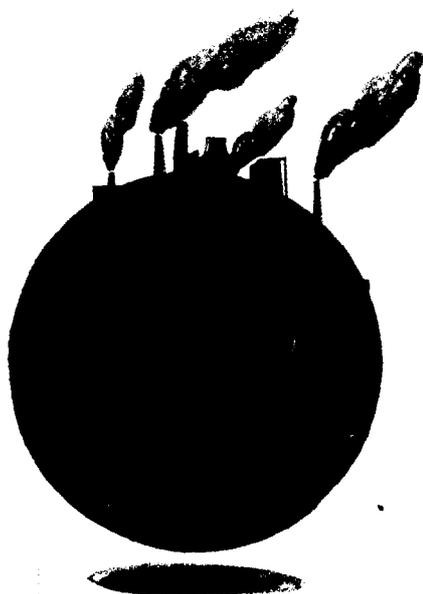


Why our economy is killing the planet and what we can do about it



THE graphs climbing across these pages are a stark reminder of the crisis facing our planet. Consumption of resources is rising rapidly, biodiversity is plummeting and just about every measure shows humans affecting Earth on a vast scale. Most of us accept the need for a more sustainable way to live, by reducing carbon emissions, developing renewable technology and increasing energy efficiency.

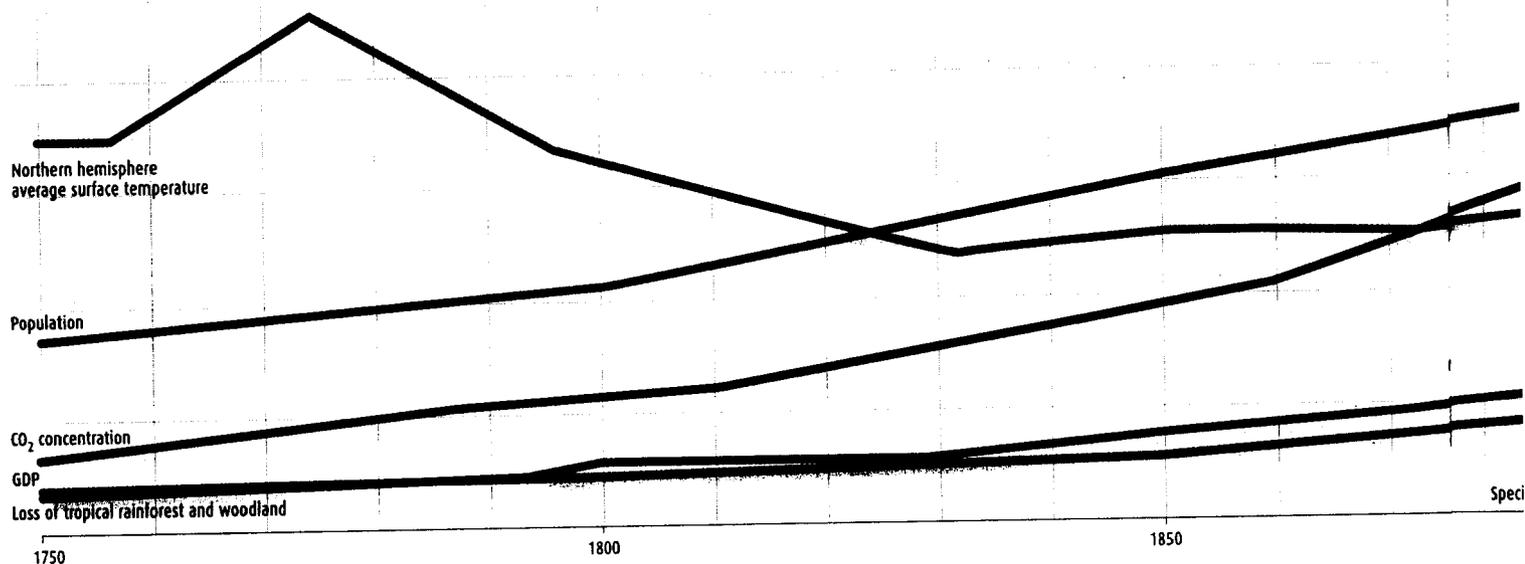
But are these efforts to save the planet doomed? A growing band of experts are looking at figures like these and arguing that personal carbon virtue and collective environmentalism are futile as long as our economic system is built on the assumption of growth. The science tells us that if we are serious about saving Earth, we must reshape our economy.

This, of course, is economic heresy. Growth to most economists is as essential as the air we breathe: it is, they claim, the only force capable of lifting the poor out of poverty, feeding the

world's growing population, meeting the costs of rising public spending and stimulating technological development – not to mention funding increasingly expensive lifestyles. They see no limits to that growth, ever.

In recent weeks it has become clear just how terrified governments are of anything that threatens growth, as they pour billions of public money into a failing financial system. Amid the confusion, any challenge to the growth dogma needs to be looked at very carefully. This one is built on a long-standing question: how do we square Earth's finite resources with the fact that as the economy grows, the amount of natural resources needed to sustain that activity must grow too? It has taken all of human history for the economy to reach its current size. On current form it will take just two decades to double.

In this special issue, *New Scientist* brings together key thinkers from politics, economics



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and philosophy who profoundly disagree with the growth dogma but agree with the scientists monitoring our fragile biosphere. The father of ecological economics, Herman Daly, explains why our economy is blind to the environmental costs of growth (page 46), while Tim Jackson, adviser to the UK government on sustainable development, crunches numbers to show that technological fixes won't compensate for the hair-raising speed at which the economy is expanding (page 42).

Gus Speth, one-time environment adviser to President Jimmy Carter, explains why after four decades working at the highest levels of US policy-making he believes green values have no chance against today's capitalism (page 48), followed by Susan George, a leading thinker of the political left, who argues that only a global government-led effort can shift the destructive course we are on (page 50).

For Andrew Simms, policy director of the London-based New Economics Foundation, it is crucial to demolish one of the main justifications for unbridled growth: that it can pull the poor out of poverty (page 49). And the broadcaster and activist David Suzuki explains how he inspires business leaders and politicians to change their thinking (page 44).

Just what a truly sustainable economy would look like is explored on page 52, when *New Scientist* uses Daly's blueprint to imagine life in a society that doesn't use up resources faster than the world can replace them. Expect tough decisions on wealth, tax, jobs and birth rates. But as Daly says, shifting from growth to development doesn't have to mean freezing in the dark under communist tyranny.

