphere so the Sun's rays are reflected. The unpredictability of geoengineering the climate

through the latter method, in particular the dangers of disturbances to seasonal rains that

billions of people rely on, make it unlikely to be used (Keller et al, 2014). The potential natural

geoengineering from increased sulphur releases from volcanoes due to isostatic rebound as

reached in December 2015 at the COP21 intergovernmental climate summit and now that

there is significant Chinese engagement on the issue. To support the maintenance and scaling

of these efforts is essential. In addition, increasing action is occurring on adaptation to climate

change, such as flood defences, planning laws and irrigation systems (Singh et al, 2016).

Whereas we can praise these efforts, their existence does not matter to an analysis of our

overall predicament with climate change.

Rather than building from existing theories on sustainable business, this paper is focusing on a

phenomenon. That phenomenon is not climate change per se, but the state of climate change

in 2018, which I will argue from a secondary review of research now indicates near term

societal collapse. The gap in the literature that this paper may begin to address is the lack of

discussion within management studies and practice of the end of the idea that we can either

solve or cope with climate change. In the Sustainability Accounting Management and Policy

Journal (SAMPJ), which this paper was originally submitted to, there has been no discussion of

this topic before, apart from my own co-authored paper (Bendell, et al, 2017). Three papers

mention climate adaptation in passing, with just one focusing on it by considering how to

improve irrigated agriculture (de Sousa Fragoso et al, 2018).
1

Organisation and Environment is a leading journal for discussion of the implications of climate

for organisations and vice versa, where since the 1980s both philosophical and theoretical

positions on environment are discussed as well as organisational or management implications.

1

A full text search of the journal database shows that the following terms have never been included in

articles in this journal: environmental collapse, economic collapse, social collapse, societal collapse,

environmental catastrophe, human extinction. Catastrophe is mentioned in 3 papers, with two about Bangladesh

factory fires and the other being Bendell et al (2017).

However, the journal has not published any research papers exploring theories and

implications of societal collapse due to environmental catastrophe.

2

Three articles mention

climate adaptation. Two of those have adaptation as a context, but explore other issues as

their main focus, specifically social learning (Orsato, et al 2018) and network learning (Temby

et al, 2016). Only one paper in that journal looks at climate adaptation as its main focus and

the implications for organisation. While a helpful summary of how difficult the implications

are for management, the paper does not explore the implications of a widespread societal

collapse (Clément and Rivera, 2016).

Away from management studies, the field of climate adaptation is wide (Lesnikowski, et al

reaches the surface and escapes to the atmosphere. In a global review of this contentious

topic, scientists concluded that there is not the evidence to predict a sudden release of

catastrophic levels of methane in the near-term (Ruppel and Kessler, 2017). However, a key

reason for their conclusion was the lack of data showing actual increases in atmospheric

methane at the surface of the Arctic, which is partly the result of a lack of sensors collecting

such information. Most ground-level methane measuring systems are on land. Could that be

why the unusual increases in atmospheric methane concentrations cannot be fully explained

by existing data sets from around the world (Saunois et al, 2016)? The lack of easy-to-access

and reputable analysis of the potential implications of real time atmospheric measurements, is

bewildering for me.

4

However, there has been “very strong” growth in methane

concentrations between 2014 and 2017 (Nisbet, et al, 2019). A study in 2020 of methane

release at the other pole, on the insufficient filtering effects of microbes, adds to concern that

methane might be released in dangerous amounts from the seabed (Thurber, et al 2020).

These recent studies suggest that the recent attempt at a consensus that it is highly unlikely

we will see near-term massive release of methane from the Arctic Ocean is sadly inconclusive.

In 2017 scientists working on the Eastern Siberian sea shelf, reported that the permafrost

surface permafrost concluded methane release would happen over centuries or millennia, not
this decade (Schuur et al. 2015). Yet within three years that consensus was broken by one of
the most detailed experiments which found that if the melting permafrost remains
waterlogged, which is likely, then it produces significant amounts of methane within just a few
years (Knoblauch et al, 2018). The debate is now likely to be about whether other
microorganisms might thrive in that environment to eat up the methane – and whether or not
in time to reduce the climate impact.

The debate about methane release from clathrate forms, or frozen methane hydrates, on the
Arctic sea floor is even more contentious. In 2010 a group of scientists published a study that
warned how the warming of the Arctic could lead to a speed and scale of methane release
that would be catastrophic to life on earth through atmospheric heating of over 5 degrees
within just a few years of such a release (Shakhova et al, 2010). The study triggered a fierce
debate, much of which was ill considered, perhaps understandable given the shocking
implications of this information (Ahmed, 2013). Since then, key questions at the heart of this
scientific debate (about what would amount to the probable extinction of the human race)
include the amount of time it will take for ocean warming to destabilise hydrates on the sea
floor, and how much methane will be consumed by aerobic and anaerobic microbes before it

2015). To illustrate, a search on Google Scholar returns over 40,000 hits for the term "climate
adaptation." In answering the questions I set for myself in this paper, I will not be reviewing
that existing field and scholarship. One might ask "why not"? The answer is that the field of
climate adaptation is oriented around ways to maintain our current societies as they face
manageable climactic perturbations (ibid). The concept of "deep adaptation" resonates with
that agenda where we accept that we will need to change, but breaks with it by taking as its
starting point the inevitability of societal collapse (as I will explain below).

In addition, after the release of this paper in 2018, I became aware of the fields of scholarship
on catastrophic risks, existential risks, and 'collapsology' (Servigne and Stevens, 2020). I
recommend readers explore the literature in those fields, as I am continuing to do so. This
paper does not incorporate insights from those fields.

Our Non-Linear World

This paper is not the venue for a detailed examination of all the latest climate science.
However, I reviewed the scientific literature from the past few years and where there was still
large uncertainty then sought the latest data from research institutes. In this section I
summarise the findings to establish the premise that it is time we consider the implications of

it being too late to avert a global environmental catastrophe in the lifetimes of people alive today.

The simple evidence of global ambient temperature rise is undisputable. Seventeen of the 18 warmest years in the 136-year record all have occurred since 2001, and global temperatures have increased by 0.9℃ since 1880 (NASA/GISS, 2018). The most surprising warming is in the Arctic, where the 2016 land surface temperature was 2.0℃ above the 1981–2010 average, breaking the previous records of 2007, 2011, and 2015 by 0.8℃, representing a 3.5℃ increase since the record began in 1900 (Aaron-Morrison et al, 2017).

