

# Leverage Points

**Abstract:** *This essay is a journey across the major landmarks of ecological and economics thinking that has helped define the environment movement from the 1960s onwards. This was a time of enormous change. Unprecedented economic growth, powered by the unprecedented exploitation of fossil fuels, was occurring across the world. More chemicals were being used than ever before. More of Nature was being eroded as environmental damage was ignored. What were the responses? Could plausible new concepts be developed to get us off a seemingly precarious trajectory?*

*The books listed in this essay set the scene for the development of the new discipline of ecological economics. They had a profound effect in shaping alternative perspectives, which are still evolving today, and which came to define environmental campaigns across the world, as well as policy actions taken by some governments. They have informed the development of the concept of Megamorphosis.*

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“Man has lost the capacity to foresee and forestall. He will end by destroying the earth.”

I first heard Albert Schweitzer’s distressing words in a lecture by the Nobel Peace Prize-winner when I was a teenager. They had a deep impact on a young person like me, growing up with the awful legacy of the second world war: that recent past was bad enough, but might the future be even worse?

Soon I saw Schweitzer’s words again as the introductory motto of Rachel Carlson’s groundbreaking and best-selling book *Silent Spring*. Published in 1962 and serialised in *The New Yorker*, it highlighted the eco-toxic impacts of pesticides such as DDT, mostly derived from second world war chemistry research. By the early 1960s, these ‘biocides’ were used in an ever-wider range of applications.

It was Carson’s diligent investigation that blew the whistle. As she began work on her book, she soon found that she was not alone. A sizeable community of researchers helped

her, as evidence of pesticide damage to Nature, particularly regarding bird populations, was mounting.

After collating evidence from all over the world, Carson concluded that synthetic chemical pesticides were “elixirs of death” whose ubiquitous use had to be challenged head-on.

She began her book by eloquently describing the tightly woven web of life on Earth: the intricate interdependencies found in Nature. She then argued that the new, chemical onslaught against insects, weeds and fungi was severely damaging Earth’s ecosystems, whilst also causing cancers and other illnesses in humans. And worse: a profit-hungry chemical industry was blatantly spreading disinformation, with public officials often endorsing its dubious claims.

The key proposition of *Silent Spring*, serialised in *The New Yorker*, was that if humankind poisoned Nature, Nature would ultimately snap back. With two million copies sold in 28 languages, the book helped to embolden environmental campaigns across the world. It triggered a broad discussion

about human–Nature relationships, which ultimately led to the first United Nations Conference on the Human Environment in 1972.

Critics of *Silent Spring* proclaimed that chemical-dependent farming was essential for feeding exploding human populations. But Carson refuted that. The widespread use of pesticides such as DDT killed all insects – pollinators as well as pests. Biocides made their way up the food chain to threaten bird and fish populations as well as humans. Surely that was not the way to assure sustainable global food supplies.

Carson did not, however, call for the wholesale abolition of pesticides, but rather pleaded for their responsible and carefully targeted use.

*Silent Spring*, despite its gloomy title and introductory motto, actually ends on a note of hope: all was not lost! By implementing suitable policies and alternative practices, we could yet travel another road; we could yet farm sustainably and restore the health of the earth rather than destroying it.

This tension between despair and ‘applied hope’ has characterised the psychology of the environment movement ever since: burdened by gloom, yet striving for better outcomes by gathering and spreading knowledge about solutions to the emerging crisis in the relationship between humans and Nature.

o was one of the first books that linked the study of ecology and economics: after all, the use of pesticides, in both farming and urban settings, was designed to improve labour productivity whilst supposedly aiding plant, animal and human health. But wider ecological impacts – or externalities – were hardly considered by largely unregulated chemical companies.

## THE COSTS OF ECONOMIC GROWTH

In 1967 the LSE economist E. J. Mishan published his pioneering book *The Costs of Economic Growth*. Its key argument is that expanding human populations, proliferating technologies and growing affluence have unintended ‘spillover’ effects, or social and environmental costs. Packaged with the consumer ‘goods’ that we have come to take for granted come ‘bads’ that we prefer to ignore.

