On: 05 March 2012, At: 07:32
Publisher: Taylor & Francis
Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK

Journal of Integrative Environmental Sciences

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/nens20

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Available online: 28 Feb 2012

To cite this article: Andrew Blowers, Jan Boersema & Adrian Martin (2012): Is sustainable development sustainable?, Journal of Integrative Environmental Sciences, 9:1, 1-8

To link to this article: http://dx.doi.org/10.1080/1943815X.2012.666045

Journal of Integrative Environmental Sciences
Vol. 9, No. 1, March 2012, 1–8

Taylor & Francis
Taylor & Francis Group

EDITORIAL

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Andrew Blowers, Jan Boersema and Adrian Martin

This journal proclaims its concern with "the relationships between science, society and policy and a key aim is to advance understanding of the theory and practice of sustainable development". We have certainly endeavoured to publish research articles, from scholars in the natural and social sciences, which put forward what our title calls an "integrative" approach. This integration is intended to be at once interdisciplinary, crossing not only disciplinary divides but also bringing together science and policy and policy and practice. And this integration is to be achieved through a focus on sustainable development as the integrating concept. But, it may be asked, has this concept any validity or utility as the *leitmotif* of a journal? Is it merely a routine recognition of a normative concept that is now pretty much axiomatic for environmental scientists and policy makers alike? Or, does the concept still retain sufficiently positive, purposive and practical connotations to fulfil its presumed role as an overarching goal of scientific understanding and political policy-making? The answer is, we suspect, a bit of both of these. It all depends on perspective, on value and viewpoint; in short, on what we think we mean by sustainable development.

It is worth going back to the original identification and definitions of the concept a generation ago, beginning naturally with the Brundtland pronouncement in 1987. "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission 1987, p. 44). This theme has been oft repeated since in a variety of versions and contexts. For example, the International Atomic Energy Agency (IAEA), referring in 1997 to radioactive waste stated that society should be protected "in such a way that the needs and aspirations of the present generation are met without compromising the ability of the future generations to meet their needs and aspirations" (IAEA 1997, Article 1). As might be expected the IAEA had a particular concern that impacts on health "will not be greater than relevant levels of impact that are acceptable today" (IAEA 1995, Principle 4). By contrast, the UK Government of Margaret Thatcher stressed the notion of stewardship involved in sustainable development. The Prime Minister herself announced in a speech to the Royal Society in 1988 that "we do not hold a freehold on our world, but only a full repairing lease". This was formulated as a statement of principle, a moral imperative, in the White Paper *This Common Inheritance:* "We have a moral duty to look after our planet and to hand it on in good order to future generations" (HMSO 1990, p.10). Over the years such heady and idealistic declarations have, perhaps, become more pragmatic, more vacuous even. By 1999 the UK's approach was defined as providing "a better quality of life for everyone, now and for generations to come"

ISSN 1943-815X print/ISSN 1943-8168 online

http://dx.doi.org/10.1080/1943815X.2012.666045
http://www.tandfonline.com

(1999) and expanded by 2005 to become, "The goal of sustainable development is to enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life, without compromising the quality of life of future generations". Many, many more definitions in a similar vein might be quoted but the essential point here is that sustainable development became and remains what Dryzek has called, "the dominant global discourse of ecological concern" (1997, p. 123). But, as even these few quotations show, sustainable development is a shifting discourse, it is not the same as when it first emerged. The question is whether it continues, as a concept, to inspire scientific purpose and, as a strategy, to motivate political action. In short, is sustainable development sustainable in theory or in practice?

Perhaps the best way to look at this is to focus on what is the essence of sustainable development. There are two linked concerns in most definitions. The one is the concern for maintaining, if not improving, the conditions for living. This is expressed in terms of meeting needs and aspirations, looking after the planet, providing a better quality of life and so on. The other is a concern for bequeathing an acceptable inheritance to future generations. This comes over in such terms as not compromising the future, handing on in good order, refraining from burdening future generations. But, it can be argued that sustainable development has become diverted from its central purposes and instead been appropriated to describe and justify approaches which are far more concerned with the demands of the present than the needs of the future. We can examine this proposition by looking at three dimensions of sustainable development – the economic, the environmental and the political.