This data is fairly easy to collate and not widely challenged, so swiftly finds its way into academic publications. However, to obtain a sense of the implications of this warming on environment and society, one needs real-time data on the current situation and the trends

2

A full text search of the journal database shows that the terms environmental collapse, social collapse and societal collapse have been mention in one different article each. Economic collapse has been mentioned in three articles. Human extinction is mentioned two articles. Environmental catastrophe is mentioned in twelve articles. A reading of these articles showed that they were not exploring collapse.

that it may infer. Climate change and its associated impacts have, as we will see, been

beginning to negatively affect ecosystems, the risk exists that this global greening effect may be reduced in time (Keenan et al, 2016)

These potential reductions in atmospheric carbon from natural and assisted biological processes is a flickering ray of hope in our dark situation. However, the uncertainty about their impact needs to be contrasted with the uncertain yet significant impact of increasing methane release in the atmosphere. It is a gas that enables far more trapping of heat from the sun's rays than CO2 but was significantly underestimated in most of the climate models since 2005, and ignored before then. Recent research is finding and predicting far higher levels of methane (Farquharson, et al, 2019; Lamarche-Gagnon, et al, 2019 and Nisbet, et al. 2019). The authors of the 2016 Global Methane Budget report found that in the early years of this century, concentrations of methane rose by only about 0.5ppb each year, compared with 10ppb in 2014 and 2015. Various sources were identified, from fossil fuels — to agriculture to melting permafrost (Saunois et al, 2016).

Given the contentiousness of this topic in the scientific community, it may even be contentious for me to say that there is no scientific consensus on the sources of current methane emissions or the potential risk and timing of significant methane releases from either surface and subsea permafrost. A recent attempt at consensus on methane risk from melting

wetlands and forests must suddenly become successful, after decades of failure across lands

outside of geographically limited nature reserves. Even if such will emerges immediately, the

heating and instability already locked into the climate will cause damage to ecosystems, so it

will be difficult for such approaches to curb the global atmospheric carbon level. The reality

that we have progressed too far already to avert disruptions to ecosystems is highlighted by

the finding that if CO2 removal from the atmosphere could work at scale, it would not prevent

massive damage to marine life, which is locked in for many years due to acidification from the

dissolving of CO2 in the oceans (Mathesius et al, 2015).

Despite the limitations of what humans can do to work with nature to encourage its carbon

sequestration processes, the planet has been helping us out anyway. A global "greening" of

the planet has significantly slowed the rise of carbon dioxide in the atmosphere since the start

of the century. Plants have been growing faster and larger due to higher CO2 levels in the air

and warming temperatures that reduce the CO2 emitted by plants via respiration. The effects

led the proportion of annual carbon emissions remaining in the air to fall from about 50% to

40% in the last decade. However, this process only offers a limited effect, as the absolute level

of CO2 in the atmosphere is continuing to rise, breaking the milestone of 400 parts per million

(ppm) in 2015. Given that changes in seasons, temperatures extremes, flood and drought are

significant in the last few years. Therefore, to appreciate the situation we need to look directly

to the research institutes, researchers and their websites, for the most recent information.

That means using, but not relying solely on, academic journal articles and the slowly produced

reports of the Intergovernmental Panel on Climate Change (IPCC). This international

institution has done useful work but has a track record of significantly underestimating the

pace of change, which has been more accurately predicted over past decades by eminent

climate scientists (Spratt and Dunlop, 2018; Herrando-Pérez, et al, 2019). Some researchers

have concluded that climate change is and will happen much faster than the IPCC predicted

(Xu et al, 2018). For instance, the IPCC previously assigned a probability of 17% for crossing

the 1.5 ℃ global ambient warming mark by 2030, which underestimated a few key factors,

which "bring forward the estimated date of 1.5 ℃ of warming to around 2030, with the 2 ℃

boundary reached by 2045" (Xu, et al. 2018). The natural fluctuations in the Pacific "raises the

odds of blasting through 1.5 ℃ by 2025 to at least 10%" they wrote. A closer study of this

"Interdecadal Pacific Oscillation (IPO)" found that if it shifts to a positive warming phase, that

"would lead to a projected exceedance of the [1.5C warming] target centred around 2026"

(Henley and King, 2017). Which is statistical language for how it could even be sooner than

that (but hopefully later).

Therefore, in this review, I will draw upon a range of sources outside of the IPCC, with a focus

on data since 2014. That is because, unfortunately, data collected since then is often

consistent with non-linear changes to our environment. Non-linear changes are of central

importance to understanding climate change, as they suggest both that impacts will be far

more rapid and severe than predictions based on linear projections and that the changes no

longer correlate with the rate of anthropogenic carbon emissions. While non-linear change

does not necessarily mean exponential, or that there might not be a curb or pause, in the

natural world, changes like non-linear rise in sea level or non-linear changes in sea ice are the

result of such massive processes with amplifying feedbacks, that it is reasonable to consider

that such non-linear processes will be unstoppable. In other words, such changes would

constitute both aspects and indicators of what is called 'runaway climate change.'

What do people mean by 'runaway' change? Scientists who study climate tipping points have

found that "we might already have crossed the threshold for a cascade of inter-related tipping

points," that would begin taking the Earth to a far hotter state. The researchers concluded

that of the 15 potential tipping points they identified in 2008, seven now show signs of being

active, meaning they may have already tipped into self-reinforcing and irreversible change.

That is along with two new ones they have added to their list (Lenton, et al, 2019). With nine

effects. Studies on seagrass (Greiner et al, 2013) and seaweed (Flannery, 2015) indicate we

could be taking millions of tonnes of carbon from the atmosphere immediately and

continually if we had a massive effort to restore seagrass meadows and to farm seaweed. The

net sequestration effect is still being assessed but in certain environments will be significant

(Howard et al, 2017). Research into "management-intensive rotational grazing" practices

(MIRG), also known as holistic grazing, show how a healthy grassland can store carbon. A 2014

study measured annual per-hectare increases in soil carbon at 8 tons per year on farms

converted to these practices (Machmuller et al, 2015). The world uses about 3.5 billion

hectares of land for pasture and fodder crops. Using the 8 tons figure above, converting a

tenth of that land to MIRG practices would sequester a quarter of present emissions. In

addition, no-till methods of horticulture can sequester as much as two tons of carbon per

hectare per year, so could also make significant contributions. It is clear, therefore, that our

assessment of carbon budgets must focus as much on these agricultural systems as we do on

emissions reductions.