Mishan was a lone voice amongst colleagues who were preaching an ideology of unending economic growth. He boldly asked whether prevailing economic theory and practices were fit for purpose: by not factoring in damage to the environment resulting from economic activities, they were subject to ‘market failure’. He did not mince his words: “With a complacency, nay a hubris, unmatched in history, and with a blindness peculiar to a consumer society, we have abandoned ourselves to a ransacking of the most precious and irreplaceable resources on our unique planet undeterred by the thought of the future desolation and deprivation of posterity.”

Mishan effectively pioneered the notion of ‘inconvenient truths’. But while his compelling and sobering views were widely discussed in student circles, they barely featured in our economics curriculum at the LSE. They were also largely ignored by company and government economists not wanting to deal with an existential question: could economic practices continue unchanged if environmental and social

costs were internalised in the price of commercial products?

Mishan said that “a part of the price that people in the West pay for an unending procession of shiny assembly-line products is the concomitant loss of those now rarer things that once imparted zest and gratification – the loss of individuality, uniqueness and flavour.” Powerful words indeed – and they did not endear him to his fellow economists!

## THE CLOSING CIRCLE

The American ecologist Barry Commoner pioneered a new, politically focused approach to environmental thinking in his 1971 book *The Closing Circle*. He argued that a wide array of ‘capitalist technologies’ were chiefly responsible for ecological degradation across the world. Commoner was a biology professor, but also a would-be politician: he even created a new ‘Citizens’ Party’ – a pioneering ‘green’ party – for which he ran for president in the 1980 US election. To summarise his profound insights, Commoner formulated four laws of ecology:

- *Everything is connected to everything else.* There is one ecosphere for all living organisms, and what affects one affects all.
- *Everything must go somewhere.* There is no ‘waste’ in Nature and there is no ‘away’ to which things can be thrown.
- *Nature knows best.* Humankind has fashioned technology to improve upon Nature, but such change in a natural system is likely to be detrimental to that system.
- *There is no such thing as a free lunch.* Exploitation of Nature will inevitably involve the conversion of resources from useful to useless forms.

Commoner was not a man of compromise. He made the bold proposal that the US economy should be ‘decontaminated’ and restructured to conform to these laws of ecology. He did not endear himself to businesspeople and politicians when he proposed that polluting industrial products such as detergents and synthetic textiles should be replaced by natural products such as soap and wool. He stated that vigorous social action was needed to close the circle of life, so that we may “restore to nature the wealth that we borrow from it”.

*The Closing Circle* brought the idea of sustainability to a mass audience, and it was no accident that both Friends of the Earth and Greenpeace were founded in 1971, aiming to put pressure on governments and companies to “make peace with Nature”.

## THE STOCKHOLM SUMMIT

In June 1972, the United Nations responded to growing unease about human impacts on Nature by organising the first-ever global Conference on the Human Environment in Stockholm. Pollution from an ever-larger array of chemicals and industrial processes could no longer be ignored. How could unprecedented human populations be fed? How could an industrialising and urbanising humanity powered by fossil fuels safeguard the health of the world’s natural environment whilst also ensuring peace and social justice?

After two weeks of negotiations, optimism prevailed: the participants adopted the *Stockholm Declaration and Action Plan for the Human Environment*, a set of shared principles to guide the peoples of the world in the preservation and

enhancement of Nature.

A key sentence in the declaration is this: “States have ... the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.”

But the declaration did not define ways of countering prevailing global trends towards ever-greater environmental destruction driven by relentless economic growth within individual countries.

## THE LIMITS TO GROWTH

The conference deliberations in Stockholm were underpinned by another landmark publication: the Club of Rome’s pioneering report *The Limits to Growth*, which soon circulated in vast numbers in many languages. It sold more than 12 million copies in 37 languages – the best-selling ecology book of all time.

*The Limits to Growth* was a bold exercise in modelling global environmental trends, using a novel ‘systems dynamics’ methodology developed by MIT professor Jay Forrester. For the first time, a computer programme, World3, was developed to model global environmental trends, simulating the interactions between human systems and the natural world. The report focused on five variables: population, agriculture, natural resources, industrial production and pollution. All five were increasing exponentially: how long could all this continue on a finite planet?