Technological innovation would

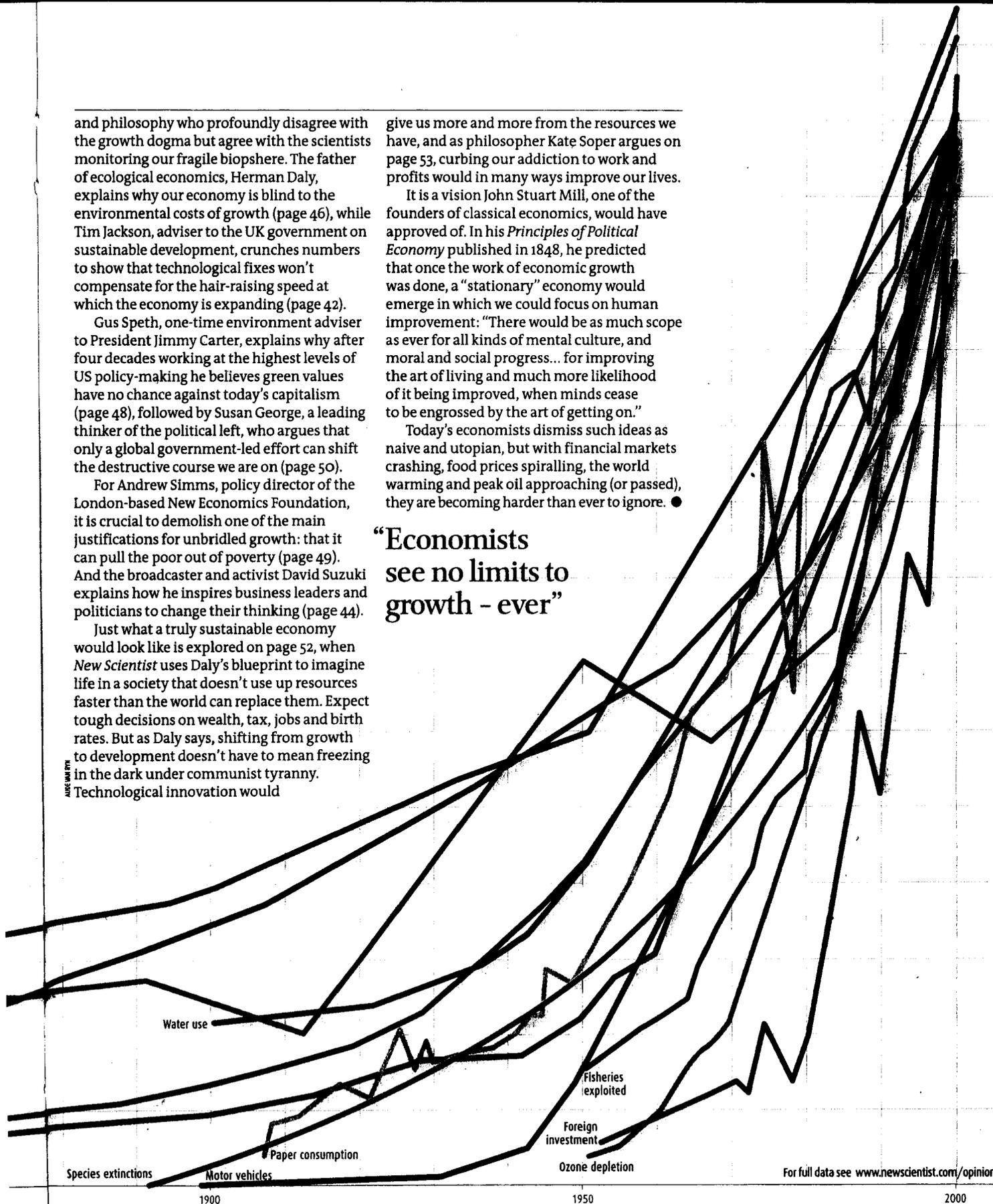
give us more and more from the resources we have, and as philosopher Kate Soper argues on page 53, curbing our addiction to work and profits would in many ways improve our lives.

It is a vision John Stuart Mill, one of the founders of classical economics, would have approved of. In his *Principles of Political Economy* published in 1848, he predicted that once the work of economic growth was done, a "stationary" economy would emerge in which we could focus on human improvement: "There would be as much scope as ever for all kinds of mental culture, and moral and social progress... for improving the art of living and much more likelihood of it being improved, when minds cease to be engrossed by the art of getting on."

Today's economists dismiss such ideas as naive and utopian, but with financial markets crashing, food prices spiralling, the world warming and peak oil approaching (or passed), they are becoming harder than ever to ignore. ●

"Economists see no limits to growth - ever"

ANDEW SIMMS



For full data see www.newscientist.com/opinion

Beyond growth

We can rely on renewable technologies to help us avert climate change without sacrifices to our lifestyles, right? Not according to sustainable development adviser **Tim Jackson**, who reckons our leaders are just too chicken to tell us the truth

What politicians dare not say

■ SCRATCH the surface of free-market capitalism and you discover something close to visceral fear. Recent events provide a good example: the US treasury's extraordinary \$800 billion rescue package was an enormous comfort blanket designed to restore confidence in the ailing financial markets. By forcing the taxpayer to pick up the "toxic debts" that plunged the system into crisis, it aims to protect our ability to go on behaving similarly in the future. This is a short-term and deeply regressive solution, but economic growth must be protected at all costs.

As economics commissioner on the UK's Sustainable Development Commission, I found this response depressingly familiar. At the launch last year of our "Redefining Prosperity" project (which attempts to instil some environmental and social caution into the relentless pursuit of economic growth), a UK treasury official stood up and accused my colleagues and I of wanting to "go back and live in caves". After a recent meeting convened to explore how the UK treasury's financial policies might be made more sustainable,

Profile

Tim Jackson is professor of sustainable development at the University of Surrey, UK. His research focuses on understanding the social, psychological and structural dimensions of sustainable living. He is also a member of the Sustainable Development Commission, which advises the UK government.

a high-ranking official was heard to mutter: "Well, that is all very interesting, perhaps now we can get back to the real job of growing the economy."

The message from all this is clear: any alternative to growth remains unthinkable, even 40 years after the American ecologists Paul Ehrlich and John Holdren made some blindingly obvious points about the arithmetic of relentless consumption.

The Ehrlich equation, $I = PAT$, says simply that the impact (I) of human activity on the planet is the product of three factors: the size of the population (P), its level of affluence (A) expressed as income per person, and a technology factor (T), which is a measure of the impact on the planet associated with each dollar we spend.

Take climate change, for example. The global population is just under 7 billion and the average level of affluence is around \$8000 per person. The T factor is just over 0.5 tonnes of carbon dioxide per thousand dollars of GDP – in other words, every \$1000 worth of goods and services produced using today's technology releases 0.5 tonnes of CO_2 into the atmosphere. So today's global CO_2 emissions work out at $7 \text{ billion} \times 8 \times 0.5 = 28 \text{ billion tonnes per year}$.

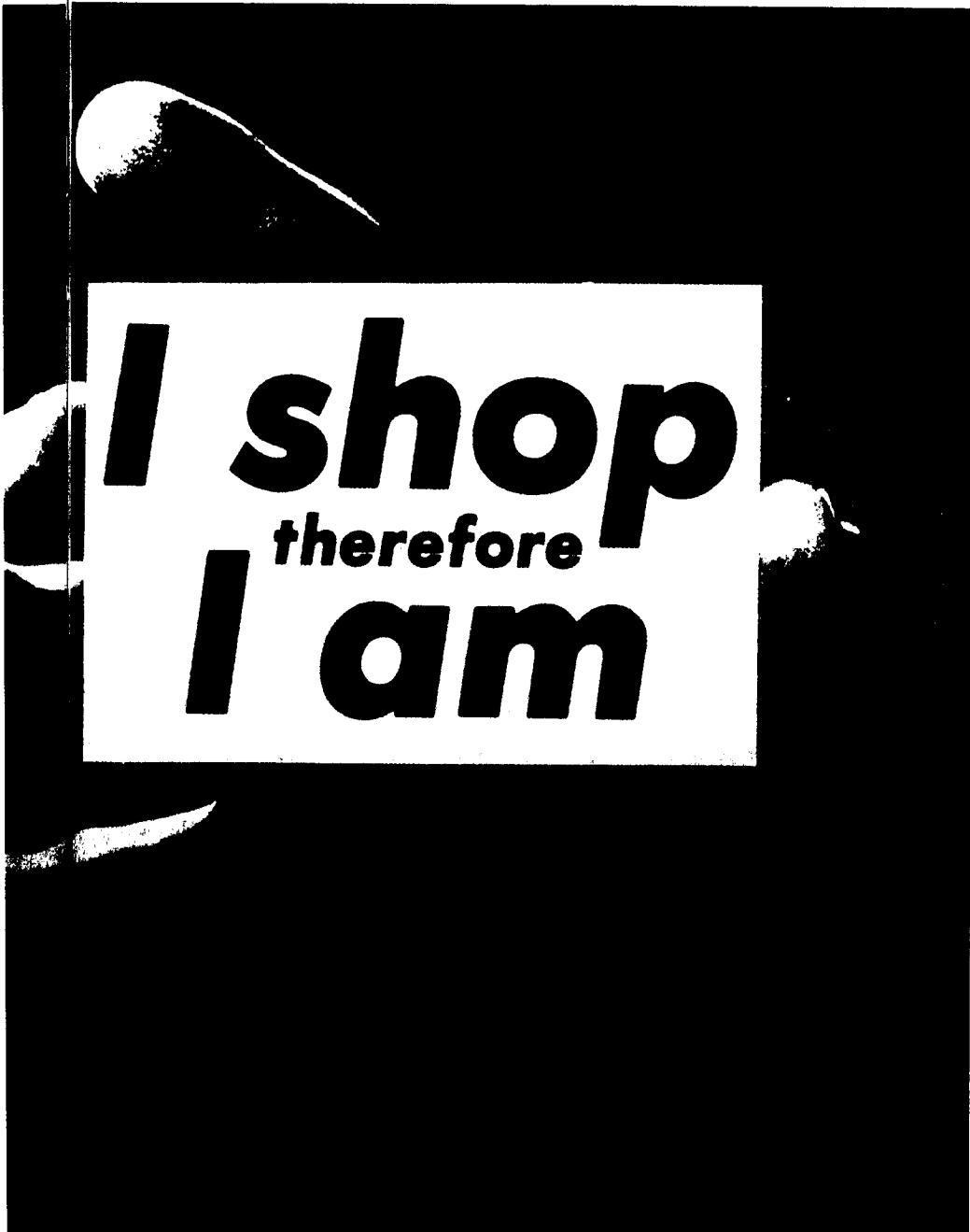
The Intergovernmental Panel on Climate Change (IPCC) has stated that to stabilise greenhouse gas levels in the atmosphere at a reasonably safe 450 parts per million, we need to reduce annual global CO_2 emissions to less than 5 billion tonnes by 2050. With a global