Clearly a massive campaign and policy agenda to transform agriculture and restore

ecosystems globally is needed right now. It will be a huge undertaking, undoing 60 years of

developments in world agriculture. In addition, it means the conservation of our existing

carbon per year (which is 37 billion tonnes of CO2). Those calculations appear worrying but

give the impression we have at least a decade to change. It takes significant time to change

economic systems so if we are not already on the path to dramatic reductions it is unlikely we

will keep within the carbon limit. With an increase of carbon emissions of 2% in 2017, the

decoupling of economic activity from emissions is not yet making a net dent in global

emissions (Canadell et al, 2017). So, we are not on the path to prevent going over 2 degrees

warming through emissions reductions. In any case the IPCC estimate of a carbon budget was

controversial. One scientist has calculated that the IPCC had underestimated the amount of

methane release and therefore the carbon budget will be used up entirely by 2025 (Knorr,

2019).

That situation is why some experts have argued for more work on removing carbon from the

atmosphere with machines. Unfortunately, the current technology needs to be scaled by a

factor of 2 million within 2 years, all powered by renewables, alongside massive emission cuts,

to reduce the amount of heating already locked into the system (Wadhams, 2018). Biological

approaches to carbon capture appear far more promising (Hawken and Wilkinson, 2017).

These include planting trees, restoring soils used in agriculture, and growing seagrass and kelp,

amongst other approaches. They also offer wider beneficial environmental and social side

tipping points in total already active and inter-relating, 'runaway' change is a reasonable term

to use for that situation. New models are projecting that on current emissions pathways we

are headed for over 6 degrees of warming by the end of the century (Johnson, 2019).

Therefore, if people assess that we might be, probably are, or definitely are, at the start of

runaway climate change they would be credible not extreme assessments.

The warming of the Arctic reached wider public awareness as it has begun destabilizing winds

in the higher atmosphere, specifically the jet stream and the northern polar vortex, leading to

extreme movements of warmer air north in to the Arctic and cold air to the south. At one

point in early 2018, temperature recordings from the Arctic were 20 degrees Celsius above the

average for that date (Watts, 2018). The warming Arctic has led to dramatic loss in sea ice, the

average September extent of which has been decreasing at a rate of 13.2% per decade since

1980, so that over two thirds of the ice cover has gone (NSIDC/NASA, 2018). This data is made

more concerning by changes in sea ice volume, which is an indicator of resilience of the ice

sheet to future warming and storms. It was at the lowest it has ever been in 2017, continuing

a consistent downward trend (Kahn, 2017).

Given a reduction in the reflection of the Sun's rays from the surface of white ice, an ice-free

Arctic is predicted to increase warming globally by a substantial degree. Writing in 2014,

scientists calculated this change is already equivalent to 25% of the direct forcing of

temperature increase from CO2 during the past 30 years (Pistone et al, 2014). That means we

could remove a quarter of the cumulative CO2 emissions of the last three decades and it

would already be outweighed by the loss of the reflective power of annual Arctic sea ice cover.

One of the most eminent climate scientists in the world, Peter Wadhams, believes an ice-free

Arctic will occur for a summer in the next few years. Once that happens, the warming

feedbacks make it near certain that, after some years, an entire year will be ice free in the

Arctic, which he calculated will likely increase by 50% the warming caused by the CO2

produced by human activity (Wadhams, 2016).

3

Whereas some scientists assess warming

implications to be lower than that (Hudson, 2011), if correct, it would render the calculations

of the IPCC redundant, along with the targets and proposals of the UNFCCC. Between 2002

and 2016, Greenland shed approximately 280 gigatons of ice per year, and the island's lower-

elevation and coastal areas experienced up to 13.1 feet (4 meters) of ice mass loss (expressed

in equivalent-water-height) over a 14-year period (NASA, 2018). Along with other melting of

land ice, and the thermal expansion of water, this has contributed to a global mean sea level

rise of about 3.2 mm/year, representing a total increase of over 80 mm, since 1993

(JPL/PO.DAAC, 2018). The IPCC has been found to have underpredicted sea level rise, as part

exploring how to live in an unstable post-Sustainability situation (Benson and Craig, 2014;

Foster, 2015). This context is worth being reminded of, as it provides the basis upon which to

assess the significance, or otherwise, of all the praiseworthy efforts that have been underway

and reported in some detail in this and other journals over the past decade. I will now offer an

attempt at a summary of that broader context insofar as it might frame our future work on

sustainability.

The politically permissible scientific consensus is that we need to stay beneath 2 degrees

warming of global ambient temperatures, to avoid dangerous and uncontrollable levels of

climate change, with impacts such as mass starvation, disease, flooding, storm destruction,

forced migration and war. That figure was agreed by governments that were dealing with

many domestic and international pressures from vested interests, particularly corporations. It

is therefore not a figure that many scientists would advise, given that many ecosystems will be

lost and many risks created if we approach 2 degrees global ambient warming (Wadhams,

2018). The IPCC agreed in 2013 that if the world does not keep further anthropogenic

emissions below a total of 800 billion tonnes of carbon we are not likely to keep average

temperatures below 2 degrees of global averaged warming. That left about 270 billion tonnes

of carbon to burn (Pidcock, 2013). Total global emissions remain at around 11 billion tonnes of

predicted declines in the yields of rice, wheat, and corn in China by 36.25%, 18.26%, and

45.10%, respectively, by the end of this century (Zhang et al, 2016). Naresh Kumar et al. (2014)

project a 6–23 and 15–25% reduction in the wheat yield in India during the 2050s and 2080s,

respectively, under the mainstream projected climate change scenarios. The loss of coral and

the acidification of the seas is predicted to reduce fisheries productivity by over half (Rogers et

al, 2017). The rates of sea level rise suggest they may soon become exponential (Malmquist,

2018), which will pose significant problems for hundreds of millions of people living in coastal

zones (Neumann et al, 2015). Environmental scientists are now describing our current era as

the sixth mass extinction event in the history of planet Earth, with this one caused by us.