The report, written by a team of young academics at MIT headed by Donella Meadows and Dennis Meadows, concludes with the alarming view that without substantial changes in human behaviour patterns, “the most probable result will be a rather sudden and uncontrollable decline in both population and industrial capacity.”

Like Mishan’s and Commoner’s writings, *The Limits to Growth* postulates that no economic system could maintain infinite growth. Advanced economies, using ever more sophisticated technologies, might try to overcome limits for a while, but sooner rather than later they would have to accept limiting growth rates to levels that were compatible with available resource supplies. Without deliberate, self-imposed constraints, collapse of the entire system would be inevitable.

The book made very uncomfortable reading for economists, financiers, business leaders and politicians – all of whom considered unending growth as a non-negotiable tool for human progress. Not surprisingly, it became the object of fierce attacks in a great variety of mainstream publications. Industrialists saw it as a threat to the growth of businesses, and economists saw their dominance in advising on economic matters undermined. The Catholic church was piqued by the suggestion that overpopulation could become an ecological problem. But subsequent studies largely confirm the validity of the book’s modelling.

Today we face the stark reality that few meaningful changes have been made since 1972 to significantly counter prevailing trends. *Limits to Growth: The 30-Year Update*, published in 2004, observed that “humanity has largely squandered the past decades in futile debates and ... half-hearted responses to global ecological challenges... Much will have to change if the

ongoing overshoot is not to be followed by collapse during the twenty-first century.” Now, with bad environmental news in the media every day, there are few reasons to challenge that perspective.

*The Limits to Growth* has been described as “a milestone in attempts to model the future of our society, and it is vital today for both scientists and policy makers to understand its scientific basis, current relevance, and the social and political mechanisms that led to its rejection.”

More than 50 years ago, *The Limits to Growth* presented various scenarios that could have forestalled environmental collapse if implemented at an appropriate scale. But it also stated: “We can say very little at this point about the practical, day-by-day steps that might be taken to reach a desirable, sustainable state of global equilibrium. Neither the world model nor our own thoughts have been developed in sufficient detail to understand all the implications of the transition from growth to equilibrium.”

## A BLUEPRINT FOR SURVIVAL

*The Ecologist’s* visionary report, *A Blueprint for Survival*, was published to coincide with the Stockholm conference in 1972. It picks up from the arguments presented in *The Limits to Growth* but goes on to propose specific scenarios by which the breakdown of human society and the disruption of the planet’s life-support systems could be forestalled. It states: “Radical change is both necessary and inevitable because the present increases in human numbers and *per capita* consumption, by disrupting ecosystems and depleting resources, are undermining the very foundations of survival.”

The report, by a team of UK-based researchers headed by Edward Goldsmith, founder editor of *The Ecologist* magazine, is all about a radical departure from a globalising ‘mega civilisation’, and a transition towards a ‘stable society’. It boldly envisages a world of small-scale, largely de-industrialised communities. Life there would be more fulfilling; agricultural and business practices would be more likely to be ecologically sound; and smaller populations leading more local lives would reduce human environmental impacts.

The authors did not shy away from bold, seemingly ‘nostalgic’ perspectives. They modelled their proposals on tribal societies with low-impact technologies, successful population control, sustainable resource management and ecologically inspired worldviews. They argued that even in the late 20th century, we could create a stable, cohesive society imbued with physical, psychological and spiritual fulfilment.

The authors acknowledged that the world they envisaged would not come about overnight: “We are sufficiently aware of ‘political reality’ to appreciate that many of our proposals ... will be considered impracticable. However, we believe that if a strategy for survival is to have any chance of success, the solutions must be formulated in the light of the problems and not from a timorous and superficial understanding of what may or may not be immediately feasible.”

Some of the ideas expressed in *A Blueprint for Survival* have resonated with many people yearning for a fulfilling, environmentally enhancing way of life. Many small-scale ‘green oases’ have sprung up in recent years in a great variety of locations across the world.