Artist Barbara Kruger gets to the root of the problem in her 1987 artwork

population of 9 billion thought inevitable by the middle of this century, that works out at an average carbon footprint of less than 0.6 tonnes per person – considerably lower than in India today. The conventional view is that we will achieve this by increasing energy efficiency and developing green technology without economic growth taking a serious hit. Can this really work?

With today's global income, achieving the necessary carbon footprint would mean getting the T factor for CO_2 down to 0.1 tonnes of CO_2 per thousand US dollars – a fivefold improvement. While that is no walk in the park, it is probably doable with state-of-the-art technology and a robust policy commitment. There is one big thing missing from this picture, however: economic growth. Factor



**I shop
therefore
I am**

it in, and the idea that technological ingenuity can save us from climate disaster looks an awful lot more challenging.

First, let us suppose that the world economy carries on as usual. GDP per capita will grow at a steady 2 or 3 per cent per year in developed countries, while the rest of the world tries to catch up – China and India leaping ahead at 5 to 10 per cent per year, at least for a while, with Africa languishing in the doldrums for decades to come. In this (deeply inequitable) world, to meet the IPCC target we would have to push the carbon content of consumption down to less than 0.03 tonnes for every thousand US dollars spent – a daunting 11-fold reduction on the current western European average.

Now, let's suppose we are serious about

eradicating global poverty. Imagine a world whose 9 billion people can all aspire to a level of income compatible with a 2.5 per cent growth in European income between now and 2050. In this scenario, the carbon content of economic output must be reduced to just 2 per cent of the best currently achieved anywhere in the European Union.

In short, if we insist on growing the economy endlessly, then we will have to reduce the carbon intensity of our spending to a tiny fraction of what it is now. If growth is to continue beyond 2050, so must improvements in efficiency. Growth at 2.5 per cent per year from 2050 to the end of the century would more than triple the global economy beyond the 2050 level, requiring almost complete decarbonisation of every last dollar.

The potential for technological improvements, renewable energy, carbon sequestration and, ultimately perhaps, a hydrogen-based economy has not been exhausted. But what politicians will not admit is that we have no idea if such a radical transformation is even possible, or if so what it would look like. Where will the investment and resources come from? Where will the wastes and the emissions go? What might it feel like to live in a world with 10 times as much economic activity as we have today?

Instead, they bombard us with adverts cajoling us to insulate our homes, turn down our thermostats, drive a little less, walk a little more. The one piece of advice you will not see on a government list is "buy less stuff". Buying an energy-efficient TV is to be

"A UK treasury official accused me of wanting to go back to cave living"

applauded; not buying one at all is a crime against society. Agreeing reluctantly to advertising standards is the sign of a mature society; banning advertising altogether (even to children) is condemned as "culture jamming". Consuming less may be the single biggest thing you can do to save carbon emissions, and yet no one dares to mention it. Because if we did, it would threaten economic growth, the very thing that is causing the problem in the first place.

Visceral fear is not without foundation. If we do not go out shopping, then factories stop producing, and if factories stop producing then people get laid off. If people get laid off, then they do not have any money. And if they don't have any money they cannot go shopping. A falling economy has no money in the public purse and no way to service public debt. It struggles to maintain competitiveness and it puts people's jobs at risk. A government that fails to respond appropriately will soon find itself out of office.

This is the logic of free-market capitalism: the economy must grow continuously or face an unpalatable collapse. With the environmental situation reaching crisis point, however, it is time to stop pretending that mindlessly chasing economic growth is compatible with sustainability. We need something more robust than a comfort blanket to protect us from the damage we are wreaking on the planet. Figuring out an alternative to this doomed model is now a priority before a global recession, an unstable climate, or a combination of the two forces itself upon us. ●

Beyond growth

What makes us fool ourselves that things have never been better? Why do we fail to live within the constraints that our planet and biology have set for us, when future generations will pay the price? As Canadian campaigner and activist **David Suzuki** tells **Jo Marchant**, those are the questions that keep him awake nights

We should act like the animals we are

Is anything more important than the environment? I can't imagine anything more important than air, water, soil, energy and biodiversity. These are the things that keep us alive.

So why do we put the economy first, and use it to define progress?

You would have thought that our first priority would be to ask what the ecologists are finding out, because we have to live within the conditions and principles they define. Instead, we've elevated the economy above ecology. After all, ecology and economics have the same root – "eco", from the Greek *oikos*, for "home". Ecology is the study of home, economics is the management of home, and of course, our home is the biosphere.

How do the economists answer you?

They believe humans are so creative and productive that the sky's the limit, that if we run out of resources, we'll find substitutes. If the substitutes run out, we'll go to the moon, mine asteroids or harvest sunlight in space and microwave it to Earth. They think the whole universe is there as a potential resource.

Isn't space a potential resource?

The option of going into space allows you to pretend that technology will get our asses out of any problem so we don't have to worry,

Profile

David Suzuki received a PhD in zoology from the University of Chicago. He hosts CBC's long-running science show *The Nature of Things*, syndicated in more than 40 countries. He co-founded the David Suzuki Foundation in 1990, to work "to find ways for society to live in balance with the natural world that sustains us". Visit www.davidsuzuki.org.

which is just not true. Limitless resources are a fool's dream that we can never achieve. The reality is we are biological beings dependent on the biosphere. What kind of intelligent creature, knowing that these are our crucial limitations, would act as if we can use Earth as a garbage can and not pay a price for that?

Has any human society ever lived sustainably?

When we were hunter-gatherers we had a very small ecological footprint because all we had was what we could carry from one place to another. But as technology increased, we began to live in large aggregates of villages, and people started to use more than the surroundings could supply. As a result, civilisations collapsed again and again, as Jared Diamond described in *Collapse*. In the past, though, when conditions got more difficult, people were able to move. That's why we spread out from Africa. Well, we filled the world up. Now we're the most numerous mammal on the planet and causing an unprecedented extinction crisis. Our future is very much at stake.

So what can we do now?

We can't go back to scrounging a living off the land – we wouldn't be able to do it. Also, the land wouldn't be able to tolerate that kind of assault from so many people. For example, 85 per cent of Canadians live in large cities. We're stuck with those urban places, so they have to be made much more benign in terms of energy and resource throughput. We've never had to do this in our history.

Will we need to lower our standard of living?

Yes, if you determine your standard of living by how much money you've got or what material goods you have. But if you judge

standard of living by quality of life, by your relationships with other people and your community, then I say that truly sustainable communities offer a far preferable way to live.

What would a sustainable society look like to you?

First, we must acknowledge that we are animals. If you give a speech to children in North America and say: "Don't forget that we're animals," their parents get very angry and reply: "Don't call my daughter an animal, we're human beings." We like to think of ourselves as elevated above other creatures. But the human body evolved to be active, so denying we are biological creatures has taken us in the opposite direction: we stuff ourselves with more than we need, sit on our asses and drive 10 blocks instead of walking! Sustainable living would be much healthier: we would go out and walk around because there would be shops, musicians and people out on the street that we'd want to meet. That's what community is all about.

Plus we have to stop this crazy stuff where cellphones are turning over every six to eight months, where people rush to get the latest iPod, and then it all goes into landfill.

What about population growth?