About half of all plants and animal species in the world's most biodiverse places are at risk of

extinction due to climate change (WWF, 2018). The World Bank reported in 2018 that

countries needed to prepare for over 100 million internally displaced people due to the effects

of climate change (Rigaud et al, 2018), in addition to millions of international refugees.

Despite you, me, and most people we know in this field, already hearing data on this global

situation, it is useful to recap simply to invite a sober acceptance of our current predicament.

It has led some commentators to describe our time as a new geological era shaped by humans

— the Anthropocene (Hamilton, et al, 2015). It has led others to conclude that we should be

of its general "understatement of existential climate risk" (Spratt and Dunlop, 2018). Recent

data shows that the upward trend is non-linear (Malmquist, 2018). That means sea level is

rising due to non-linear increases in the melting of land-based ice.

The observed phenomena are both at the higher ranges and more extreme than what most

climate models over the past decades were predicting for our current time. They are more

extreme because the models did not predict the extent of the variability of weather, which is

arising from phenomena such as the extent of changes to the jet streams (Kornhuber, et al

2019). The global average temperatures are at the higher edge of model predictions for the

current time, especially if we consider the most recent years as indicating a new normal,

rather than waiting for scientific convention to confirm decadal trends. "The average

temperature for the twelve months to June 2020 is close to 1.3℃ above the level [of pre-

industrial temperatures used by the IPCC] for its 1.5℃ and 2℃ degree thresholds]"

(Copernicus Programme, 2020). These current measurements are consistent with non-linear

changes in our environment that would then trigger uncontrollable impacts on human habitat

and agriculture, with subsequent complex impacts on social, economic and political systems. I

will return to the implications of these trends after listing some more of the impacts that are

already being reported as occurring today.

This was corrected from “double” in an earlier version.

Already we see impacts on storm, drought and flood frequency and strength due to a change

in the balance of the thermal heat in the oceans and atmosphere, with the poles heating

faster (Herring et al, 2018). In addition, the greater heat being trapped in the polar regions

means the temperature gradient with the lower latitudes drops and therefore the jet streams

weaken and become more wavy, thereby creating more blocks of high pressure that lead to

extreme weather (Kornhuber, et al 2019). We are witnessing negative impacts on agriculture.

Climate change has reduced growth in crop yields by 1–2 percent per decade over the past

century (Wiebe et al, 2015). The UN Food and Agriculture Organisation (FAO) reports that

weather abnormalities related to climate change are costing billions of dollars a year, and

growing exponentially. For now, the impact is calculated in money, but the nutritional

implications are key (FAO, 2018). We are also seeing impacts on marine ecosystems. About

half of the world’s coral reefs have died in the last 30 years, due a mixture of reasons though

higher water temperatures and acidification due to higher CO2 concentrations in ocean water

being key (Phys.org, 2018). In ten years prior to 2016 the Atlantic Ocean soaked up 50 percent

more carbon dioxide than it did the previous decade, measurably speeding up the acidification

of the ocean (Woosley et al, 2016). This study is indicative of oceans worldwide, and the

consequent acidification degrades the base of the marine food web, thereby reducing the

ability of fish populations to reproduce themselves across the globe (Britten et al, 2015).

Meanwhile, warming oceans are already reducing the population size of some fish species

(Aaron-Morrison et al, 2017). Compounding these threats to human nutrition, in some regions

we are witnessing an exponential rise in the spread of mosquito and tick-borne viruses as

temperatures become more conducive to them (ECJCR, 2018).

Looking Ahead

Most of the impacts I just summarised are already upon us and even without increasing their

severity they will nevertheless increase their impacts on our ecosystems, soils, seas and our

societies over time. It is difficult to predict future impacts. But it is more difficult not to predict

them. Because the reported impacts today are at the very worst end of predictions being

made in the early 1990s — back when I first studied climate change and model-based climate

predictions as an undergraduate at Cambridge University. The models today suggest an

increase in storm number and strength (Herring et al, 2018). They predict a decline of normal

agriculture, including the compromising of mass production of grains in the northern

hemisphere and intermittent disruption to rice production in the tropics. That includes

Jem Bendell
Deep Adaptation
A Map for Navigating Climate Tragedy
July 27, 2018; Revised 2nd Edition Released July 27th 2020.

Retrieved on JUNE 9 2024 from jembendell.com

theanarchistlibrary.org

images (Banos Ruiz, 2017). This evidence suggests that the idea we "experts" need to be

careful about what to tell "them" the "unsupported public" may be a narcissistic delusion in

need of immediate remedy.

Emotional difficulties with realising the tragedy that is coming, and that is in many ways upon

us already, are understandable. Yet these difficulties need to be overcome so we can explore

what the implications may be for our work, lives and communities.

Framing After Denial

As a sense of calamity grows within the environmental movement, some argue against a focus

on "carbon reductionism" for how it may limit our appreciation of why we face this tragedy

and what to do about it (Eisenstein, 2018). I agree that climate change is not just a pollution

problem, but an indicator of how our human psyche and culture became divorced from our

natural habitat. However, that does not mean we should deprioritise the climate situation for

a broader environmental agenda.

If we allow ourselves to accept that a climate-induced form of economic and societal collapse

is now likely, then we can begin to explore the nature and likelihood of that collapse. That is

when we discover a range of different views. Some frame the future as involving a collapse of

this economic and social system, which does not necessarily mean a complete collapse of law,
order, identity and values. Some regard that kind of collapse as offering a potential upside in
bringing humanity to a post-consumerist way of life that would be more conscious of
relationships between people and nature (Eisenstein, 2013). Some even argue that this
reconnection with nature will generate hitherto unimaginable solutions to our predicament.
Sometimes that view comes with a belief in the power of spiritual practices to influence the
material world according to human intent. The perspective that natural or spiritual
reconnection might save us from catastrophe is, however, a psychological response one could
analyse as a form of denial.