## SMALL IS BEAUTIFUL

The messages of *A Blueprint for Survival* were reinforced by subsequent publications, such as E.F. Schumacher's book *Small Is Beautiful*, another major critique of mainstream neoliberal economics and rampant globalisation. It, too, advanced politics for small-scale organisation and the use of environment-friendly, human-scale technologies as a superior alternative to the mainstream ethos of 'big is best'. Published just after the 1973 oil crisis, it became a global bestseller and was later ranked by *The Times Literary Supplement* among the 100 most influential books published since the second world war.

Perhaps the most widely quoted chapter of *Small Is Beautiful* is 'Buddhist Economics', which draws on Schumacher's work as a development consultant in Burma. It questions the idea of never-ending economic growth, arguing that in Nature all organisms stop growing at a certain point. From the point of view of Buddhism, production from local resources for local needs is the most rational way of economic life, while dependence on long-distance imports, and the consequent need to produce for export to unknown and distant peoples, is highly uneconomic and is justifiable only in exceptional cases – just as Buddhist economists would admit that a long travel distance between a person's home and their workplace signifies misfortune and not a high standard of life.

Schumacher was no friend of neoliberal capitalism, and he advocated public ownership of key resources: "Socialists should insist on using the nationalised industries not simply to out-capitalise the capitalists – an attempt in which they may or may not succeed – but to evolve a more democratic and dignified system of industrial administration, a more humane employment of machinery, and a more intelligent utilisation of the fruits of human ingenuity and effort. If they can do this, they have the future in their hands. If they cannot, they have nothing to offer that is worthy of the sweat of free-born men."

A few years later another ground-breaking book hit the bookshops: Herman Daly's *Steady-state Economics*, a no-holds-barred bold critique of mainstream economics.

Daly wrote: "The entire evolution of the biosphere has occurred around a fixed point – the constant solar-energy budget. Modern man is the only species to have broken the solar-income budget constraint, and this has thrown him out of equilibrium with the rest of the biosphere. Natural cycles have become overloaded, and new materials have been produced for which no natural cycles exist. Not only is geological capital being depleted, but the basic life-support services of nature are impaired in their functioning by too large a throughput from the human sector."

He argued that the laws of thermodynamics apply to all human activities. Technology can't rise above these laws, with entropy precluding the possibility of recycling energy and burning the same gallon of gasoline again and again. Thus our capital stock of fossil fuels, which powers the modern world, will inevitably run out, whilst causing climate chaos in the meantime. This analysis did not find much favour with Daly's fellow economists at the World Bank, where neoliberal, growth-driven thinking was taking ever-firmer root.

## YES, IT IS THE ECONOMY, STUPID

All the reports I have listed agree that much of the economic growth occurring across the world is effectively *uneconomic* growth. Prevailing economic theory and practices are clearly failing humanity. Resource depletion, pollution and climate breakdown inevitably undermine the prospects of future generations, while hundreds of millions of people are still in grinding poverty.

It is our ubiquitous use of fossil fuels that defines human impacts on our home planet above all else. This predicament is shared by both capitalism and any state socialism/communism that operates under the auspices of 'productivism': industrial production systems aiming for virtually unlimited growth regardless of the ecological consequences.

Faced with depletion of resources and a deteriorating condition of the biosphere, there is no question that we need to find new ways to get to grips with the spill-over effects, or 'externalities', of our economic systems. This job won't be done under the prevailing view that advocates unlimited economic growth via unrestrained free markets, privatisation and elimination of price controls.

As Mishan pointed out all those years ago, this ideology leads to market failure: by opposing regulation wherever possible, companies tend to fiercely resist incorporating hidden costs into the market price of their products. For Mishan market failure is far too mild a term to denote the inadequacy of the prevailing pricing system in directing economic resources towards preventing environmental damage. This is not just market failure, but policy failure, and present and future generations are faced with vast unpaid bills.

## THE HIDDEN COSTS OF ENERGY AND MOBILITY

Actually quantifying these unpaid costs of our present way of life is surely a herculean task. But there is always someone who will try. Benjamin Sovacool and his colleagues at Sussex University had a go. Their report *The Hidden Costs of Energy and Mobility* drew on over 20 years of peer-reviewed data in 139 individual studies. The authors found that these hidden costs add up to a staggering US\$25 trillion – the equivalent of over 25% of the world's entire economic output: the global energy sector is responsible for around US\$12 trillion, while the hidden costs of transport amount to some US\$13bn.