Development as growth

Taking the economic first, the focus of economic policy is fixated on the notion of "growth". But, self-evidently growth is not the same as "development" which is a qualitative concept incorporating ideas of improvement and progress, including cultural as well as economic dimensions. Development in its sustainable sense is suggestive of such ideas as quality of life and well-being. These are difficult concepts to define, let alone realise. For instance, well-being includes the sense of identity, development and positive self-image of individuals, communities and countries. It is much easier to contemplate the more material, quantifiable and recognisable objective of growth. Indeed, in times of economic hardship and recession the need to achieve growth becomes an obsession, a political imperative. Quality of life and well-being though present in political rhetoric become, in practice, gratuitous ideas remote from the harsh reality of retrenchment and recovery of growth. The reality depends on where we live. For example, in subsistence economies well-being might be defined in terms of maintaining, improving and passing on the means of that subsistence, fish stocks, soil quality, forests and so on. In the developed world, where economies are less directly linked to environment the needs of the future are focused more immediately around providing work for the present generation especially the young. It is a similar picture during times of plenty, like the long boom experienced in much of the world economy until it was summarily halted by the banking and credit crisis of 2008. The emphasis is on maintaining growth satisfying consumer demand for the present and immediate future. Both in times of scarcity and of plenty the economic prescription is for *sustainable growth*, not sustainable development.

This has repercussions for the environmental dimension of policy. Environmental issues have continued to "enjoy" a massive amount of attention from scientists,

policy-makers and the media. The threats to environments and to the planet itself are a constant and prominent theme. The litany of environmental degradation is long: the destruction and reshaping of landscapes through quarrying, mining and extensive farming; the loss of amenity through wind farms, pylons, motorways, pipelines, high speed rail and other infrastructures; the exploitation of non renewable resources; the unwanted detritus and pollution from emissions to air, discharges to sea and disposal on land – all these and more form the quotidian diet of environmental information. As the scale of resource depletion and environmental pollution has increased, environment has become recognised as a global issue, with climate change its inevitable and destructive consequence. Except among a few vocal sceptics, the so-called climate change deniers, the inevitability of climate change has become a commonplace, a matter of general acceptance. Indeed, this familiarity is now part of the problem. We have become used to living with the threat to the point where familiarity with the knowledge is at odds with the absence, as yet, in most areas of sufficient palpable confirmation of the impacts. A pervading indifference, a combination of fatalistic acceptance and hedonistic denial, makes the problem seem less urgent, less requiring of changing life styles than the predictions suggest is urgent. There is an eerie Catch-22 type paradox about this. Although we have the knowledge of the dangers and of the need to take effective action now, the problem poses no immediate hardship or reason to act. But when the problem materialises and action becomes unavoidable it may be too late. In these circumstances, observation of the precautionary principle, taking action in the absence of certainty, however desirable, becomes exceedingly difficult.

Of course, that is not to say nothing is being done now. Enormous scientific and political effort has been mobilised, most notably through the IPCC process but also evident in the efforts to combat climate change in many countries, to understand the processes of climate change and to develop international agreements and protocols to secure adaptation and mitigation of its effects. And the efforts at international level have been replicated at national and local levels in an array of policies which put sustainable development at the heart of the agenda. But, it quickly becomes evident that economic growth not environmental sustainability is the policy imperative. The British land use planning system provides a telling example. The notion that the environment is an impediment to growth has been a consistent political theme among planners. Way back in the 1980s a White Paper provocatively titled *Lifting the Burden* proclaimed that there was a need ''to accept a presumption in favour of development'' (HMSO 1985, para. 3.4). This central idea is very much back in business. Although, according to the most recent policy statement, the purpose of planning is to achieve sustainable development, it is really concerned ''to support sustainable economic growth'' which, we have suggested, is an altogether different matter. It goes on in exhortation, ''Planning must operate to encourage growth and not act as an impediment'' (Dept. of Communities and Local Government 2011, p. 3). Economic growth is an essential component of sustainable development, so the argument runs, for without it a sustainable future cannot be achieved.