We're way overpopulated. But it's not just a function of numbers, it also has to do with per capita consumption. The industrialised world has only 20 per cent of Earth's population but uses more than 80 per cent of the resources and produces more than 80 per cent of the toxic waste. I asked a top ecologist at Harvard University how many humans Earth could sustainably support, and he said 200 million if you want to live like North Americans. Even if you only look at industrialised countries, there are way too many of us. When I say this,



people get angry. They say the stores are filled with food, we're living longer than ever, we're better off. Well, the reason we have the illusion that everything is OK is because we're using up what our children and grandchildren should expect to inherit.

How do you hope to persuade governments and businesses to make fundamental changes?

When you talk to politicians, they're just focused on the next election. When you talk to business people, they're just focused on the quarterly report. At the Suzuki Foundation we say to them, let's look ahead a generation. Let's imagine a Canada where the air is clean, and fewer than 15 per cent of kids develop asthma.

"Limitless resources are a fool's dream that we can never achieve"

Let's imagine a Canada covered in forest we can log forever because we're doing it the right way; a Canada where you can drink water from any river or lake, or catch a fish and eat it without worrying about what chemicals are in it. When you define a vision for the future that way, everybody agrees. That's very powerful because you've done two things: we're no longer fighting because we're all on the same side, and we've got a target.

Can you achieve that target?

We have divided foundation activities into nine areas, such as energy, waste, water and food, with targets we believe are achievable in 25 years. We call it "sustainability within a generation". And our parliament just passed a bill mandating that government activities be filtered through the lens of sustainability within a generation. I'm very proud of that.

We also ought to be pulling back on taxes on good things that we want to encourage, and tax the hell out of bad things. We pay CAN\$99 a tonne to put garbage into a landfill but we don't pay to put pollutants into the air! Our corporate community screams and yells at the very suggestion of a carbon tax but I'm sure one is coming, it's only a matter of time.

You're clearly very passionate about this.

I have grandchildren. Anybody that's not passionate about this doesn't give a shit about their grandchildren. I'm 72. I would love to be retired and doing some painting and the other things that I've left off doing all these years, but I don't ever want my grandchild to look at me and say: "Grandpa, you could have done more." ●

Beyond growth



Economists are still failing to grasp the simple message that Earth's resources are finite, says ecological economist **Herman Daly**. Until they do, we will never switch to a sustainable economy and avoid the ultimate crash

On a road to disaster

■ HERE is a salutary tale about the World Bank. The first draft of its 1992 World Development Report, dedicated to sustainable development, contained a diagram labelled "the relation of the economy to the environment". It showed a rectangle labelled "economy", with an arrow entering it labelled "inputs" and an arrow exiting it labelled "outputs". That was it.

It was my job, as senior economist in the bank's environment department, to review the draft and offer suggestions. I said drawing such a picture was a great idea, but it really had to include the environment. As drawn, the

economy was receiving inputs from nowhere and expelling outputs back to nowhere.

I suggested we draw a big circle around the economy and label it "ecosystem". Then it would be clear that the inputs represented resources taken from the ecosystem, and the outputs represented waste returned to it as pollution. This would allow us to raise fundamental questions, such as how big the economy can get before it overwhelms the total system.

When the second draft came back, a large unlabelled rectangle had been drawn around the original figure, like a picture frame.

I complained that it changed nothing. In the third draft, the diagram was gone. The idea that economic growth should be constrained by the environment was too much for the World Bank in 1992, and still is today. The bank recognised that something must be wrong with that diagram – but better to omit it than deal with the inconvenient questions it raised.

That was when I realised that economists have not grasped a simple fact that scientists is obvious: the size of the Earth as a whole is fixed. Neither the surface nor the mass of the planet is growing or shrinking. The same is true for energy budgets: the amount absorbed by the Earth is equal to the amount it radiates. The overall size of the system – the amount of water, land, air, minerals and other resources present on the planet we live on – is fixed.

The most important change on Earth in recent times has been the enormous growth of the economy, which has taken over an ever greater share of the planet's resources. In my lifetime, world population has tripled, while the numbers of livestock, cars, houses and refrigerators have increased by vastly more. In fact, our economy is now reaching the point where it is outstripping Earth's ability to sustain it. Resources are running out and waste sinks are becoming full. The remaining natural world can no longer support the existing economy, much less one that continues to expand.

Booklist

Want to read more?

COMMON WEALTH: ECONOMICS FOR A CROWDED PLANET
by Jeffrey Sachs, Allen Lane/Penguin, £22/\$27.95

Global problems need global solutions, says Sachs in this ambitious call for a new economic paradigm. Hugely authoritative and bursting with energy.

ECOLOGICAL ECONOMICS AND SUSTAINABLE DEVELOPMENT
by Herman E. Daly, Edward Elgar, £25/\$45

This clear-thinking set of Daly's academic essays also includes his heartfelt speeches to the World Bank. A masterclass in sustainable economics from the founder of the field.

THE DOMINANT ANIMAL

by Paul R. Ehrlich and Anne H. Ehrlich, Island Press, \$35
Devotees of the Ehrlichs will be familiar with their eco-message, but it feels more pressing than ever. This marvellous compendium should be required reading.

THE BRIDGE AT THE END OF THE WORLD

by James Gustave Speth, Yale University Press, £16/\$28
A massive plea for junking capitalism as we know it, from one of the world's best-placed environmental policy makers. A must-read.

EARTH IN THE BALANCE

by Al Gore, Earthscan, £9.99
A passionate and intelligent discussion of the environmental crisis we face. First published in 1992, it was rereleased after the success of *An Inconvenient Truth* and resonates even more strongly today.

THE SHADOWS OF CONSUMPTION

by Peter Dauvergne, MIT Press, £16.95/\$24.95
Iconic case studies of unsustainable consumption focused on cars, fuel, meat, refrigerators and one of the most emotive environmental causes, seal hunting.

HOW THE RICH ARE DESTROYING THE EARTH

by Hervé Kempf, Chelsea Green, £7.95/\$12.95
Refreshingly, this slim, searing, openly political essay on environmental degradation points the finger of blame at the left for ignoring ecology, as well as the rich.

DO GOOD LIVES HAVE TO COST THE EARTH?

edited by Andrew Simms and Joe Smith-Constable, £7.99
Twenty-three inspiring essays on how we can have our ecological cake and eat it, too.

To read longer reviews of these books and others, go to www.newscientist.com/channel/opinion

The economy is like a hungry, growing organism. It consumes low-entropy natural resources such as trees, fish and coal, produces energy and useful goods from them, and spits out high-entropy waste such as carbon dioxide, mine slag and dirty water. Mainstream economists are mostly concerned with the organism's circulatory system, how the energy and resources can be efficiently allocated, while tending to ignore its digestive system. As my experience with the diagram showed, the sources of the resources that the organism consumes and the sinks into which it deposits waste are ignored. Effectively, economists are assuming they are infinite.

Because of this, they recognise no limits on the capacity for economic growth. In a report published earlier this year, the Commission on Growth and Development reviewed the experience and policies of 13 countries, including Botswana, Brazil, China and Japan, which since the 1950s have grown at an average annual rate of 7 per cent or more for 25 years or longer. The commission suggests that this is an example the rest of the world should follow. If the global economy were to grow this fast, however, then in 25 years it would have increased to five times its present size. They don't say what would happen after that; presumably we should simply aim to do the same again.

Generally, when the cost of an activity starts to outweigh any benefits, we stop doing it. Buying one ice cream makes sense if it brings us pleasure and satisfies our hunger. Once we have eaten two or three, however, we do not buy more because, despite the pleasant taste, we start feeling sick. This "off switch" is not working for the economy as a whole, though, because our national accounts do not separate the costs of economic activity from the benefits. Instead, both are counted towards a country's GDP. We count as desirable growth both the beneficial activity that causes pollution and the costly activity of cleaning up the pollution, for example. And when cutting down trees and selling the lumber boosts GDP, we subtract nothing for the loss of forests.

The scale of the global economy is approaching the limits of what our planet can cope with. As the oceans are emptied

of fish, forests shrink from logging and levels of pollutants and greenhouse gases in the atmosphere rise, the environmental and social costs of further growth are likely to intensify until we reach a point at which the price we pay for each unit of extra growth becomes greater than the benefits we gain.