The scope of the report is remarkable. But even these figures may be rather conservative. When the full range of externalities of all of our activities is added up, we are bound to come up with much higher figures. What are the costs involved in each centimetre of sea level rise? What are the hidden costs of pollution of rivers and oceans? What about soil erosion, large-scale deforestation and biodiversity loss? What figure would they add up to, and who will bear all these costs?

We now need a further study fully costing the full range of human impacts on Nature. It is evident that we need to fundamentally change the parameters under which we make decisions and formulate the policies that drive them. Carbon taxes, as far as they exist today, are tokens that cover only a very small proportion of negative externalities.

## BALANCING THE BOOKS

There is no doubt that we now face a planetary emergency

closely linked to the negative externalities arising from the economic and financial practices benefiting a tiny minority whose vast private gains are resulting in ever-greater public costs. All too often, untaxed private profits are set against spiralling public costs, with the world's poorest, now ravaged by floods and droughts, bearing the brunt. And, most troublingly, we are leaving vast unpaid bills for future generations to pick up – resource depletion, pollution, soil damage and climate chaos.

Economists and the companies they work for have been very clever at sweeping these externalities under the carpet. It would seem clear that governments need to step in and assert appropriate policies for a rapid move towards clean production systems.

What steps can be taken to encourage the world's businesses to take full responsibility for their environmental impacts, and to regenerate depleted and damaged ecosystems?

In her 2013 book *Environmental Debt*, Amy Larkin proposed a new framework for 21st-century commerce, based on three principles:

- 1) Pollution can no longer be free or subsidised;
- 2) All business decision making and accounting must incorporate the long view; and
- 3) Government must play a vital role in catalysing clean technology and growth while preventing environmental destruction.

In the current discussion about our global climate emergency, the ever-reducing costs of renewable energy systems must surely be highlighted. The current imbalance between fossil fuel use and renewable energy consumption would be quickly rectified if the price of fossil fuel products fully internalised their social and environmental costs. All available studies show that renewables – wind, solar, marine and geothermal – have far lower externalities.

## DOUGHNUT ECONOMICS

Kate Raworth made a major contribution to the limits-to-growth debate in 2017 with her book *Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist*. It aims to provide a compass to help “policymakers, activists, business leaders and citizens alike to steer a wise course through the twenty-first century”.

Working for Oxfam for many years, Raworth was closely involved in developing concepts for balanced economic and ecological development of the global south. One important contribution made in her book is the call to set human wellbeing firmly within the context of the planetary boundaries that we exceed at our peril. The book's line of argument is firmly based on the concepts listed in this essay that have emerged since the 1960s.

## TOWARDS THE REGENERATIVE ECONOMY

Meanwhile a fundamental rethink of the metabolism of society is long overdue. In the face of the planetary emergency we are facing, a deeper perspective on human relationships to Nature is now needed, based on an understanding of the systemic difference between the biosphere and the technosphere we have imposed upon it.

- The biosphere, driven by solar energy and photosynthesis, is an essentially circular system, which is all about

reproduction, organic growth, species interdependence and regeneration. All wastes are recycled into new growth, assuring continuity of life.

- The technosphere, largely powered by fossil fuel combustion, is an essentially linear system. It is defined by resource extraction, mechanical production, chemical manipulation and linear waste disposal, with pollutants accumulating in the biosphere, systemically undermining the continuity of life.

E.F. Schumacher said in *Small Is Beautiful*: “The system of nature, of which man is a part, tends to be self-balancing, self-adjusting, self-cleansing. Not so with technology.”

Since 1972, sustainable development (SD) has been held up as the solution to the world's problems. The official definition is well known: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” But does SD require a fundamental rethink?

Effectively, SD was a marriage of convenience to facilitate north-south collaboration on enhancing human livelihoods while also halting humanity's deteriorating relationship with its host planet. It is a concept to which few people would object; most of us would agree that we should not live as if there were no tomorrow. But the term has become like a rubber band that can be stretched almost at will in many directions.