Sustainable development as environmental conservation

This comfortable assumption must be challenged. It is not that the assumption is necessarily wrong, rather, it is the practice of sustainable development or the lack of

it that is the problem. When choices are made there is a tendency to put imminent economic gains before longer term environmental losses. The present is valued more than the future since the reality is experienced rather than envisioned. Discounting seems to be both economically and psychologically sensible. As Giddens puts it, 'People find it hard to give the same level of reality to the future as they do to the present. Thus a small reward offered now will normally be taken in preference to a much larger one offered at some remove' (2009, pp. 2–3). Discounting is more problematic when weighing up disadvantages to the future against advantages to the present. Longer term risks to environments tend to be discounted in favour of more immediate gratification. This is true of big projects, which have a machismo fascination for politicians who want to appear to be doing something visible, big and impressive. Hence the fascination with building new airports, fast railways, container ports, mega power stations, giant shopping malls and so on, all of which plant a heavy ecological footprint into the future. The push towards sustainable practices is gathering momentum, witness the proliferation of solar panels, protection of habitats, localised energy networks, afforestation, tighter pollution controls to mention a few, but is it enough, sufficiently widespread and in time to counteract the continuing path of unsustainable growth? Environmental conservation is evident in policies, plans and programmes for development. Environmental conservation in practice tends to mean maintaining a balance either through preservation or by substitution. But conservation in the sense of aesthetic design, preservation of specific species and habitats, compensation for loss or risk, conversion of polluted landscapes, recovery of waste will not arrest the accelerating loss of resources, degradation of ecosystems and pollution of atmosphere that is contingent on the doctrine of growth in both developed and developing countries. Environmental conservation in its various forms may be a necessary condition of environmental sustainability but it is not sufficient. It is necessary not merely to maintain a balance but to retain and restore environments, including the atmosphere itself, that are becoming depleted and polluted to the point where, in the absence of action, widespread and catastrophic consequences will set in. It follows that in terms of environmental sustainability, policies for environmental conservation are meaningless if not supported by the far tougher actions required for *environmental protection*.

This brings us to the political dimension of sustainable development. Politics here needs to be seen in its broadest terms, as a process involving collective choices at a variety of levels from the local to the global. And this requirement of collective choice confronts us with another problem. As Meyer Hillman observes, ''It is totally unrealistic to expect many individuals or communities to act unilaterally when others are not doing so. Nor is it realistic to expect sufficient success in the wake of businesses ''going it alone'' in adopting green practices – any more than it is from individuals doing so'' (Hillman 2011, p. 31). There will always be those who will act individually to save environments whether for altruistic reasons or out of self-interest. But, individual actions only become effective when there is widespread behavioural change. Very often this requires collective actions in one form or another. These occur in various forms: as a stimulus, when, for example, economic incentives encourage adoption of solar energy; as a response to provision of facilities such as for recycling; in the form of a restraint, for example, in the protection of birds and other species; or arising from a set of standards or regulations for example in building design. But in all these, political action is necessary to encourage,

constrain or prevent certain forms of collective behaviour. But the scope for political action to achieve the far reaching changes to secure sustainable development is strictly limited.

It is limited, in democracies and in other systems, too, because the contemporary form of environmental policy making reflects and reinforces the economic and environmental limitations we have set out above. In terms of substance, policies emphasise the need for conservation achieved through green technologies and practices. So, in the energy sector a mix of renewables and low carbon big technologies like carbon capture and storage (CCS, yet to be developed) and nuclear is advocated (though not everywhere) alongside gas as the most energy efficient fossil fuel. The sustainable future of electricity supply and distribution is foreseen as a combination of long distance grid transfers linking up renewable sources of wind, wave and solar power together with localised smart grids, combined heat and power and distributed networks and a major shift towards energy efficiency and conservation. It is quite possible to envisage a wholesale decarbonisation of the electricity sector for many countries by the middle of the century (see, for example, scenarios for Germany and UK, SRU and UKERC). Policies and plans envisage very considerable reductions in carbon output. For example, the UK indicates an 80% reduction. By 2050 the EU is aiming for 20% (projected to rise to 30%) cuts in 1990 levels by 2020 together with 20% from renewables and a 20% reduction in energy use through energy efficiency. In short, there appears to be a prospect that sustainable development in the energy sector is achievable. The issue is not whether it can be done, it is whether it will be done or done in time to prevent greenhouse gases reaching a critical level.