In fact, there is evidence that we have passed this point, at least in well-off countries such as the US and UK. Since our GDP accounts cannot reveal whether this has happened or not, scholars have devised ways to track other potential indicators such as health, well-being and the state of our environment. These include the Index of Sustainable Economic Welfare, the Genuine Progress Indicator, the Ecological Footprint, and the Happy Planet Index. They have found that as GDP goes up, these other measures are levelling off and even declining. Economic growth may already be making us poorer rather than richer.

As long as our economic system is based on chasing economic growth above all else, we are heading for environmental, and economic, disaster. To avoid this fate, we must switch our focus from quantitative growth to qualitative

"When the cost of an activity outweighs the benefit, we should stop"

development, and set strict limits on the rate at which we consume the Earth's resources. In such a "steady-state" economy, the value of goods produced can still increase, for example through technological innovation or better distribution, but the physical scale of our economy must be kept at a level the planet is able to sustain. Can we transform our economy from a forward-moving aeroplane to a hovering helicopter without crashing? After 200 years in a growth economy, it is hard to imagine what a steady-state economy might look like, but it does not have to mean freezing in the dark under a communist tyranny (see page 52). Most of the changes could be applied gradually, in mid-air.

The idea of moving to a steady-state economy will appear radical to many, perhaps politically impossible. But the alternative, a macro-economy that is structurally required to grow in scale beyond the biophysical limits of the Earth, is an absurdity, and heading for the ultimate crash. Before we reach that radical physical limit, we are already encountering the economic limit at which benefits of extra growth are increasingly outweighed by the costs. ●

Profile

Herman Daly is one of the founders of the field of ecological economics, which argues that the scale of the economy must be kept within sustainable limits. He was senior economist in the World Bank's environment department from 1988 to 1994, and is now professor of ecological economics at the University of Maryland.

Beyond growth

From the Supreme Court to the White House, Gus Speth helped shape US environmental policy. But, as he tells Liz Else, green values stand no chance against market capitalism

Swimming upstream

When did you first realise that the environment was in trouble?

I was 12. There was a lake in the mountains of North Carolina where I used to go with my grandparents. We arrived one summer and found that a tannery had dumped its waste into a river that flowed into the lake. The whole thing stank to high heaven and frothed around the edges. I'll never forget it.

But you read law not science?

Yes, but then in the late 1960s when I was finishing law school a group of us got together and created what became the Natural Resources Defense Council. This was a public interest, non-profit environmental law firm. It's still doing fabulously today.

What kind of cases did you take?

The US had just passed the National Environmental Policy Act, which meant all federal projects had to have an environmental impact statement. We used it to challenge a series of destructive federal projects, from water projects to offshore drilling. I even helped to trip up the fast breeder reactor project.

Were you able to continue that work when you joined Jimmy Carter's administration in 1977?

I was principal environmental adviser at the White House, and we were trying to undo a lot of destructive water development projects. But I'm most proud of the fact that we pushed

Profile

James Gustave Speth, dean of the school of forestry and environmental studies at Yale University, co-founded the Natural Resources Defense Council, advised Jimmy Carter, and headed the UN Development Programme. His latest book is *The Bridge At The Edge of the World: Capitalism, the environment, and crossing from crisis to sustainability*.

the global warming issue hard, starting in 1979. Carter took it very seriously and I think he would have done something had he stayed in office. I have a copy of a news story in *The New York Times* in which I called for capping carbon dioxide concentrations at 50 per cent above pre-industrial levels. We're likely to fly right past that number shortly.

You later headed the UN Development Programme. Wasn't that a big change from the environment? We were mainly concerned about world poverty, but the environment was central to that, in terms of conserving the resources people depend on. Our mantra became "sustainable human development".

After decades of work on the environment, you've painted a bleak picture in your latest book. Why? I was trying to get to grips with a paradox: the environmental community is stronger, better funded and more sophisticated than ever, so why is the environment going downhill so far that we face the prospect of a ruined planet?

What do you think?

My conclusion is that we're trying to do environmental policy and activism within a system that is simply too powerful. It's today's capitalism, with its overwhelming commitment to growth at all costs, its devolution of tremendous power into the corporate sector, and its blind faith in a market riddled with externalities. And it is also our own pathetic capitulation to consumerism. Even as the environmental community swims more strongly against the current, the current gets ever stronger and more treacherous, so environmentalism slips under. The only solution is to get out of the water, take a hard look at what's going on and figure what needs to be done to change today's capitalism.



Can we really reform capitalism?

Only if the issues I've dwelled on in *The Bridge At The Edge Of The World* become a subject of widespread discussion. The environmental community, at least in the US, is weak when it comes to talking about lifestyle changes, about consumption, and it is reluctant to challenge growth or the power of corporations. A lot of the big issues have political immunity. We need a new political movement in the US to drive this.

"We have enough money, we're just spending it poorly"

What should a movement like this be aiming for?

The economy we have now is an inherently rapacious and ruthless system. It is up to citizens to inject values that reflect human aspirations rather than just making money. But groups, whether they're concerned about social issues, social justice, the environment or effective politics, are failing because they're not working together. I want to see them join into one hopefully powerful political force.



Arguing that economic growth is the only way to make poor people richer is misguided, says analyst Andrew Simms

Trickle-down myth

■ THE last line of defence for advocates of indefinite global economic growth is that it is needed to eradicate poverty. This argument is at best disingenuous. By any reasonable assessment it is claiming the impossible.

Here's why. During the 1980s, for every \$100 added to the value of the global economy, around \$2.20 found its way to those living below the World Bank's absolute poverty line. During the 1990s, that share shrank to just 60 cents. This inequity in income distribution – more like a flood up than a trickle down – means that for the poor to get slightly less poor, the rich have to get very much richer. It would take around \$166 worth of global growth to generate \$1 extra for people living on below \$1 a day.

Fair enough, you might think, it's worth it. But consider the resources it would require. The measure known as the "ecological footprint" compares what we harvest from the biosphere, and return to it as waste, with the biosphere's ability to absorb this and regenerate. It reveals whether we are living within our means or eating into our ecological capital.

Humanity has been overshooting the biosphere's capacity to sustain our activities every year since the mid-1980s, and each year we do it sooner. In 2008, we had consumed the ration for the year by 23 September, five days earlier than the previous year. It would take at least three Earths to sustain us if everyone had the lifestyle of people in the UK; five if we all lived like Americans.

Perversely, under the current economic system, reducing poverty by a tiny amount will necessitate huge extra consumption by those who are already rich. To get the poorest onto an income of just \$3 per day would require an impossible 15 planets' worth of biocapacity. In other words, we will have made Earth uninhabitable long before poverty is eradicated. If we are serious about

helping the poor rather than the rich, we need a new development model.

Let's say we want an economy that gives us long, satisfied lives, within the tolerance levels of supporting ecosystems. Progress then requires maximising the efficiency with which an economy converts natural resources such as fossil fuels into desirable human outcomes. At the New Economics Foundation, we compare the ecological footprint with life expectancy and satisfaction, to see how well different nations are doing. By this measure, middle-income developing countries – and especially small island states – score best, while developed nations lag behind. Per unit of carbon, Europe delivers less well-being for its citizens now than it did in 1961. Across Europe, however, people report comparable levels of well-being whether they consume a lot or a little. In the UK, for example, people are just as satisfied whether their lifestyles would require eight planets to sustain or just one. This is a message of hope: good lives don't have to cost the earth.

But we have to overcome knee-jerk rejection of the "R" word – redistribution. With global growth constrained by the need to limit carbon emissions (remember that the poorest will be the first and worst victims of climate change), redistribution becomes the only viable route to poverty reduction. Given the triple crunch of the credit crisis, high oil prices and climate change, industrialised economies need radical, practical plans to address all these issues at once. Susan George discusses one approach on page 50. Another is the Green New Deal, launched last month. It calls for capital controls and tax reforms to stabilise the economy and raise funds for a massive and quick environmental transformation, creating thousands of jobs while narrowing the gap between rich and poor.

It took just days for governments in the UK and US to abandon decades of economic doctrine to try to rescue the reckless financial system from complete meltdown. Why should it take longer to introduce a plan to stop the planet crunch brought on by an equally reckless and even more dangerous obsession with growth? ●

Are there recent models of this "coming together"?
The US civil rights movement of the 1960s. People would have to be willing to take those kinds of risks.