Some analysts emphasise the unpredictable and catastrophic nature of this collapse, so that it
will not be possible to plan a way to transition at either collective or small-scale levels to a
new way of life that we might imagine as tolerable, let alone beautiful. Then others go further
still and argue that the data can be interpreted as indicating climate change is now in a
runaway pattern, with inevitable methane release from the seafloor leading to a rapid
collapse of societies that will trigger multiple meltdowns of some of the world's 400 nuclear
power-stations, leading to the extinction of the human race (McPherson, 2016). The author
making that claim is controversial and unusual within the scientific community. In my own

research I was unable to find evidence to support or refute this view on nuclear power

stations, as studies just referred to radiation release from disasters where there was

containment (such as Chernobyl and Fukushima). Aside from this uncertainty around nuclear,

those people who consider that we face near-term human extinction can draw on the findings

of geologists that the last mass extinction of life on earth, where 95% of species disappeared,

was due to methane-induced rapid warming of the atmosphere (Lee, 2014; Brand et al, 2016).

Although a far distance from inevitable human extinction, two reputable climate scientists

have calculated that the human race now has a 20% chance of going extinct this century (Xu

and Ramanathan, 2017).

With each of these framings – collapse, catastrophe, extinction – people describe different

degrees of certainty. Different people speak of a scenario being possible, probable or

inevitable. In my conversations with both professionals in sustainability or climate, and others

not directly involved, I have found that people choose a scenario and a probability depending

not on what the data and its analysis might suggest, but what they are choosing to live with as

a story about this topic. That parallels findings in psychology that none of us are purely logic

machines but relate information into stories about how things relate and why (Marshall,

2014). None of us are immune to that process. Currently, I have chosen to interpret the

information as indicating inevitable collapse, probable catastrophe and possible extinction. I
do not prove in this paper that societal collapse is inevitable, as that would require more
discussion of complex social, economic, political and cultural processes, but it is my personal
conclusion from an overview of those factors which I have not yet published (and which seems
reasonable to share with the reader given the seriousness of the matter).

There is a growing community of people who conclude we face inevitable human extinction
and treat that view as a prerequisite for meaningful discussions about the implications for our
lives right now. For instance, there are thousands of people on Facebook groups who believe
human extinction is near. In such groups I have witnessed how people who doubt extinction is
either inevitable or coming soon are disparaged by some participants for being weak and
deluded. This could reflect how some of us may find it easier to believe in a certain than an
uncertain story, especially when the uncertain future would be so different to today that it is
difficult to comprehend. Reflection on the end of times, or eschatology, is a major dimension
of the human experience, and the total sense of loss of everything one could ever contribute
to is an extremely powerful experience for many people. How they emerge from that
experience depends on many factors, with loving kindness, creativity, transcendence, anger,
depression, nihilism and apathy all being potential responses. Given the potential spiritual

experience triggered by sensing the imminent extinction of the human race, we can
appreciate why a belief in the inevitability of extinction could be a basis for some people to
come together.

In my work with mature students, I have found that inviting them to consider collapse as
inevitable, catastrophe as probable and extinction as possible, has not led to apathy or
depression. Instead, in a supportive environment, where we have enjoyed community with
each other, celebrating ancestors and enjoying nature before then looking at this information
and possible framings for it, something positive happens. I have witnessed a shedding of
concern for conforming to the status quo, and a new creativity about what to focus on going
forward. Despite that, a certain discombobulation occurs and remains over time as one tries
to find a way forward in a society where such perspectives are uncommon. Continued sharing
about the implications as we transition our work and lives is valuable.

One further factor in the framing of our situation concerns timing. Which also concerns
geography. Where and when will the collapse or catastrophe begin? When will it affect my
livelihood and society? Has it already begun? Although it is difficult to forecast and impossible
to predict with certainty, that does not mean we should not try. The current data on
temperature rise at the poles and impacts on weather patterns around the world suggests we

are already in the midst of dramatic changes that will impact massively and negatively on

agriculture within the next twenty years. Impacts have already begun. That sense of near-term

disruption to our ability to feed ourselves and our families, and the implications for crime and

conflict, adds another level to the discombobulation I mentioned. Should you drop everything

now and move somewhere more suitable for self-sufficiency? Should you be spending time

reading the rest of this article? Should I even finish writing it? Some of the people who believe

that we face inevitable extinction believe that no one will read this article because we will see

a collapse of civilisation in the next twelve months when the harvests fail across the northern

hemisphere. They see societal collapse leading to immediate meltdowns of nuclear power

stations and thus human extinction being a near-term phenomenon. Certainly not more than

five years from now. The clarity and drama of their message is why Inevitable Near Term

Human Extinction (INTHE) has become a widely used phrase online for discussions about

climate-collapse.

Although I do not currently agree with them, writing about that perspective makes me sad.

Even four years after I first let myself consider near-term extinction properly, not as

something to dismiss, it still makes my jaw drop, eyes moisten, and air escape my lungs. I have

seen how the idea of INTHE can lead me to focus on truth, love and joy in the now, which is

respect. Instead, I want to share it now as a tool for shifting the quality of conversations that I need to

have. Therefore, I have decided to publish it simply as an IFLAS Occasional Paper.

The process has helped me realise that I need to relinquish activities that I no longer have passion for, in

what I am experiencing as a dramatically new context. Therefore, I must step back from the Editorial

team of the journal. Thank you for having involved me and congratulations on it now being in the top

ten journals in business, management and accounting.

Please pass on my thanks to the reviewers. On my website www.jembendell.com I will be listing some

links to articles, podcasts, videos and social networks that are helping people explore and come to

terms with a realisation of near-term collapse (and even extinction), which they may be interested in.

Yours sincerely,

Jem Bendell

"The authors stress repeatedly that "climate-induced societal collapse is now inevitable" as if that was

a factual statement… I was left wondering about the social implications of presenting a scenario for the

future as inevitable reality, and about the responsibility of research in communicating climate change

scenarios and strategies for adaptation. As the authors pointed out, denial is a common emotional

response to situations that are perceived as threatening and inescapable, leading to a sense of

helplessness, inadequacy, and hopelessness and ultimately disengagement from the issue…"

This perspective is one I discuss in some detail in the paper, as one that enables denial. It reflects the

self-defeating hierarchical attitude towards society that many of us have in both academia and

sustainability, where we censure our own exploration of a topic due to what we consider should or

should not be communicated. There is both scholarship and experience on the impact of

communicating about disaster, and I discuss that in the paper.