Sustainable development as ecological modernisation

There are good reasons for taking a pessimistic view. In the first place there is the cost. Estimates of the cost of the various options vary. Calculations are complex and results depend on assumptions, what is factored in and, it may be said, the predilections or preferences of those interpreting the statistics. In most calculations one simple fact stands out, that in an unsubsidised market fossil fuels will usually turn out to be cheaper than low carbon options. While the cost of some renewable options is falling rapidly they are not yet competitive in developed economies (on cost alone) with coal or gas for electricity production. Furthermore, while pollution abatement and CCS and higher costs of carbon may make coal much less competitive (especially in Western Europe) gas, a cheaper and more efficient fossil fuel, has taken on a new lease of life. The extraction of shale gas reserves using the ''fracking'' process will provide a substantial boost to gas usage in the US and elsewhere. And natural gas piped across the continent and the North Sea is filling the so-called ''energy gap'' as coal and nuclear plants are retired. Gas is already proving to be an attractive option during the transition to a low carbon economy both as a substitute for coal and possibly nuclear but it may also impede the progress of renewables.

The relationship between big business and the state is a further reason why decarbonisation will take longer than optimistic forecasts suggest. Energy companies are among the biggest and most profitable in the world. The Fortune 500 list of companies shows that seven out of the first ten are energy companies. The ability to deploy resources and jobs provides them with enormous political clout to gain

regulatory concessions, mitigation of pollution controls, exploitation rights and licenses and to gain access to markets. The consequences in environmental degradation are evident as oil spillages in the Caribbean, the dereliction in the Athabasca tar sands or the Fukushima nuclear disaster have demonstrated. The ''greening'' of big business may be genuine if limited but it is a sideshow, more image than substance. Within countries businesses, often backed by scientists keen to apply big technologies, use privileged access to government to nurture their interests. To take two examples from the subjects of our most recent editorials, how else than continuing and persistent lobbying can the revival of the nuclear industry in the UK be explained? Or the success of GM food technologies? Or, the fascination with the fantasies of geotechnical engineering. The point is that the power relations between business and government nurture a conservative, business-as-usual approach to sustainable development. The approach favours environmental conservation provided it does not impede economic growth and the necessity for making profits within a capitalist context. Consequently, market based mechanisms such as carbon trading are favoured over interventionist methods such as quotas or taxation. Environment and economy are regarded as complementary, not contradictory. Sustainable development and ecological modernisation become one and the same.

The imbalance in power relations is concomitant with persistent political and social inequality. We have previously detected a tendency towards recentralisation of decision-making (Blowers et al. 2009). While there has been some opening up through ostensibly more participative and partnership styles of governance, there has also been a closing down and access to and influence on policy and decision-making is quite limited. Ultimately, control remains concentrated. Elites in government and business engaging in a cooperative and negotiative relationship; that is the partnership that really matters. Recentralisation tends to weaken subsidiary forms of government and in the UK (or at least, England) regional bodies have been abandoned and local government has long ago lost its power to be an effective counter force representing local communities. Councils lack the resources, expertise and authority to support or reject proposals. Planning procedures may be simplified and accelerated to facilitate the provision of major infrastructures. There are, of course, some countervailing forces, strong elements in civil society, notably environmental groups who continue to challenge and influence the policy agenda. But, in terms of sustainability, this can work both ways. The push towards on-land wind farms, supported everywhere in principle, can be held back in places by environmental groups determined to protect local amenity. Anti-nuclear groups drawn into consultation may serve mainly to fulfil a role of policy legitimation. Mainstream environmental groups in civil society cooperate and are coopted into the discourse and process of ecological modernisation.

The unknowable future

To all intents and purposes, in all its dimensions, economic, environmental and political, sustainable development has become indistinguishable from ecological modernisation. This approach envisages environmental conservation achieved through green technologies promoted through market based mechanisms, partnership between business and state and the incorporation of civil society through participation in policy making. Sustainable development has become synonymous with policies focused on economic growth, environmental conservation and political partnership. It is possible that this may, over time, deliver a sustainable environment.

But, this will involve substantial, fundamental even, behavioural changes that may not be achieved in time. The warnings have been clear for a long time but always the tendency is to try to maintain things as they are, not as they should be.