How do you sell capitalism without growth?
The US has been growing between 3 and 3.5 per cent a year for a long time. Is there some growth dividend that's being put into better social conditions and services? No. Is it being spent protecting our environment? No. It's a snare and a delusion. We have enough money, we are just spending it poorly. To invoke growth as a solution creates barriers to dealing with the real problems.

What things do need to grow?
In the US we have huge social needs to meet, sustainable industries to create, technologies to grow, decent healthcare to create. We need to focus on those things and not sacrifice them to growing the aggregate economy. I'm not advocating state socialism, but I am advocating a non-socialist alternative to today's capitalism. If we took one-tenth of 1 per cent of what we spend on trying to prop up the current system, and put it into exploring the future, we'd be making good progress. ●

Profile

Andrew Simms is policy director of the New Economics Foundation in London, UK. He is co-editor of *Do Good Lives Have to Cost the Earth?* (Constable 2008).

Beyond growth

Susan George is known for her critiques of corporate-driven globalisation and hard-hitting books on hunger, development and debt. Now, she argues, we can borrow lessons from the early 1940s to transform our shattered economies and halt runaway climate change before it's too late

We must think big



OUR poor battered world is beset by multiple crises. There is mass poverty, and growing inequality within and between rich and poor countries. The financial disaster which began with sub-prime mortgages has spread inexorably throughout the US and elsewhere, threatening to plunge the global economy into a prolonged period of stagnation as severe as the Depression. Most ominous of all, climate change and species destruction are accelerating faster than most scientists, much less governments, thought possible.

These crises feed back into and intensify each other. After years of irresponsible "innovation", huge financial institutions are bailed out by the public purse and top management takes the money and runs, while millions lower down lose their jobs and often their homes. Seeing the housing balloon shrivel, speculators stampede into commodities markets, spurring the rise

of food and energy prices. Dramatically higher prices for staples plunge another 150 million people globally into destitution. Resource-poor communities grab what they can, fell trees, kill animals and over-exploit the little land they have, but the rich cause far greater damage with their dinosaur-like ecological footprints.

Piously pretending to reduce its carbon dioxide emissions, the US devotes more than a third of its corn and soya land to agri-fuels, pushing food prices further skyward. Global warming and the fury of the storms it provokes hit the poor and the poorer regions of Earth hardest, just as the Intergovernmental Panel on Climate Change (IPCC) long foresaw.

So is there an escape route? Yes, but not the one well-meaning environmentalists have long advocated. Sorry, but "we" can't save the planet even if "we" halve our energy use by tomorrow. I'm not suggesting that individuals

should not make every change they can, but they should not harbour any illusions that personal behaviour, however carbon-virtuous, can do the trick. The worst offenders will not desist and voluntary measures are ineffective. Scale is the problem, and our task is to promote a quantitative and qualitative leap in the scale of environmental action, recognising that big can be not just beautiful but crucial if we hope to avert the worst.

Is such a leap possible? Is the planet salvageable as long as international capitalism prevails, with its focus on growth and profits at all costs, predatory resource capture and footloose finance? As a wise man said: "All for ourselves and nothing for other people seems, in every age of the world, to have been the vile maxim of the masters of mankind." That was Adam Smith in the *Wealth of Nations*, not Karl Marx.

If Smith was right and our "masters"

Take action

continue to display both greed and avarice, must we organise world revolution before we can hope to save Earth? Is there a single point of attack? If so, please tell me the name of the tsar and the address of the Winter Palace. It's not to be found on Wall Street, which not only survived 9/11 but seems to have captured the US government, despite a radical winnowing of the major firms. Nor would anyone welcome the political systems that shrouded those vast areas where revolution did occur. Somehow, though, because our present system seems bent on catastrophe, we need a third way between red-in-tooth-and-claw capitalism and a worldwide uprising as unlikely as it is utopian.

There is a historical precedent. When the Allies faced fascism in the second world war, it was as dire a foe for them as climate change is for us. The US had not yet fully emerged from the Depression, but it had in Franklin D. Roosevelt a president who understood what was required. Under his guidance, the economy was shifted to a war footing in an amazingly short time. My native city, Akron, Ohio, the "rubber capital of the world", switched to producing tyres and equipment for the army and air force. Every other industrial centre also switched to meet military needs. Chief executives became prestigious "dollar-a-year men", paid that symbolic sum by the treasury for meeting government quantity and quality targets. Many framed the cheque like a badge of honour.

Yes, there were still worker-management conflicts, but on the whole it was a time of opportunity, especially for women and minorities. Workers were well paid, everyone pitched in, "victory gardens" were cultivated, children used their allowances to buy war stamps, petrol was rationed. The country had never been so united before – or since. The war pulled the country out of the Depression at last. It was Keynesian economics, named after British economist John Maynard Keynes.

A similar effort is required to fight environmental meltdown and it would be less difficult than it sounds. The political point is that ecological Keynesianism is a win-win scenario that could provide something for everyone. People are generally way ahead of governments in recognising danger, and they

tend to build coalitions to convince politicians they will vote for whoever takes a specific crisis as seriously as they do. Politicians can win on a Keynesian environmental programme because now, as then, it promises a society of highly skilled, highly paid quality jobs and renewed export opportunities.

But where is the money to come from for this? The world is actually awash with money, the problem is getting at it. According to US financial services giant Merrill Lynch, 10 million people worldwide are sitting on \$40 trillion of investable cash. Banks must be told that in exchange for the bailouts they must devote X per cent of their loan portfolios to environment-friendly products and processes at below-market interest rates. They can make up the difference by lending to big greenhouse polluters at 10 per cent.

"Politically, ecological Keynesianism is a win-win scenario"

Stringent standards for new buildings have to become the norm, while older ones can be retrofitted on easy terms; families and landlords can be offered financial incentives for installing green roofs and solar panels – and sell excess energy to the grid. Research can be oriented towards alternative energies and strong, ultra-light materials for aircraft and vehicles. Technically speaking, we already know how to do these things, although some clean solutions are still more costly than dirty ones. Mass-produced, that could change.

The environmental crisis provides an ideal opportunity to get the global financial system under control. Taxing international currency transactions and other market operations needs only political determination and some software. Debt cancellation for poor countries promised by the G8 for a decade must happen, with the requirement they contribute to the global effort through reforestation, soil conservation, and the like. Tax havens would have to go. Half of all world trade currently passes through them; they allow rich people and corporations to stash trillions in assets that could provide governments with at least \$250 billion a year in tax revenues.

What about reluctant or hostile executives? Let's create an ultra-exclusive Order of Carbon Conquerors or Eco Heroes, give them shiny green-gold silk rosettes for their buttonholes, banners for their energy neutral homes, and fanions for their efficient, lightweight cars. We could even pay them \$1 a year. Wouldn't that be nicer than another war? ●

Profile

Susan George is chair of the board of the Transnational Institute, an Amsterdam-based international network of activist-scholars who provide critical analyses of global problems (www.tni.org). Her most recent book is *Hijacking America* (Polity).

Want to do your bit?

“Buy less stuff. And join and support Friends of the Earth.”

Herman Daly, ecological economist
University of Maryland, College Park, US

“Vote. Or better yet, get involved in politics at any level and advocate green economics.”

Julia Mamon, secretary general of the
International Union for Conservation of Nature

“In a speech in April 1967, Martin Luther King called on the US to shift from a ‘thing-oriented society to a person-oriented society’. It is a message that resonates with today's challenges.”

John Beddington, chief scientific adviser
to the UK government

“Go outside much more and connect with the environment, and cut your personal consumption of meat in half.”

Gus Speth, dean of the school of forestry and
environmental studies at Yale University

“Pick an aspect of the crisis you are interested in, join an organisation that tries to do something about it and build alliances with others.”

Susan George, chair of the board, Transnational Institute

“Buy strategically: products that not only do their job more sustainably, but send market signals back through the economy.”

Alex Steffen, executive director, WorldChanging.com

“Sign up to take monthly actions at onehundredmonths.org; do a simple survey at happyplanetindex.org and join a Transition Town initiative.”

Andrew Simms, policy director,
New Economics Foundation

For more advice, please visit
www.newscientist.com/channel/opinion

How we kicked our addiction to growth

The transition to a sustainable society will throw up massive challenges. How will we make a living? And what will happen to all those bankers? Here's a vision of what a "steady state" economy might be like 10 years after it gets under way

■ IT'S 2020, and we are a decade into a huge experiment in which we are trying to convert our country to a sustainable or "steady-state" economy. We have two guiding principles: we don't use natural resources faster than they can be replenished by the planet, and we don't deposit wastes faster than they can be absorbed.