We need to ask, how long is sustainable: 10 years, 100 years, 1,000 years? And who and what should be sustainable: households, cities, whole nations, the world economy? And who should benefit: current generations or all humans who will ever be alive? And can SD really occur under the rules of neoliberalism?

In my view, we need to start thinking of *regenerative* rather than just *sustainable* development. We urgently need to help regenerate the land and the oceans. And we urgently need to regenerate local communities and economies that have fallen by the wayside as economic globalisation has become a dominant force.

It is becoming clearer now that human ‘progress’ cannot be at the expense of the health of the world's ecosystems and that their protection and continuous regeneration must be a guiding principle for human action. The time has come for taking specific measures to help regenerate soils, forests and watercourses rather than just sustaining them in a degraded condition, and to make renewables our main source of energy supply.

Creating a circular rather than a linear industrial/urban metabolism – giving plant nutrients back to Nature, storing carbon in soils and forests, reviving urban agriculture, powering human settlements efficiently by renewable energy, reconnecting cities to their regional hinterland – is the basis for creating viable new economies, which are so badly needed in this time of financial and economic crisis.

Regenerative development, then, is as much about an honest give-and-take between humans and Nature as about reviving human communities at the local level. It is a concept that matches closely the ideas expressed in all the reports listed in this text so far.

## INTERVENING IN THE SYSTEM

What has happened to the ‘polluter pays’ concept, or,

indeed, to the precautionary principle? The premise of the current system can be challenged by confronting it with the vast actual accumulating costs of carrying on as usual. For this, even more detailed figures are needed than those compiled by Sovacool and his colleagues. The rise of strong, interconnected regional, national and global governance is needed to define and implement fiscal incentives towards regenerative practices. As never before, we need international agreements for a global green recovery, with a new economics firmly embedded within sound ecological parameters, whilst also offering a wide range of new, green livelihood options.

In the last 60 years, a few landmark books have triggered a vigorous discussion on reconceptualising human affairs in the light of global limits. Since then, hundreds of other books and reports concerned with forestalling environmental disaster have been published, and a seemingly endless procession of conferences have been held. Various new terms have been invented to describe our predicament: we now live in the age of the 'great acceleration', or the 'Anthropocene'. *The Living Planet Index*, published annually by WWF, shows how we are consuming ever more of the planet's capital rather than its income.

Existential anxiety is now affecting many people across the world, impacting their wellbeing but also motivating them to help initiate change. Global connections are being utilised as never before, with NGOs working together on behalf of future generations.

Since the 1960s, *modelling* global trends has gradually given way to actual *observation* of the changes that are occurring on the land, in the oceans and in the atmosphere. We are no longer groping in the semi-dark, but we have hard evidence: the heavens are now studded with satellites that are monitoring carbon emissions, sea level rises, deforestation, soil erosion, plastics pollution and much else. Innumerable studies are evaluating the evidence presented by our new global monitoring systems.

Probably our greatest challenge now is to overcome the mindset underpinning a false system of economics. In 1999, in a famous essay titled *Leverage Points*, Donella Meadows, lead author of *The Limits to Growth*, outlined critical steps by which significant changes can be brought about. She described these as "places to intervene in a system (in increasing order of effectiveness)":

9. Constants, parameters, numbers (subsidies, taxes, standards)
8. Regulating negative feedback loops
7. Driving positive feedback loops
6. Material flows and nodes of material intersection
5. Information flows
4. The rules of the system (incentives, punishments, constraints)
3. The distribution of power over the rules of the system
2. The goals of the system
1. The mindset or paradigm out of which the system – its goals, its power structure, its rules, its culture – arises

In recent years much has been done to address the lesser elements in this 'leverage hierarchy'. The impacts of taxation and subsidies are being widely discussed (9). It is better understood how negative feedback loops can be regulated (8 & 7). Material and information flows are being analysed in

ever more detail (6 & 5). Systems' rules are better understood than ever before (4 & 3). The goals of neoliberal economics are clearer than ever (2). But now the greatest challenge is to address the very mindset underlying our current cultural, political and economic system.