The trauma from assessing our situation with climate change has led me to become aware of and drop

some of my past preoccupations and tactics. I realise it is time to fully accept my truth as I see it, even if

partially formed and not polished yet for wider articulation. I know that academia involves as much a

process of wrapping up truth as unfolding it. We wrap truth in disciplines, discrete methodologies,

away from the body, away from intuition, away from the collective, away from the everyday. So as that

is my truth then I wish to act on it as well, and not keep this analysis hidden in the pursuit of academic

wonderful, but how it can also make me lose interest in planning for the future. And yet I

always come around to the same conclusion – we do not know. Ignoring the future because it

is unlikely to matter might backfire. "Running for the hills" – to create our own eco-

community – might backfire. But we definitely know that continuing to work in the ways we

have done until now is not just backfiring – it is holding the gun to our own heads. With this in

mind, we can choose to explore how to evolve what we do, without any simple answers. In my

post-denial state, shared by increasing numbers of my students and colleagues, I realised that

we would benefit from conceptual maps for how to address these questions. I therefore set

about synthesising the main things people talked about doing differently in light of a view of

inevitable collapse and probable catastrophe. That is what I offer now as the "deep adaptation

agenda."

The Deep Adaptation Agenda

For many years, discussions and initiatives on adaptation to climate change were seen by

environmental activists and policymakers as unhelpful to the necessary focus on carbon

emissions reductions. That view finally changed in 2010 when the IPCC gave more attention to

how societies and economies could be helped to adapt to climate change, and the United

Nations Global Adaptation Network was founded to promote knowledge sharing and

collaboration. Five years later the Paris Accord between member states produced a "Global

Goal on Adaptation" (GGA) with the aim of "enhancing adaptive capacity, strengthening

resilience and reducing vulnerability to climate change, with a view to contributing to

sustainable development and ensuring an adequate adaptation response in the context of the

global temperature goal" (cited in Singh, Harmeling and Rai, 2016). Countries committed to

develop National Adaptation Plans (NAPs) and report on their creation to the UN.

Since then the funding being made available to climate adaptation has grown, with all the

international development institutions active on adaptation finance. In 2018 the International

Fund for Agricultural Development (IFAD), African Development Bank (AfDB), Asian

Development Bank (ADB), Global Facility for Disaster Reduction and Recovery (GFDRR) and the

World Bank each agreed major financing for governments to increase resilience of their

communities. Some of their projects include the Green Climate Fund, which was created to

provide lower income countries with assistance. Typical projects include improving the ability

of small-scale farmers to cope with weather variability through the introduction of irrigation

and the ability of urban planners to respond to rising sea levels and extreme rainfall events

through reengineering drainage systems (Climate Action Programme, 2018). These initiatives

are falling short of the commitments made by governments over the past 8 years, and so

therefore that the paper is about climate change being a big problem. But the article doesn't say that.

It says that we face an unsolvable predicament and great tragedy. When the reviewer says "There are

not clear contributions that can be derived from the article" then I wonder whether that is wilful

blindness, as the article is saying that the basis of the field is now untenable.

At a couple of points, I attempted to cut through the unemotional way that research is presented. For

instance, when I directly address the reader about the implications of the analysis for their own likely

hunger and safety, it is to elicit an emotional response. I say in the text why I express myself in that way

and that although it is not typical in some journals the situation we face suggests to me that we do try

to communicate emotively. The reviewer comments "the language used is not appropriate for a

scholarly article."

The second reviewer summarises the paper as "the introduction of deep adaptation as an effective

response to climate change" which suggests to me a fundamental misunderstanding despite it being

made clear throughout the paper. There is no "effective" response. The reviewer also writes "I am not

sure that the extensive presentation of climate data supports the core argument of the paper in a

meaningful way." Yet the summary of science is the core of the paper as everything then flows from the

conclusion of that analysis. Note that the science I summarise is about what is happening right now,

rather than models or theories of complex adaptive systems which the reviewer would have preferred.

One piece of feedback from the 2nd reviewer is worth quoting verbatim:

I would have had difficulty finding motivation for undertaking a complete re-write given the conclusion

of the paper – that the premise of the "sustainable business" field that the journal is part of is no longer

valid. Indeed, the assumptions about progress and stability that lead us to stay in academia in the field

of management studies are also now under question.

The first referee questioned "to which literature(s) does this article actually contribute" and stated that

"the research question or gap that you intend to address must be drawn from the literature,"

continuing that "to join the conversation, you need to be aware of the current conversation in the field,

which can be identified by reviewing relevant and recent articles published in these journals." That is

the standard guidance I use with my students and it was both amusing and annoying to read that

feedback after having dozens of peer-reviewed articles published over the last 20 years. The problem

with that guidance is when the article is challenging the basis of the field and where there are not any

other articles exploring or accepting the same premise. For instance, there are no articles in either

SAMPJ or Organisation and Environment that explore implications for business practice or policy of a

near-term inevitable collapse due to environmental catastrophe (including those that mention or

address climate adaptation). That isn't surprising, because the data hasn't been so conclusive on that

until the last couple of years.

It is surprising therefore that the first reviewer says "the paper does not contain any new or significant

information. The paper reiterates what has already been told by many studies." The reviewer implies

more is being done to promote private bonds to finance adaptation (Bernhardt, 2018) as well

as stimulate private philanthropy on this agenda (Williams, 2018).

These efforts are paralleled by an increased range of activities under the umbrella of "Disaster

Risk Reduction" which has its own international agency – the United Nations International

Strategy for Disaster Reduction (UNISDR). The aim of their work is to reduce the damage

caused by natural hazards like earthquakes, floods, droughts and cyclones, through reducing

sensitivity to these hazards as well as increasing the capacity to respond when disasters hit.

That focus means significant engagement with urban planners and local governments. In the

business sector, this disaster risk reduction agenda meets the private sector through the well-

established fields of risk management and business continuity management. Companies ask

themselves what the points of failure might be in their value chains and seek to reduce those

vulnerabilities or the significance of something failing.

Given the climate science we discussed earlier, some people may think this action is too little

too late. Yet, if such action reduces some harm temporarily, that will help people, just like you

and me, and therefore such action should not be disregarded. Nevertheless, we can look more

critically at how people and organisations are framing the situation and the limitations that

such a framing may impose. The initiatives are typically described as promoting "resilience",

rather than sustainability. Some definitions of resilience within the environmental sector are

surprisingly upbeat. For instance, the Stockholm Resilience Centre (2015) explains that

"resilience is the capacity of a system, be it an individual, a forest, a city or an economy, to

deal with change and continue to develop. It is about how humans and nature can use shocks

and disturbances like a financial crisis or climate change to spur renewal and innovative

thinking." In offering that definition, they are drawing on concepts in biology, where

ecosystems are observed to overcome disturbances and increase their complexity (Brand and

Jax, 2007).