In our society, scientists set the rules. They work out what levels of consumption and emission are sustainable – and if they're not sure they work out a cautious estimate. Then it's up to the economists to work out how to achieve those limits, and how to encourage innovation so we extract as much as possible from every scrap of natural resource we use.

They are using two main mechanisms for doing this. The first is a cap-and-trade system, under which companies can buy and sell emissions permits. This is working well for reducing carbon emissions, for example. The second is to change what we tax. We are gradually abolishing income tax (a very popular decision!) to encourage people to add as much value as possible to the resources they work with. Instead we are taxing resources at the point at which they are removed from the biosphere: oil as it is pumped from the ground, for example, or fish as they are scooped from the sea. This raises the price of those resources, and encourages people to use them sparingly. All that excess supermarket packaging disappeared overnight.

An incidental benefit of this tax system is that it's easy to enforce. Cheats can no longer dodge taxes by hiding their income. Unfortunately it is also regressive: poorer people end up paying a higher proportion of their incomes on goods than the rich do. We offset

this by using some of the proceeds to fund benefits programmes and projects for them.

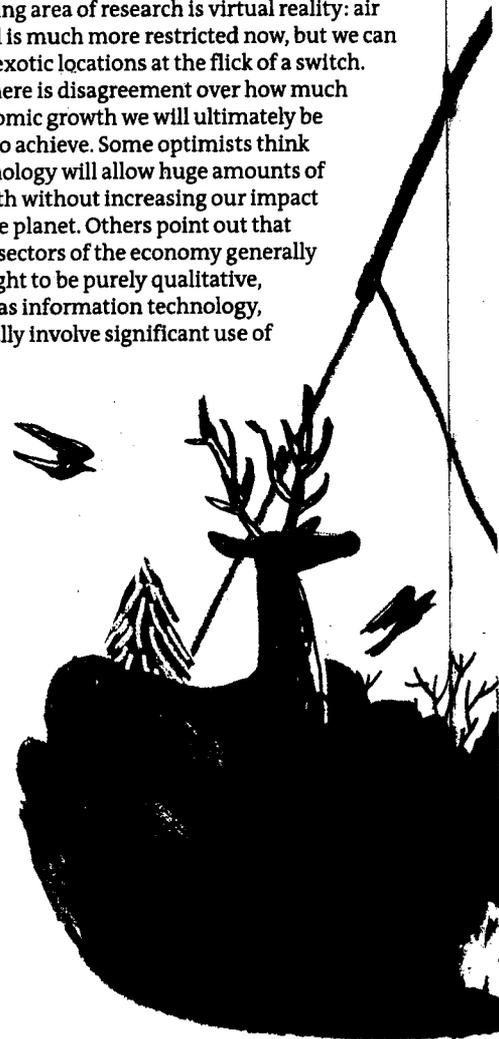
Without economic growth to raise incomes, we have to tackle poverty differently. We are gradually redistributing resources by setting upper limits for income inequality. It was tricky deciding what the permitted range of incomes should be – one that rewards real differences and contributions rather than just multiplying privilege. Plato thought it was a factor of 4. Universities, civil services and the military have always seemed to manage with a factor of 10 to 20, but in the US corporate sector before we began this experiment it was over 500. As a first step, we are aiming to lower the overall range to a factor of 100, so if the lowest salary in a company is \$10,000, the highest for a top manager is \$1 million. Eventually, we may try to bring this down to a factor of 30.

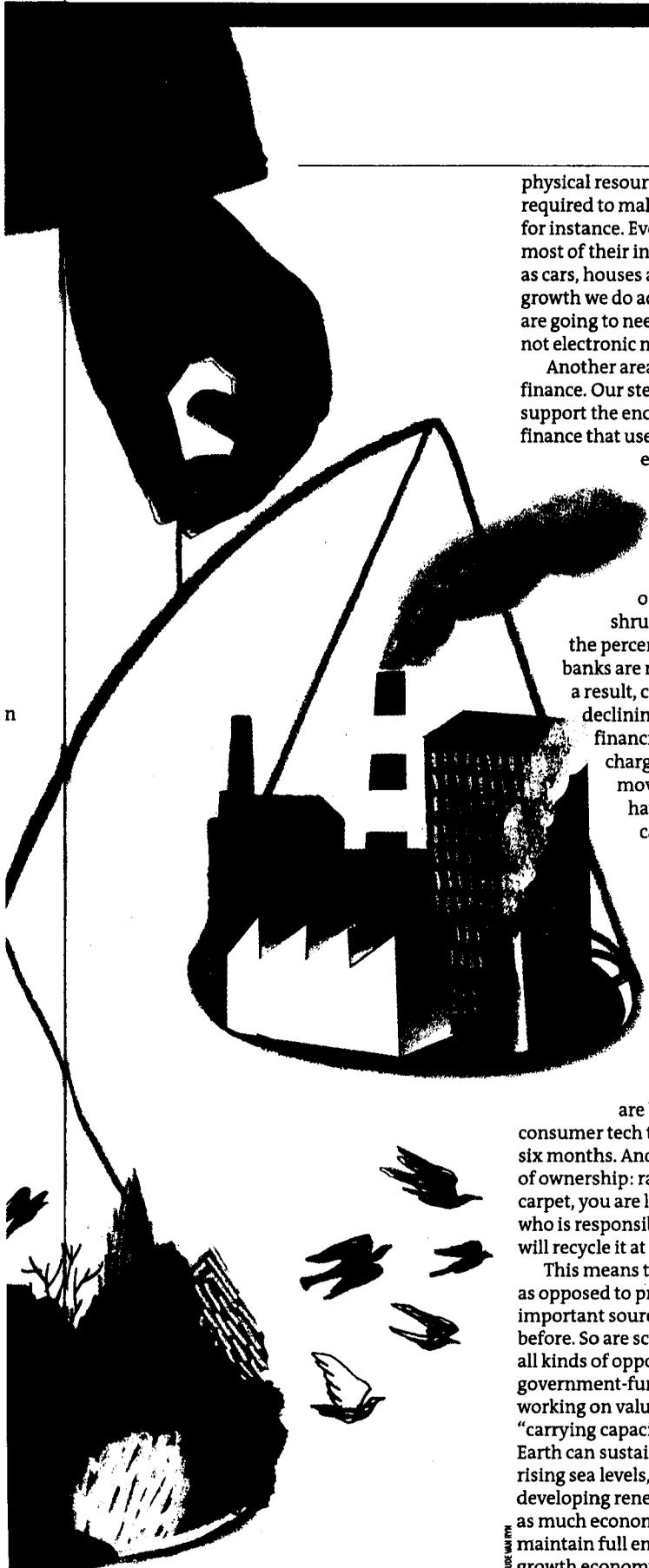
So what about growth? It is still allowed, but only as long as it doesn't breach the limits set by ecologists. Interest rates have therefore fallen very low, although not to zero. Though the rate of physical throughput of resources is limited, increases in efficiency and developments in technology are allowing us to get more and more out of the resources we have. This increases the value of the economy.

When we began this transition, for example, we introduced a carbon tax which made petrol-fuelled travel prohibitively expensive. That limited car journeys, but also triggered huge investments in public transport, as well as in the technology required to run vehicles on renewable energy. That research has paid off, so cars are becoming much more affordable. Another

thriving area of research is virtual reality: air travel is much more restricted now, but we can visit exotic locations at the flick of a switch.

There is disagreement over how much economic growth we will ultimately be able to achieve. Some optimists think technology will allow huge amounts of growth without increasing our impact on the planet. Others point out that even sectors of the economy generally thought to be purely qualitative, such as information technology, actually involve significant use of





physical resources – the raw materials required to make computers and monitors, for instance. Even people working in IT spend most of their income on physical goods such as cars, houses and holidays. Besides, for the growth we do achieve to benefit the poor, they are going to need clothing, shelter and food, not electronic music and internet recipes.

Another area that has changed hugely is finance. Our steady-state economy can't support the enormous superstructure of finance that used to be built around expectations of future growth.