It is above all else an issue of getting to grips with the mindset underpinning 'carboniferous capitalism' (a term coined by Lewis Mumford). A rapid switch to efficient use of renewable energy is of the essence, actually replacing fossil fuels and their vast negative, unpaid-for externalities. There is every indication that the negative costs associated with renewable energy are minimal in comparison. A fair evaluation that fully reflects negative externalities will assign fossil fuels to the dustbin of history.

## FORCES FOR CHANGE

There is no doubt that if we were victorious in our war against Nature, we would find ourselves on the defeated side. What, then, are the forces that can yet forestall such an outcome? There is now an unprecedented worldwide movement for regenerating the environment whilst also fostering social justice. In his 2007 book *Blessed Unrest*, Paul Hawken explored the diversity of this movement and its ideas and strategies. Hundreds of thousands of NGOs add up to a remarkable global force. "From billion-dollar non-profits to single-person dot.causes, these groups collectively comprise the largest movement on earth, a movement that has no name, leader, or location and that has gone largely ignored by politicians and the media."

In addition to the plethora of NGOs and their consensus statements and strategies there is an ever-growing number of countries where green politics are becoming influential. We can now draw inspiration from exemplars of best practices and policies, and tangible achievements, from many locations right across the planet. But, for a full breakthrough, the mindsets underpinning the current paradigm have yet to be addressed head-on.

Can humanity still learn to be at peace with Nature? It was Albert Schweitzer who came up with the term 'reverence for life', which he described as a universal concept of ethics that could reconcile the drives of altruism and egoism. No person must ever harm or destroy life unless absolutely necessary. Schweitzer said: "I cannot but have reverence for all that is called life. I cannot avoid compassion for everything that is called life. That is the beginning and foundation of morality." It is surely such a deep well of understanding that must motivate our actions to forestall the planetary devastation that Schweitzer was concerned about – echoed by many others since the 1960s.

## THIS AUTHOR

Professor Herbert Girardet is a co-founder of the World Future Council, and a member of The Club of Rome. His most recent book is *Creating Regenerative Cities* (Routledge). He is a trustee of the Resurgence Trust, which owns and publishes *The Ecologist*.

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## THE ECOLOGIST SPECIAL SERIES: MEGAMORPHOSIS

*The Ecologist* online strategy for 2022/5 includes the publication of three new special series examining economics and the fossil fuel industry from a number of useful perspectives. The first major series is *Megamorphosis*, from Professor Herbert Girardet. The series examines how the economy and the technosphere have come to dominate and degrade the atmosphere, biosphere and geosphere in what is now called the Anthropocene Epoch.

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## ECOLOGIST WRITERS' FUND

The Ecologist Writers' Fund was launched to support contributors who are from, or who write about, communities and identities that remain marginalised within the environment movement and the journalism industry. This includes, but is not limited to, BAME, LGBTQI+ and disabled people. The fund is supported by readers of *The Ecologist* online and subscribers to our newsletter. *The Ecologist* Special Series is funded by trusts and foundations and not through the EWF. However, we hope those who have read and benefited from the series will consider donating to the writers' fund online.

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## THE ECOLOGIST

*The Ecologist* is a news and analysis platform with a focus on environmental, social and economic justice. Our strategic aim for the coming years is to focus on the fossil fuel industry and its impact on people, society and the natural environment. *The Ecologist* is published online. Editor: Brendan Montague. Assistant Editor: Yasmin Dahnoun. We also publish as an integral part of the *Resurgence & Ecologist* print magazine. Editor: Marianne Brown. The Ecologist is a member of the newspaper regulator IMPRESS.

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## THE RESURGENCE TRUST

The Resurgence Trust is an educational charity (Charity Number: 1120414) that aims to improve our connection to each other and to nature. The charity examines how we can reconnect with the living planet from the perspectives of society, economics, community and individual wellbeing. The trust publishes the *Resurgence & Ecologist* magazine, *The Ecologist* online and Resurgence.org, as well as organising events at its centre in Hartland, Devon and in London. The trust is funded through its members and with some donations from a number of trusts and foundations which support environmental and social change. The work of the trust is overseen by its board of trustees.