Two issues require attention at this point. First, the upbeat allegiance to "development" and

"progress" in certain discourses about resilience may not be helpful as we enter a period

when material "progress" may not be possible and so aiming for it might become counter-

productive. Second, apart from some limited soft skills development, the initiatives under the

resilience banner are nearly all focused on physical adaptation to climate change, rather than

considering a wider perspective on psychological resilience. In psychology, "resilience is the

process of adapting well in the face of adversity, trauma, tragedy, threats or significant

sources of stress — such as family and relationship problems, serious health problems or

workplace and financial stressors. It means 'bouncing back' from difficult experiences"

]][[http://wwf.panda.org/wwf_news/?324471/Half-of-plant-and-animal-species-at-risk-from-climate-change-in-worlds-most-important-natural-places][

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Letter to the Editor of SAMPJ, Professor Carol Adams, from Professor Jem Bendell, 27

th

July 2018.

Dear Professor Adams,

It is an odd situation to be in as a writer, but I feel compassion for anyone reading my Deep Adaptation

article on the inevitability of near-term social collapse due to climate chaos! I am especially grateful for

anyone taking the time to analyse it in depth and provide feedback. So, I am grateful to you arranging

that and the reviewers for providing their feedback. Some of the feedback, particularly

recommendations for a better introduction, were helpful. However, I am unable to work with their main

requests for revisions, as they are, I believe, either impossible or inappropriate, as I will seek to explain.

I agree with Professor Rob Gray that "The journal's constant exploration of new and challenging

perspectives on how accountability and sustainability might play out in organisations ensures a

stimulating source of articles, experiences and ideas." It is why I was pleased to guest edit an issue last

year and bring critical perspectives on leadership to its readership. However, the topic of inevitable

collapse from climate change is so challenging it is not surprising it didn't find support from the

anonymous peer reviewers.

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(American Psychology Association, 2018). How a person “bounces back” after difficulties or
loss, may be through a creative reinterpretation of identity and priorities. The concept of
resilience in psychology does not, therefore, assume that people return to how they were
before. Given the climate reality we now face, this less progressivist framing of resilience is
more useful for a deeper adaptation agenda.

In pursuit of a conceptual map of “deep adaptation,” we can conceive of resilience of human
societies as the capacity to adapt to changing circumstances so as to survive with valued
norms and behaviours. Given that some analysts are concluding that a societal collapse is now
likely, inevitable, or already occurring, the question becomes: What are the valued norms and
behaviours that human societies will wish to maintain as they seek to survive? That highlights
how deep adaptation will involve more than “resilience.” It brings us to a second area of this
agenda, which I have named “relinquishment.” It involves people and communities letting go
of certain assets, behaviours and beliefs where retaining them could make matters worse.
Examples include withdrawing from coastlines, shutting down vulnerable industrial facilities,
or giving up expectations for certain types of consumption. The third area can be called
“restoration.” It involves people and communities rediscovering attitudes and approaches to
life and organisation that our hydrocarbon-fuelled civilisation eroded. Examples include re-

wilding landscapes, so they provide more ecological benefits and require less management,

changing diets back to match the seasons, rediscovering non-electronically powered forms of

play, and increased community-level productivity and support. A fourth area for Deep

Adaptation is what could be termed "reconciliation." That is in recognition of how we do not

know whether our efforts will make a difference, while we also know that our situations will

become more stressful and disruptive, ahead of the ultimate destination for us all. How we

reconcile with each other and with the predicament we must now live with will be key to how

we avoid creating more harm by acting from suppressed panic (Bendell, 2019).

It is not my intention in this paper to map out more specific implications of a deep adaptation

agenda. Indeed, it is impossible to do so, and to attempt it would assume we are in a situation

for calculated attempts at management, when what we face is a complex predicament beyond

our control. Rather, I hope the deep adaptation agenda of resilience, relinquishment and

restoration can be a useful framework for community dialogue in the face of climate change.

Resilience asks us "how do we keep what we really want to keep?" Relinquishment asks us

"what do we need to let go of in order to not make matters worse?" Restoration asks us "what

can we bring back to help us with the coming difficulties and tragedies?" Reconciliation asks

"with what and whom can we make peace with as we face our mutual mortality?" In 2017,

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part of this deep adaptation agenda was used to frame a festival of alternatives organised by

Peterborough Environment City Trust. It included a whole day devoted to exploring what

relinquishment could involve. As such, it allowed more open conversation and imagination

than a narrower focus on resilience. Further events are planned across the UK. Whether it will

be useful framing for a broader-level policy agenda is yet to be seen.

How does this "deep adaptation agenda" relate to the broad conceptual framework of

sustainable development? It is related to other perspectives that despite the attention of

international institutions to "sustainable development goals," the era of "sustainable

development" as unifying concept and goal is now ending. It is an explicitly post-sustainability

framing, and part of the Restoration Approach to engaging with social and environmental

dilemmas, as I outlined elsewhere (Bendell, et al 2017).

Research Futures in the Face of Climate Tragedy

I was only partly joking earlier when I questioned why I was even writing this paper. If all the

data and analysis turn out to be misleading, and this society continues nicely for the coming

decades, then this article will not have helped my career. If the predicted collapse comes

within the next decade, then I won't have a career. It is the perfect lose-lose. I mention this to

highlight how it will not be easy to identify ways forward as academic researchers and

educators in the field of organisational sustainability. For the academics reading this paper,

most of you will have increasing teaching loads, in areas where you are expected to cover

certain content. I know you may have little time and space for reinventing your expertise and

focus. Those of you who have a mandate to research might discover that the deep adaptation

agenda is not an easy topic for finding research partners and funders. This restrictive situation

was not always the reality faced by academics. It is the result of changes in higher education,

that are one expression of an ideology that has made the human race so poor at addressing a

threat to its wellbeing and even existence. It is an ideology that many of us have been

complicit in promoting, if we have been working in business schools. It is important to

recognise that complicity, before considering how to evolve our research in the face of the

climate tragedy (Bendell, 2020).