The biggest shortcoming of ecological modernisation is its short term approach to the future. It is essentially about present gratification with, perhaps, some concern for the next decade, maybe even a generation or so. But, beyond that it is difficult for people to conceptualise or evince any concern. And, yet, much of our current technological activity produces impacts, risks and burdens which will extend far into the future. At the same time uncertainty and instability presses on the present. Barbara Adam and Chris Groves (2007) express the problem in the following way: "... our knowledge of the future is being continuously foreshortened, compressed and reduced to the present while the effects of our activities extend ever further into the distant beyond" (p. 35). If we increasingly cannot know what lies far ahead, we may increasingly cease to care. It is impossible to plan for the unknowable, so we must do what we can and hope for the best. Such a cavalier attitude to the far future is as much a product of ignorance as irresponsibility. It is, at least, possible to put forward sets of principles or proposals that may help to ensure a sustainable future. In the cause of optimism we make five suggestions in the form of propositions applied to the energy sector.

First, do not undertake anything for the future that cannot be defended now. This poses a problem in that some things will always be controversial, to some desirable, to others indefensible. Nuclear energy is, perhaps, the classic case in point. But, the point here is that it is difficult to defend the creation of radioactive wastes for which there is, as yet, no satisfactory or acceptable method of long- term management. The same may apply to technologies which have potentially harmful or uncertain impacts or unintended consequences such as fusion or geotechnologies. We are not prescribing that these are not researched or never developed, rather that we do not apply them until they can be adequately defended.

Our second proposition is that decisions on major projects should not only be based on variable magnitudes like money. The application of this suggests it makes little sense to let the efforts to save energy depend entirely on the price of fossil fuels and that the need to switch-over to renewable sources of energy should not be linked exclusively to the oil price. This seems rather obvious but is very difficult to apply. There can be little doubt that wind, wave, biomass, geothermal and hydro technologies are sustainable and no doubt at all that energy efficiency and conservation are entirely desirable. But, where markets are the primary means of allocation and distribution, renewables and energy efficiency measures must compete or be subsidised.

Thirdly, develop alternatives to discounting as a means of making choices about the future. As we suggested earlier discounting is more relevant to short-term choices and tends to undervalue the importance of risks to the future and may literally discount the far future altogether. It effectively implies that since future impacts cannot be known the future must be left to look after itself. Where irreversible adverse impacts on environments or life are possible such as with radioactive wastes or the broader impacts of climate change the principle of intergenerational equity should be applied as indicated earlier in our discussion about defining sustainable development.

Fourthly, a sharpened concern for the future must not be an excuse for ignoring current environmental injustices. It is all too easy for a focus on future needs to threaten those whose discount rates are highest: those suffering from resource

poverty right now. For example, it is widely accepted that poor people have borne much of the cost of conserving biodiversity valued by current (and future) wealthy people. We must then integrate concerns for intergenerational distribution with concerns for intragenerational distribution, an argument that was central to the Brundtland report but which is all but neglected.

Finally, the precautionary principle should be applied. This may work in different ways. On the one hand, it may be advisable to take action to prevent environmental damage even in the absence of conclusive evidence that damage will occur. For example, the strong possibility that climate change will wreak havoc is a compelling reason for reducing fossil fuel consumption and increasing the use of renewables and energy efficiency. On the other hand, the principle also urges caution in taking action where the consequences of that action are uncertain or unknown. For example, in the present state of knowledge about risks it may be better to continue storing radioactive wastes rather than burying them. At least the precautionary approach suggests that it might be better to keep options open until there is greater certainty about outcomes. This is, of course, very similar to the position indicated by the first proposition. Applied to energy in the context of climate change, propositions such as these place an emphasis on achieving a sustainable path to the future. And they help to apply an integrative approach to policy making.

The potential impacts of present human actions on the future climate and its implications are, of course, well known. There are strenuous efforts to drive policies in a truly sustainable direction. The jury is out on the question of whether this can succeed. Our point is that sustainable development in its present dispensation as a process and concept is no longer, if it ever was, a sufficiently robust or practical guide or goal for the future. We need to re-invest in the concept to ensure it focuses on meeting future needs rather than responding to wants, protects as well as conserves environmental resources and encourages shifts in behaviour through greater equality and widespread political participation. As it is conceived and used at present sustainable development is not sustainable.

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