Investment is mainly for replacement and qualitative improvement, and the enormous pyramid of debt that was previously balanced on top of our economy has shrunk. We are gradually raising the percentage of money deposited that banks are required to keep in reserve. As a result, commercial lending is declining – banks get their income by financial intermediation and service charges instead – and we are moving to a culture in which you have to save money before you can lend or invest it.

We are also producing different kinds of goods. Now that we are paying the environmental costs of what we use, natural resources are expensive. So making short-lived, disposable goods no longer makes economic sense. Today, we only make what we need, and products are built to last – so no more fun

consumer tech that has to be updated every six months. And we're developing new models of ownership: rather than buying a car or carpet, you are likely to lease it from an owner who is responsible for maintaining it, and who will recycle it at the end of its useful life.

This means that maintenance and repair – as opposed to production – are much more important sources of employment than ever before. So are science and technology. We have all kinds of opportunities there, from the government-funded ecologists and scientists working on values for concepts such as "carrying capacity" (the number of people Earth can sustain) or modelling the effects of rising sea levels, to the entrepreneurs developing renewable technologies. Without as much economic growth as before, we can't maintain full employment – but then, our old growth economy wasn't so good at doing that

either. Instead, people work part time, generally as a co-owner of a business rather than as an employee. The whole pace of life is more relaxed. Incomes are lower but we are rich in something that many of us had never experienced before: time.

Completely free trade isn't feasible any more, of course, because we have to count many costs to the environment and the future that foreign firms in growth economies are allowed to ignore. So we allow regulated international trade under rules that compensate for those differences. As the number of countries committing to sustainability increases, however, we're forming a rapidly expanding club within which we can trade freely. Eventually we hope that club will encompass the whole world.

One of the toughest issues, politically, has

“Making short-lived, disposable goods no longer makes sense”

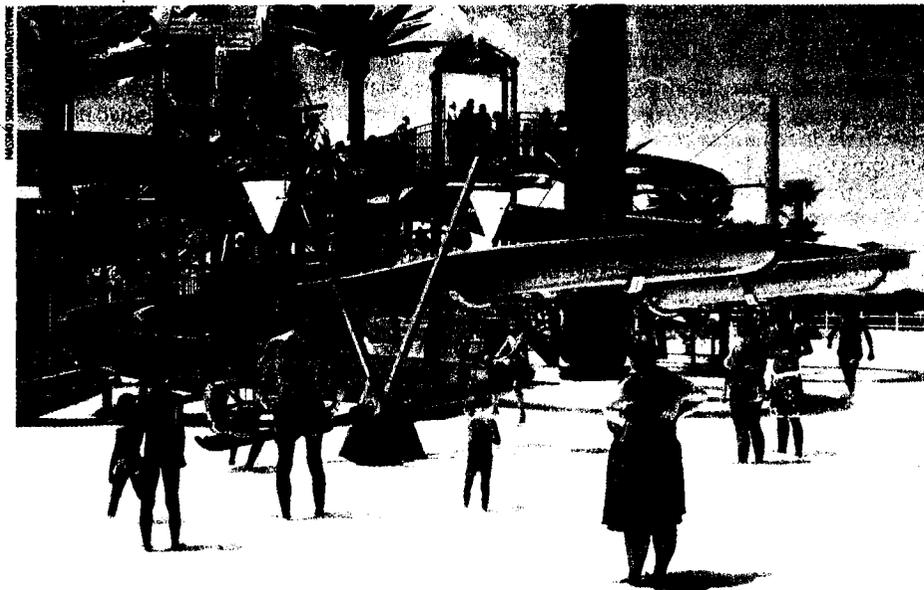
been population. We know that we will have to stabilise our population – and that includes immigration rates as well as birth rate. We're not quite there yet, but we are moving in that direction. This will push up the average age of the population, putting pressure on the pensions system, but our economists are busy working out what contributions will be needed to make it sustainable.

How is all this affecting our quality of life? The outlook here is pretty good. Before we started our experiment, psychologists and economists had found that the correlation between absolute income and happiness extends only to a certain threshold. Once basic needs are satisfied, only relative income – how well off we are compared to our peers – influences how happy people say they are. This held for comparisons between rich and poor countries at a given time, and in comparing a single country before and after a significant growth in income. Fortunately, then, abandoning economic growth has not meant a decline in total happiness.

Ten years down the line, the sacrifices we have made have been less onerous than we feared they might be. We have escaped the doomed model of economic growth, and no one is worse off. It's even possible that we have all become a little bit happier, and it's good to know that now our grandchildren have a chance of a better life too. ●

This scenario is based on a discussion with Herman Daly (see profile page 47)

Beyond growth



The good life

Breaking our dependence on profits and growth would make our lives better, not worse, says philosopher Kate Soper

■ BACK in the 1970s, few people listened to scientists' warnings about global warming. Even fewer heeded calls to curb economic growth so we could protect the environment. Today, these ideas are starting to be appreciated. We are hearing ever more about the contradiction between hanging on to a habitable planet and the expansionary demands of the global market.

Yet as Tim Jackson outlines (see page 42), people and their governments – which continue to urge the growth agenda in Canute-like defiance of the rising waters and raging heats they have been told will ensue – are still largely in denial about this conflict. A key factor in this is the widespread presumption that becoming more sustainable will inevitably make our lives worse, which leads to green campaigners being dismissed as regressive killjoys bent on returning us to a primitive existence. Perhaps to counter this idea, those who take global warming seriously tend to focus on technical fixes that might allow us to continue with our current ways.

It doesn't help that virtually all representations of pleasure and the life we should aspire to come from advertising, with

its incessant message that our happiness is dependent on consuming ever more "stuff". We hear little about the joys of escaping the stress, congestion, ill-health, noise and waste that come with our "high" standard of living.

In fact, there is plenty of evidence that the work-dominated and materially encumbered affluence of today is not giving us enjoyable lives, and that switching to a more sustainable society in which we work and produce less would actually make us happier. For example, rates of occupational ill-health and depression have been shown to be linked to the number of hours we work, and once a certain level of income is reached further wealth does not correlate with increased happiness.

The absurdity of our situation is illustrated

Profile

Kate Soper is based at London Metropolitan University. She specialises in the theory of needs and consumption, and environmental philosophy. Soper is the author of *What is Nature? Culture, politics and the non-human* (Blackwell, 1995) and has recently completed a research project on alternative hedonism (www.consume.bbk.ac.uk).

by the way our economy profits from selling back to us the pleasures that we have lost through overwork: the leisure and tourist companies that sell us "quality time"; the catering services that provide "home cooking"; the dating and care agencies that see to personal relations; the gyms where people pay to walk on treadmills because the car culture has made it unsafe or unpleasant to walk outside. As the economy continues to expand, consumer culture becomes evermore reliant on our willingness to accept this.

A growing number of people are starting to realise that there may be more to life than working to spend. Troubled by the negative impacts of a high-stress lifestyle, they are simplifying their lives and rethinking their values and desires. If we were to shift en masse to a less work-intensive economy, it would reduce the rate at which people, goods and information had to be delivered, cutting both resource use and carbon emissions.

Rather than entailing any sacrifice to our lifestyles, this would bring huge benefits. People would reclaim time for personal and family life. They would commute less and enjoy healthier modes of travelling such as walking, cycling and boating. Supermarket shopping would cede to a resurgence in local stores, making town centres more individual and boosting local communities. All this would transform urban and rural living, and provide more tranquil space for reflection, as well as opportunities for sensual experience now denied by harried travel and work routines. These revised ideas of the "good life" might also inspire less-developed countries to reconsider the conventions and goals of development, enabling them to avoid some of the less desirable consequences of the current model.

Of course, we would have to sacrifice some conveniences and pleasures: creature comforts such as regular steaks, hot tubs, luxury cosmetics and easy foreign travel. But constant comfort can dull as well as gratify appetites, and human ingenuity will surely contrive a range of more eco-friendly excitements.

Shifting to a steady-state economy is a daunting prospect. Yet as Herman Daly outlines on page 46, it is unrealistic to suppose that we can continue with current rates of expansion in production, work and material consumption over the next few decades, let alone into the next century.

In a climate of financial turmoil and extensive cynicism about government commitments on global warming, more honesty about this might win cooperation and respect from the electorate – especially if politicians start to focus on the fulfilments of living in a sustainable society. ●