The West's response to environmental issues has been restricted by the dominance of

neoliberal economics since the 1970s. That led to hyper-individualist, market fundamentalist,

incremental and atomistic approaches. By hyper-individualist, I mean a focus on individual

action as consumers, switching light bulbs or buying sustainable furniture, rather than

promoting political action as engaged citizens. By market fundamentalist, I mean a focus on

market mechanisms like the complex, costly and largely useless carbon cap and trade systems,

rather than exploring what more government intervention could achieve. By incremental, I

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mean a focus on celebrating small steps forward such as a company publishing a sustainability

report, rather than strategies designed for a speed and scale of change suggested by the

science. By atomistic, I mean a focus on seeing climate action as a separate issue from the

governance of markets, finance and banking, rather than exploring what kind of economic

system could permit or enable sustainability (ibid).

This ideology has now influenced the workloads and priorities of academics in most

universities, which restricts how we can respond to the climate tragedy. In my own case, I

took an unpaid sabbatical, and writing this paper is one of the outcomes of that decision. We

no longer have time for the career games of aiming to publish in top-ranked journals to

impress our line managers or improve our CV for if we enter the job market. Nor do we have a

need for the narrow specialisms that are required to publish in such journals. So, yes, I am

suggesting that in order to let oneself evolve in response to the climate tragedy one may have

to quit a job – and even a career. However, if one is prepared to do that, then one can engage

with an employer and professional community from a new place of confidence.

If staying in academia, I recommend you begin to ask some questions of all that you research

and teach. When reading others' research, I recommend asking: "How might these findings

inform efforts for a more massive and urgent pursuit of resilience, relinquishment and

restoration in the face of social collapse?" You may find that most of what you read offers

little on that question, and, therefore, you no longer wish to engage with it. On one's own

research, I recommend asking: "If I didn't believe in incremental incorporation of climate

concerns into current organisations and systems, what might I want to know more about?" In

answering that question, I recommend talking to non-specialists as much as people in your

own field, so that you are able to talk more freely and consider all options.

In my own work, I stopped researching corporate sustainability. I learned about leadership

and communications and began to research, teach and advise on these matters, in the

political arena. I began to work on systems to enable relocalisation of economies and support

for community development, particular those systems using local currencies. I sought to share

that knowledge more widely, and therefore launched a free online course (The Money and

Society Mass Open Online Course). I began to spend more time reading and talking about the

climate tragedy and what I might do, or stop doing, with that in mind. This rethinking and

repositioning is ongoing, but I can no longer work on subjects that do not have some

relevance to deep adaptation. Looking ahead, I see the need and opportunity for more work

at multiple levels. People will need more support to access information and networks for how

to attempt a shift in their livelihoods and lifestyles. Existing approaches to living off-grid in

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intentional communities are useful to learn from, but this agenda needs to go further in asking
questions like how small-scale production of drugs like aspirin is possible. Free online and in-
person courses as well as support networks on self-sufficiency need to be scaled. Local
governments will need similar support on how to develop the capabilities today that will help
their local communities to collaborate, not fracture, during a collapse. For instance, they will
need to roll out systems for productive cooperation between neighbours, such as product and
service exchange platforms enabled by locally issued currency. At the international level, there
is the need to work on how to responsibly address the wider fallout from collapsing societies
(Harrington, 2016). These will be many, but obviously include the challenges of refugee
support and the securing of dangerous industrial and nuclear sites at the moment of a societal
collapse.

Other intellectual disciplines and traditions may be of interest going forward. Human
extinction and the topic of eschatology, or the end of the world, is something that has been
discussed in various academic disciplines, as you might expect. In theology it has been widely
discussed, while it also appears in literary theory as an interesting element to creative writing
and in psychology during the 1980s as a phenomenon related to the threat of nuclear war. The
field of psychology seems to be particularly relevant going forward.

Whatever we choose to work on in future will not be a simple calculation. It will be shaped by

the emotional or psychological implications of this new awareness of a societal collapse being

likely in our own lifetimes. I have explored some of these emotional issues and how they have

been affecting my work choices, in a reflective essay on the spiritual implications of climate

despair (Bendell, 2018). I recommend giving yourself time for such reflection and evolution,

rather than rushing in to a new agenda of research or teaching. If you are a student, then I

recommend sending your lecturers this paper and inviting a class discussion about these ideas.

It is likely that those who are not embedded within the existing system will be the ones more

able to lead this agenda.

I think it may be our vanity as academics to think that anyone but academics and students

read academic papers. Therefore, I have chosen to leave my recommendations for managers,

policy makers and lay persons for another outlet (see www.jembendell.com for my writings on

various aspects of the Deep Adaptation agenda and community, including topics of campaign

strategy, social justice, re-localisation, decolonisation, financial reform, psychology and

spirituality).

Conclusions

Since records began in 1850, seventeen of the eighteen hottest years have occurred since

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2000. Important steps on climate mitigation and adaptation have been taken over the past

decade. However, these steps could now be regarded as equivalent to walking up a landslide.

If the landslide had not already begun, then quicker and bigger steps would get us to the top

of where we want to be. Sadly, the latest climate data, emissions data and data on the spread

of carbon-intensive lifestyles show that the landslide has already begun. As the point of no

return can't be fully known until after the event, ambitious work on reducing carbon

emissions and extracting more from the air (naturally and synthetically) is more critical than

ever. That must involve a new front of action on methane.

Disruptive impacts from climate change are now inevitable. Geoengineering is likely to be

ineffective or counter-productive. Therefore, the mainstream climate policy community now

[[http://www.jembendell.com/][

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recognises the need to work much more on adaptation to the effects of climate change. That

must now rapidly permeate the broader field of people engaged in sustainable development

as practitioners, researchers and educators. In assessing how our approaches could evolve, we

need to appreciate what kind of adaptation is possible. Recent research suggests that human

societies will experience disruptions to their basic functioning within less than ten years due to

climate stress. Such disruptions include increased levels of malnutrition, starvation, disease,

civil conflict and war – and will not avoid affluent nations. This situation makes redundant the

reformist approach to sustainable development and related fields of corporate sustainability

that has underpinned the approach of many professionals (Bendell et al, 2017). Instead, a new

approach which explores how to reduce harm and not make matters worse is important to

develop. In support of that challenging, and ultimately personal process, understanding a deep

adaptation agenda may be useful.

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